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ASSESSMENT OF THE COMPETITIVE ENVIRONMENT OF IT COMPANIES

Background. ***Ukraine's IT services market has remained a dynamic and export-oriented segment of the economy during the full-scale war, while undergoing consolidation, exits, mergers and acquisitions (M&A), and restructuring processes. Small and medium-sized enterprises (SMEs) are gaining visibility, yet competitive conditions remain ambiguous due to business groups comprising multiple legal entities. This study focuses on Ukraine's IT services market, examining the competitive environment and structural market asymmetries from 2022 to 2024. It aims to evaluate the level and dynamics of competition by analyzing market concentration and structural asymmetries during this period.***

Methods. ***A system-structural approach is applied, using concentration metrics for firms classified under Classificator of Types of Economic Activities (KVED) sections 62 and 63. Indicators include the Herfindahl–Hirschman Index (HHI), concentration ratios (CR_3, CR_5), the Gini Index, the Entropy Index, the Linda Index, and variance-based measures. Market shares are calculated from revenue; the SME share in total market revenue is also tracked. Descriptive statistics are complemented by comparative analysis across 2022–2024 on a research sample of 411 companies (13 large), with particular attention to the gap between the number of legal entities and verified active companies.***

Results. ***The market exhibits complex corporate structures: 8.6 thousand legal entities provided IT services in 2024, but only 2,118 companies were verified as active. HHI fell from 433.68 (2022) to 170.86 (2024), signalling stronger competition. CR_3 declined from 26.18% to 17.77%, and CR_5 from 34.13% to 23.31%; the SME revenue share rose from 52.7% to 62.4%. Distribution-sensitive measures reveal a hybrid structure: high entropy (E = 5.09) and low variance indicate broad participation, whereas the Gini Index (0.601), the Linda Index (169.2%), and the Lorenz curve point to a dominant core in the upper segment. By business model, outsourcing firms prevail (47% in 2024), followed by product (31%), mixed (19%), and outstaffing (3%).***

Conclusions. ***Ukraine's IT services market is moving toward a more competitive, decentralized configuration while an oligopolistic core persists. The simultaneous rise of SMEs and the weakening of top players' shares reduces monopolization risks, enhances resilience, and suggests growing value-added potential. Policy should balance SME entry and scaling with support for high-value, export-oriented capabilities through cooperation with market leaders. The proposed methodology can be applied to other high-tech markets, while future research should examine the links between concentration dynamics, financial stability, and the role of business models in shaping the competitive environment.***

Keywords: ***IT services market, structural market asymmetry, market competition, oligopolistic market core, market concentration.***

Background

Under the current conditions of full-scale war in Ukraine, small and medium-sized enterprises (SMEs) in the IT services market play a particularly important role in maintaining economic resilience and preserving the potential for high-tech development. They demonstrate flexibility, adaptability, and the ability to respond rapidly to changing circumstances. The IT services market remains one of the most dynamic and export-oriented sectors of the Ukrainian economy, ensuring foreign currency inflows and creating new jobs.

At the same time, this sector is experiencing processes of market concentration and consolidation (through mergers and acquisitions, bankruptcies of some companies, and the expansion of others), which may lead to reduced competition. For Ukraine, which is actively integrating into global IT value chains, the analysis of market concentration levels is of particular importance.

The object of this study is the IT services market of Ukraine, while the subject is the competitive environment and the structural asymmetries formed under the influence of market concentration and redistribution processes. The formulation and systematization of the state and dynamics of IT services market concentration make it possible to identify potential risks of market dominance and provide a foundation for comprehensive research into the conditions for the development of small and medium-sized IT companies.

The purpose of this study is to determine the competitive conditions for the development of the domestic IT market.

Literature review. Korablinova and Kulbatska (2017) provided a concise analysis of the level of concentration in the global software market and identified the main challenges associated with comprehensive and reliable assessments of market concentration. Zavhorodnia and Melnyk (2023) focused on the theoretical foundations of competition and the development of competitiveness in Ukraine's IT sector. Shthuler and Prestaya (2023) analyzed the current state of the IT services market in Ukraine and outlined possible development trends. Similarly, Lisik and Moriak (2023) examined the Ukrainian IT sector under the conditions of the full-scale war with Russia, emphasizing the specific risks and transformations triggered by the wartime economy.

