

Research Article

UDC 005.96: 658.8

JEL: J24, M31, L10, O15

Nataliia Kuzmynchuk

V.N. Karazin Kharkiv National University,
Kharkiv, Ukraine
ORCID iD: 0000-0002-9844-3429

Tetiana Kutsenko*

V.N. Karazin Kharkiv National University,
Kharkiv, Ukraine
ORCID iD: 0000-0001-7800-2987

Serhii Aloslyn

National Technical University “Kharkiv Polytechnic Institute”,
Kharkiv, Ukraine
ORCID iD: 0000-0003-0461-8329

Albert Volkov

V. N. Karazin Kharkiv National University,
Kharkiv, Ukraine
ORCID iD: 0009-0000-3203-6364

*Corresponding author

E-mail: chkutsenko@gmail.com

Received: 05/12/2025

Revised: 18/02/2026

Accepted: 09/03/2026

Published: 30/03/2026

DOI: 10.61954/2616-7107/2026.10.1-7

© Economics Ecology Socium, 2026
CC BY-NC 4.0 license

**THE IMPACT OF HUMAN CAPITAL
TRANSFORMATION ON MARKETING-DRIVEN
STRATEGIC MANAGEMENT OF
ORGANISATIONAL COMPETITIVENESS**

Background. The global economy is operating amid increasing turbulence, driving deep demographic transformations, large-scale migration flows, and instability in consumer demand. Accordingly, human capital becomes a system-forming factor in sustainable organisational competitiveness, as it determines not only enterprises' production capacities but also the structure and dynamics of the market demand. This necessitates the development of new analytical and adaptive approaches to ensure the potential of marketing support for organisational competitiveness, considering the demographic context.

Purpose. This study aims to quantify the impact of human capital on the potential of marketing support