The measurement of concentration in high-tech industries using the Herfindahl–Hirschman Index (HHI) has

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been widely applied in international research. For instance, Bessen (2020) demonstrated that advances in information technology significantly influence industry concentration, reshaping competitive dynamics across sectors. In parallel, Autor et al. (2020) advance the "superstar-firms" hypothesis: rising concentration and markups reflect the growing weight of firms with superior intangible assets and software, with macroeconomic effects on the labor share. De Loecker and Eeckhout (2020) corroborate the aggregate rise in market power, showing substantial increases in markups concentrated in the upper tail of the firm distribution. Complementing these findings, Grullon, Larkin, and Michaely (2019) show that U.S. industry concentration rose in over 75% of industries since the late 1990s, with profitability gains tied more to margins than to efficiency – evidence consistent with increased market power rather than pure technological improvement. Together, these studies provide a baseline against which the wartime evolution of Ukraine's IT services market can be compared.

At the same time, theory cautions against a simplistic mapping from competition to innovation outcomes. Aghion et al. (2005) document an inverted-U relationship in which moderate product–market competition fosters "neck-and-neck" innovation, whereas excessive concentration dampens it. This perspective is particularly relevant for IT services, where modular production, outsourcing/product/mixed business models, and rapid capability reconfiguration can sustain vigorous rivalry even alongside a persistent upper-tier core of large firms. It motivates the use of multiple indicators (HHI, CR_n, Gini/inequality measures, and Linda/entropy-type indices) to diagnose whether observed structural asymmetries amount to harmful dominance or to a competitive hybrid consistent with innovation and resilience.

Identification of previously unresolved aspects. Despite the considerable number of publications devoted to the characteristics, challenges, and prospects for the development of the IT market, as well as to the formation of competitiveness among IT companies, the issues of assessing the level of market concentration and its competitiveness remain insufficiently addressed. The degree of market concentration directly influences the strategic behavior of companies operating within it and seeking to maintain their competitiveness. This aspect is particularly important for small and medium-sized enterprises (SMEs), whose primary task under current challenges is not only survival but also strengthening their positions in a highly concentrated market.

Methods

The methodological framework for analyzing the IT services market in Ukraine was based on a combination of general scientific and specialized methods of economic analysis, including:

- system-structural method – used to analyze the characteristics of the functioning of the Ukrainian IT services market, its structural features, and the distribution of companies by size;
- economic and mathematical methods – applied to calculate quantitative measures of market concentration, including the Herfindahl–Hirschman Index (HHI), concentration ratios (CR_3, CR_5), the Gini Index, the Entropy Index, and the Linda Index;
- formalization method – used to present the results in the form of generalized statistical indicators reflecting the level of market concentration and competitiveness;
- comparative analysis – employed to compare the dynamics of concentration indicators in 2022–2024 and to cross-check the results obtained from different measures, enabling a comprehensive characterization of structural changes in the IT services market.

The use of concentration indices (HHI, CR_n, Gini, Entropy, Linda) corresponds to modern approaches to structural market analysis, which have also been applied in other sectors of the national economy, including the banking services market (Ihnatiuk, & Kolosha, 2024).

Results

The Ukrainian IT services market is characterized by a complex corporate structure, which reflects the specific features of doing business in the digital economy. According to the State Tax Service of Ukraine and IT Research Ukraine (2024), about 8.6 thousand legal entities providing IT services operated in Ukraine in 2024 (Fig. 1), which is 5.9% more than in 2023. The increase in the number of IT companies may indicate a gradual recovery of the market to its pre-war scale (in 2021, the number of such legal entities amounted to 9.6 thousand).

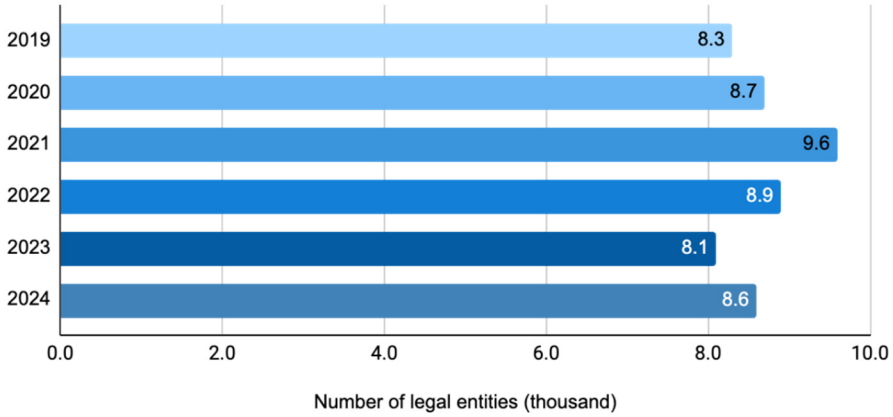

Fig. 1. Dynamics of the number of legal entities providing IT services in Ukraine, 2019–2024, thousand entities

Sourse: developed by the authors based on data from the State Tax Service of Ukraine and Lviv IT Cluster.

However, it should be noted that the number of registered IT companies is not identical to the number of those actually operating. This is because a single company may include several legal entities registered to serve different business areas or models. In 2024, the number of verified active IT companies in Ukraine amounted to 2,118 units – almost four times fewer than the number of registered legal entities. Such a gap between the number of

companies and legal entities complicates the accurate assessment of the IT services market structure and requires consideration in the chosen analytical methodology.

To conduct a more in-depth analysis of the IT services market structure in Ukraine, particularly in the context of the transformational period of 2022–2024, a comprehensive assessment of market concentration levels was carried out. This analysis makes it possible to identify key changes in the balance of power among major players as well as to reveal trends towards monopolization or, conversely, towards increasing competition in the market.

The primary source of information for the study of the Ukrainian IT services market was the set of enterprises whose activities, according to the Classification of Types of Economic Activity (KVED), fall under Section 62 "Computer programming, consultancy, and related activities" and Section 63 "Information service activities." This choice is explained by the fact that these sections cover enterprises directly involved in software development, implementation, maintenance, and consulting, as well as in the provision of information services, including data processing, hosting, and related information resource activities. Therefore, they are representative of capturing the key processes and development trends of the domestic IT services market.

The research sample included 411 companies, among which 13 enterprises were classified as large according to the current criteria for classifying business entities by size (Table 1).

Table 1

Market shares of major IT companies in Ukraine, 2022–2024

Company	Market share (%)		
	2022	2023	2024
LLC "GLOBALLOGIC UKRAINE"	9.14	7.64	6.79
LLC "EPAM SYSTEMS"	16.05	8.44	6.60
LLC "EPAM DIGITAL"	0.99	4.02	4.38
LLC "LUXOFT SOLUTIONS"	4.72	3.93	3.17
LLC "INSTITUTE OF INFORMATION TECHNOLOGIES INTELLIAS"	3.23	2.90	2.36
LLC "SOFTSERVE TECHNOLOGIES"	0.05	1.56	2.23
LLC "FINTECH BAND"	1.78	3.73	2.16
LLC "HIGHLOAD SOLUTIONS"	0.00	0.69	1.88
LLC "CIKLUM"	3.83	2.56	1.86
LLC "TIETOEVRY CREATE UKRAINE"	2.67	2.16	1.78
LLC "MEGOGO"	1.30	1.48	1.62
LLC "SQUAD UKRAINE"	0.00	0.63	1.51
LLC "SOFTSERVE DIGITAL"	0.41	0.42	1.30

The formal parameters most frequently used to assess market concentration include:

1. The number of sellers;
2. The distribution of market shares among individual market participants.

The IT services market is no exception. To calculate a concentration indicator, it is first necessary to determine the market shares of individual entities. The market share of the *i*-th entity is most commonly defined as the ratio of the value of goods or services sold by this entity (*Qi*) to the total sales volume in the market (*Qr*) over the corresponding period (Equation 1):

$$Y_i = \frac{Q_i}{Q_r}. \quad (1)$$

In global practice, several indices and measures are used to assess the level of market concentration. First, we calculated the indices traditionally applied in economic theory and antitrust regulation:

- concentration ratios (CR_3 and CR_5), which capture the share of revenue accumulated by the three and five largest companies, respectively;
- Herfindahl–Hirschman Index (HHI), which provides an aggregated representation of concentration by summing the squares of the market shares of all market participants;
- the share of small and medium-sized enterprises (SMEs) in total market revenue, calculated as the ratio of the combined revenue of all companies meeting SME criteria to the total revenue of all market participants.

This approach is consistent with the theoretical conclusions of Kvålseth (2018), who demonstrated the functional relationship and complementarity among these indicators.

It should be noted that the concentration ratio is measured as the sum of market shares (k_i) for m largest companies out of the total number n of companies operating in the same product market (Equation 2):

$$CR = \sum_{i=1}^{m} k_i, \sum_{i=1}^{n} k_i = 100\%. \quad (2)$$

Based on the data on the market shares of the largest entities, it is possible to trace the dynamics of the concentration index for the four largest (CR_4) and eight largest (CR_8) IT companies (Table 2).

Another widely used indicator for assessing market concentration is the Herfindahl–Hirschman Index (HHI), which is calculated as the sum of the squared market shares of all firms operating in the market (Equation 3):

$$\mathrm{HHI} = \sum_{i=1}^{n} q_i^2, \quad (3)$$

where q_i^2 is the squared market share of the individual IT company, expressed as a percentage.

The concentration ratios and the Herfindahl–Hirschman Index are important indicators of market structure that make it possible to identify the overall dynamics of economic activity distribution within the market. The calculation results are presented in Table 2.

Table 2

Indicators of the IT Services market structure in Ukraine, 2022–2024

Year	HHI Index	CR_3 (%)	CR_5 (%)	SME Revenue Share (%)
2022	433.68	26.18	34.13	52.72
2023	228.29	20.09	26.93	56.91
2024	170.86	17.77	23.31	62.35

Source: compiled by authors.

The values of the Herfindahl–Hirschman Index (HHI) during 2022–2024 demonstrate a clear downward trend: from 433.68 in 2022 to 170.86 in 2024, indicating a gradual increase in the level of competition in the IT services market. In this study, the HHI was calculated in the format adopted in antitrust practice, where market shares are expressed as percentages, and the resulting sum of the squared shares ranges from 0 to 10,000. This approach is appropriate as it allows for direct comparison of the obtained values with the concentration thresholds used by regulatory authorities, including the U.S. Department of Justice (US DOJ) and the Federal Trade Commission (FTC).

In the context of antitrust regulation, it is generally accepted that on a 0–10,000 scale, HHI values below 1,000 correspond to highly competitive markets, values between 1,000 and 1,800 indicate a moderately concentrated market, and values above 1,800 are characteristic of highly concentrated markets (U.S. Department of Justice, 2024).

Thus, the obtained results indicate that the Ukrainian IT services market falls within the zone of high competition, and its concentration level continues to decrease. Overall, this points to structural changes, particularly the weakening of the positions of certain large companies and the increasing influence of medium-sized and small enterprises.

It should be noted that the Herfindahl–Hirschman Index (HHI) is considered one of the most reliable tools for assessing market concentration, especially in industries with a high level of intellectual capital and low barriers to entry, such as the information technology market. Its advantage lies in its sensitivity to changes in the market shares of even smaller participants, making it possible to capture very minor shifts in the competitive environment (PLOS One, 2022).

Alongside the decline in the overall concentration level measured by the Herfindahl–Hirschman Index (HHI), a similar downward trend is observed in the concentration ratios of the three and five largest companies (CR_3 and CR_5). Specifically, the CR_3 indicator decreased from 26.18% in 2022 to 17.77% in 2024, while CR_5 dropped from 34.13% to 23.31% over the same period. This indicates that the combined revenue share accumulated by the largest market participants has significantly declined, leading to a more fragmented market structure.

These changes reflect a gradual diversification of the market structure, where small and medium-sized enterprises (SMEs), as well as new or niche companies, are beginning to play a more prominent role in shaping the total revenue of the IT services market. Under the dynamic conditions triggered by military and economic shocks, this may point to the high adaptability and flexibility of the less concentrated market segment, which can effectively respond to changes in demand, technological challenges, and the transformation of global value chains.

Contemporary literature emphasizes that the use of the Herfindahl–Hirschman Index (HHI) and concentration ratios (CR_n) constitutes a sound methodological framework for analyzing the competitive environment. These indicators enable a comprehensive assessment of both the overall level of market concentration and the distribution of shares among market participants. In particular, Peleckis (2022), examining the methodological aspects of structural analysis, highlights the appropriateness of applying these indicators to identify the level of competitiveness and evaluate transformation dynamics across various sectors of the economy.

Notably, the share of small and medium-sized enterprises (SMEs) in the total revenue of the IT services market increased from 52.7% in 2022 to 62.4% in 2024. This positive trend indicates the gradual strengthening of SMEs' positions in the market structure and their growing contribution to the overall revenue generation in the IT services market.

The increase in the SME share in the IT services market can be viewed as one of the manifestations of this segment's adaptive potential, particularly in the context of prolonged crises associated with full-scale war, business relocation, disrupted supply chains, and the transformation of global demand for IT services.

The increasing share of SMEs also reflects the high level of innovation activity and entrepreneurial dynamism in the market, driven by the development of startup culture, remote work models, and the creation of highly specialized niche solutions targeting global markets. This trend indicates not only the ongoing restructuring of the market but also potential shifts in the long-term competitive strategy of Ukraine's IT services market, where SMEs are emerging as key drivers of resilience and recovery.

Thus, the growing market weight of small and medium-sized IT companies represents not only a quantitative change but also qualitative evidence of the strategic transformation of the market toward a decentralized, adaptive, and more resilient development model.

For comprehensively measuring the level of market concentration and structural differentiation in the IT services market in Ukraine, this study employs a system of quantitative indicators that allow for the assessment of both the overall level of competition and the presence of structural asymmetries among market participants. These indicators include the Entropy Index, the variance of market shares, the variance of the logarithms of shares, the Gini Index, and the Linda Index. Each of these measures captures different aspects of market structure, ranging from the degree of uniformity in the distribution of shares among all participants to the dominance of leading companies. Their combined use ensures a multidimensional approach to analyzing the competitive environment, enabling the identification of both general decentralization trends and localized manifestations of concentration, which are critical for shaping adaptive market development strategies (Table 3).

The Entropy Index (E = 5.09) indicates a high level of market fragmentation in the IT services sector, which is typical for competitive environments with a large number of active players. Such a level of entropy suggests the absence of dominance by individual entities and a relatively even distribution of market shares among companies of different sizes. In the context of the transformation of Ukraine's IT services market, this is a sign that the market has the potential for sustainable development through internal diversification and the growing share of medium-sized and small enterprises.

The variance of market shares (σ^2 = 0.0000356) demonstrates a slight deviation of companies' market shares from the average value, confirming the presence of relatively balanced competition across a significant part of the market. This indicator is particularly valuable for analyzing a broad base of service providers with similar levels of commercial influence. In the case of the IT services market, it suggests that the institutional environment supports relatively equal access to market resources, at least beyond the dominant core.

The variance of the logarithms of market shares (σ^2_log = 0.7275) reveals moderate inequality in the distribution of market shares, with increased sensitivity to extreme values. This indicates the existence of significant differences between leading companies and the mass of less influential firms, which is typical for markets with complex hierarchical structures. For the Ukrainian IT services market, it means that despite the overall competitive background, vertical differentiation persists, whereby some entities accumulate significantly more resources and client segments.

Table 3

Results of the calculation of concentration indices for the IT services market

Indicator	Formula	Description	Value
Entropy Index (E)	$E = \sum_{i=1}^{n}\left(q_i \cdot ln\left(\frac{1}{q_i}\right)\right)$, *where q_i is the market share of the i-th firm (expressed as a fraction), and n is the number of firms operating in the IT services market*	Reflects the degree of uniformity in the distribution of market shares among all companies. Higher values indicate greater uniformity and competition	5.09
Variance of shares (σ²)	$\sigma^2 = \frac{1}{n}\sum_{i=1}^{n}\left(q_i - \underline{q}\right)^2$, *where q_i is the market share of the i-th firm (expressed as a fraction); $\bar{q}$ is the average market share of a single firm in the IT services market, calculated as $\frac{1}{n}$, n – the total number of firms operating in the market*	Measures deviations of individual companies' market shares from the average share. High values indicate uneven distribution and potential concentration	0.0000356
Variance of logarithms (σ²_log)	$\sigma^2\_log = \frac{1}{n}\sum_{i=1}^{n}\left(ln\, q_i - ln\, \underline{q}\right)^2$, *where q_i is the market share of the i-th firm (expressed as a fraction); $\bar{q}$ is the average market share of a single firm in the IT services market, calculated as $\frac{1}{n}$, n is the total number of firms operating in the market*	Similar to the variance of shares, but applies logarithms to account for relative differences, making it more sensitive to disparities between small and large shares	0.7275
Gini index (G)	$G = \frac{1}{2(n-1)}\sum_{i=1}^{n}\sum_{j=1}^{n}\lvert y_i - y_j\rvert$, *where y_i is the volume of services provided by the i-th firm, and y_j is the volume of services provided by the j-th firm*	Reflects the degree of inequality in the distribution of market shares or sales volumes among companies in the IT services market, where a value of 0 indicates perfect equality, while a value close to 1 corresponds to maximum concentration of shares among a small number of companies. The indicator is calculated based on the Lorenz curve	0.601
Linda index (IL)	$IL = \frac{1}{k(k-1)}\sum_{i=1}^{n} q_i$, *where q_i is the market share of the i-th firm among the k largest firms (expressed as a fraction)*	Reflects the degree of dominance of the largest companies ("market core") over the rest. Higher values indicate stronger dominance	169.2%

Source: calculated by the authors.

The Linda Index (IL = 169.2%) demonstrates the dominance of a limited number of companies in the market, particularly the four largest, which significantly surpass other participants in terms of market share. In the context of IT services, this indicates the formation of a market elite that concentrates the main orders, investments, and human capital. Such a market configuration requires differentiated regulation: on the one hand, supporting the innovative activity of market leaders, and on the other, stimulating the development of small and medium-sized businesses to prevent the strengthening of monopolistic tendencies.

The Gini Index (G = 0.601) reflects a high degree of inequality in the distribution of market shares, indicating a concentrated structure in the upper segment of the market. For the IT services market, this suggests the presence of a stable pool of leading companies that play a system-forming role by accumulating a significant share of total demand. On the one hand, such a configuration ensures stability and international competitiveness, while on the other, it creates potential entry barriers for new players.

The Lorenz curve based on 2024 data demonstrates a substantial deviation from the line of perfect equality, indicating significant concentration of market shares among leading companies. Specifically, a small group of firms accounts for a critically important segment of the market, while the majority hold relatively minor shares. This configuration confirms the conclusions drawn from numerical indices (in particular, the Gini and Linda indices) and visually illustrates the asymmetric market structure with elements of oligopolistic influence in the upper segment (Fig. 2).

The obtained quantitative indicators reveal a complex structure of the IT services market in Ukraine, which cannot be unequivocally classified under any of the classical typologies of market structures. On the one hand, the high value of the Entropy Index (5.09) and the low variance of market shares (σ² = 0.0000356) indicate the presence of a significant number of active participants with a relatively even distribution of shares, which is typical for conditions of monopolistic competition. On the other hand, the Gini Index (0.601) and the Linda Index (169.2%) point to the pronounced dominance of a limited group of leading companies that form the "core" of the market and possess considerable market power. Such a configuration allows the market structure to be classified as hybrid, with prevailing features of diffuse competition alongside certain oligopolistic elements in the upper segment. This structural heterogeneity reflects the dynamic transformation of the market, where the steady growth of small and medium-sized IT companies coexists with the high concentration of market power among industry leaders.

We also analyzed the IT services market structure by business model type and found that in 2024, outsourcing companies dominated, accounting for 47% of the market. Product companies accounted for 31%, mixed models (combining elements of outsourcing and proprietary product development) represented 19%, while the least common type was outstaffing – only 3% (Fig. 2). This structure confirms that the export-oriented model (primarily outsourcing) remains dominant in the Ukrainian IT business, although the growing presence of product and hybrid companies indicates the market's evolution towards higher value-added activities.

Thus, the IT services market in Ukraine demonstrates not only quantitative growth after the decline of 2022–2023 but also retains a complex, multi-level corporate structure, in which a single business group may include several affiliated legal entities, requiring caution when analyzing market statistics.

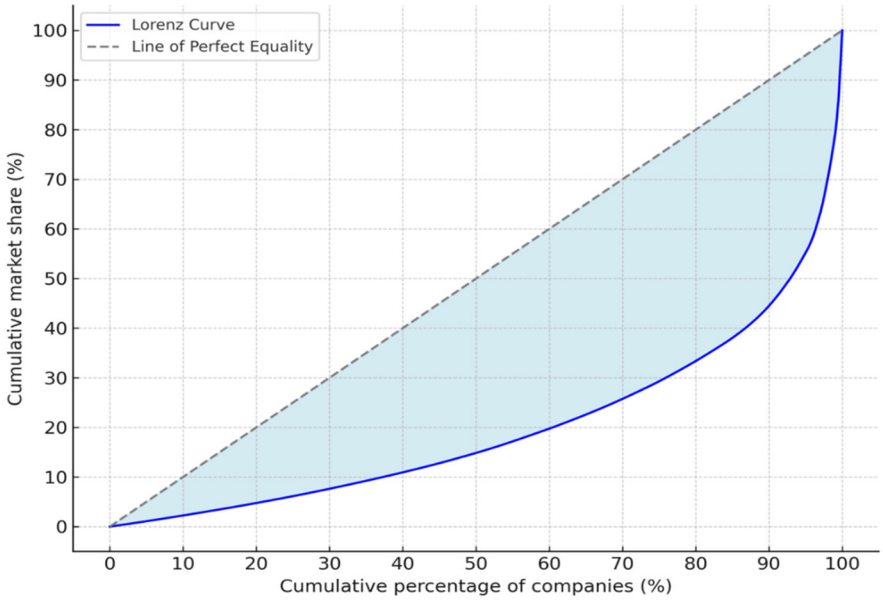

Fig. 2. Lorenz Curve (concentration) of the distribution of market shares of firms in the IT services market of Ukraine, 2024
Source: authors' own elaboration.

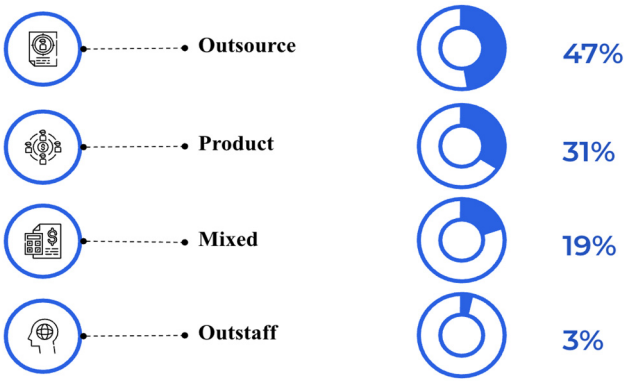

Fig. 3. Structure of the IT services market in Ukraine by business model type in 2024, %
Source: developed by the author based on Lviv IT Cluster data.

Finally, it should be noted that providing a comprehensive and reliable assessment of the degree of concentration and, consequently, competition in the Ukrainian IT services market based on traditional analytical methods is a rather challenging task. We agree with other authors that the main reasons for this include:

- some domestic IT companies are outsourcing providers fulfilling orders for international corporations and do not operate in the domestic market;
- most IT companies, although engaged in similar activities (which creates elements of competition), still differ in the specifics of their IT tasks and solutions offered (a manifestation of monopolistic tendencies).

Discussion and conclusions

Scientific research by both Ukrainian and international scholars devotes considerable attention to analyzing market concentration levels in high-tech sectors, particularly in IT services, as it directly influences competitiveness and corporate resilience. However, comprehensive studies evaluating the structure of Ukraine's IT services market during the wartime transformations of 2022–2024 remain scarce. This study partially addresses this gap, demonstrating that the domestic IT services market is undergoing structural transformation, combining elements of intense competition with the continued dominance of certain players.

In comparative perspective, these dynamics resonate with three major strands in the literature. First, the "superstar-firms" view links digital scale and intangibles to persistent concentration and higher markups (Autor et al., 2020; De Loecker, & Eeckhout, 2020; Bessen, 2020). Second, innovation theory suggests an inverted-U relationship in which moderate rivalry fosters "neck-and-neck" innovation while excessive concentration can dampen it (Aghion et al., 2005). Third, policy-institutional work argues that targeted SME digitalisation reduces entry and scaling frictions, sustaining competition even under shocks (OECD, 2024). Our wartime evidence provides a useful counterpoint to the first view while aligning with the latter two: rivalry appears to have broadened despite turbulence, yet a leading core persists.

The results of quantitative calculations (HHI, CR_3, CR_5, Gini Index, Linda Index) show that market concentration levels are gradually decreasing. This is reflected in the declining shares of the largest companies and the growing role of small and medium-sized enterprises (SMEs), whose share of total revenue increased from 52.7% in 2022 to 62.4% in 2024. Consequently, the market is becoming increasingly fragmented, reducing the risks of monopolization. At the same time, the Gini Index (0.601) and the Linda Index (169.2%) highlight the presence of a powerful core of companies that maintain a system-forming

role and capture a significant portion of demand. This indicates the emergence of a hybrid market structure combining features of monopolistic competition and oligopoly in the upper segment.

Viewed through theory, such a "hybrid" structure is consistent with the inverted-U intuition: broadened rivalry (lower HHI/CR_n) can coexist with an upper-tier core without collapsing into dominance (Aghion et al., 2005). Methodologically, using multiple indicators is warranted because HHI and CR_n capture top shares, whereas inequality-sensitive and entropy-type measures detect distributional tails and core–periphery contours (Kvålseth, 2018; Zhou, 2022). Benchmarked against antitrust thresholds, the observed HHI levels map to unconcentrated–moderate ranges in the U.S. Merger Guidelines/DOJ guidance, reinforcing the interpretation of reduced monopolization risks (U.S. Department of Justice & Federal Trade Commission, 2023; U.S. Department of Justice, Antitrust Division, 2024).

The growing share of SMEs can be interpreted as evidence of their adaptability and flexibility in the face of military and economic shocks. It also points to the capacity of smaller firms to create new niches, promote market diversification, and mitigate overall concentration risks. Meanwhile, the persistence of a stable core of large companies underscores the importance of maintaining balance: on the one hand, stimulating the development of small and medium players, and on the other, creating conditions for effective cooperation with market leaders to ensure integration into global value chains.

This balance aligns with the policy-institutional perspective that treats SME digitalisation as a resilience multiplier (OECD, 2024) and helps explain why, contrary to the superstar-dominance pattern seen elsewhere, Ukraine's IT services did not gravitate toward higher concentration during 2022–2024 (cf. Autor et al., 2020; De Loecker, & Eeckhout, 2020). At the same time, evidence of rising industry concentration in many mature economies (e.g., Grullon, Larkin, & Michaely, 2019) provides a useful external benchmark, highlighting the distinctiveness of Ukraine's wartime trajectory.

Overall, the Ukrainian IT services market demonstrates a strengthening competitive environment while maintaining structural asymmetry. This calls for an adaptive regulatory approach aimed at fostering further market diversification while ensuring the strategic resilience of the sector. Future research could focus on exploring correlations between market concentration levels and companies' financial stability, as well as analyzing the impact of business model types (outsourcing, product, or mixed) on the competitive balance within the sector. Policy priorities naturally follow: (i) institutionalise SME-oriented digitalisation and export-readiness programs; (ii) maintain transparent, methodologically documented monitoring of HHI/CR_n/Gini/Linda; and (iii) support cluster-based cooperation between SMEs and core firms to accelerate capability transfer without entrenching dominance (OECD, 2024; U.S. Department of Justice & Federal Trade Commission, 2023; U.S. Department of Justice, Antitrust Division, 2024). Future research could focus on exploring correlations between market concentration levels and companies' financial stability, as well as analyzing the impact of business model types (outsourcing, product, or mixed) on the competitive balance within the sector. Robustness tests should also assess sensitivity to group consolidation rules and tail treatments, given known measurement caveats (Kvålseth, 2018; Zhou, 2022).

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ОЦІНЮВАННЯ КОНКУРЕНТНОГО СЕРЕДОВИЩА ІТ-КОМПАНІЙ

В с т у п . ***Ринок ІТ-послуг України залишається одним із найбільш динамічних та експортно орієнтованих сегментів економіки навіть під час повномасштабної війни, проте одночасно зазнає процесів консолідації, виходу компаній із ринку, злиття і поглинань, а також реструктуризації. Малі та середні підприємства (МСП) відіграють дедалі помітнішу роль, водночас конкурентні умови залишаються неоднозначними, оскільки бізнес-групи можуть містити кілька пов'язаних юридичних осіб. Об'єктом дослідження є ринок ІТ-послуг України, предметом – конкурентне середовище та структурні асиметрії ринку у 2022–2024 рр. Метою цього дослідження є оцінювання рівня та динаміки конкуренції шляхом вимірювання ринкової концентрації та структурних асиметрій у 2022–2024 рр.***

М е т о д и . ***Застосовано системно-структурний підхід із використанням показників концентрації для підприємств, класифікованих за секціями КВЕД 62 і 63. До індикаторів належать індекс Герфіндаля – Гіршмана (HHI), коефіцієнти концентрації (CR_3, CR_5), індекс Джині, індекс ентропії, індекс Лінда та дисперсійні показники. Ринкові частки розраховано на основі виручки; додатково оцінено частку МСП у загальній виручці ринку. Описову статистику доповнено порівняльним аналізом за 2022–2024 рр. на вибірці з 411 компаній (з них 13 великих), з урахуванням розриву між кількістю юридичних осіб і кількістю верифікованих активних компаній.***

Р е з у л ь т а т и . ***Ринок характеризується складною корпоративною структурою: у 2024 р. ІТ-послуги надавали 8,6 тис. юридичних осіб, проте лише 2 118 компаній було верифіковано як активні. Індекс HHI знизився з 433,68 (2022) до 170,86 (2024), що свідчить про посилення конкуренції. Показник CR_3 скоротився з 26,18 % до 17,77 %, а CR_5 – з 34,13 % до 23,31 %; частка МСП у виручці зросла з 52,7 % до 62,4 %. Чутливі до розподілу показники виявляють гібридну структуру: висока ентропія (E = 5,09) та низька дисперсія свідчать про широку участь компаній, тоді як індекс Джині (0,601), індекс Лінда (169,2 %) і крива Лоренца вказують на домінуюче ядро у верхньому сегменті ринку. За типом бізнес-моделі 2024 р. переважають аутсорсингові компанії (47 %), далі йдуть продуктові (31 %), змішані (19 %) та аутстафінгові (3 %).***

В и с н о в к и . ***Ринок ІТ-послуг України поступово набуває більш конкурентної та децентралізованої структури, хоча олігополістичне ядро зберігається. Зростання ролі МСП та зменшення часток провідних компаній знижують ризики монополізації, підвищують стійкість ринку та створюють передумови для розвитку сегментів із більшою доданою вартістю. Регуляторна політика має забезпечити баланс між підтримкою входження та масштабування МСП і створенням умов для ефективної кооперації з ринковими лідерами задля інтеграції у глобальні ланцюги вартості. Запропоновану методологію можна застосувати й до інших високотехнологічних ринків, тоді як подальші дослідження можуть бути зосереджені на аналізі взаємозв'язку між динамікою концентрації, фінансовою стійкістю компаній і впливом типу бізнес-моделі на конкурентний баланс у секторі.***

К л ю ч о в і с л о в а : ***ринок ІТ-послуг, структурна асиметрія ринків, конкуренція, олігополістичне ядро ринку, концентрація ринків.***

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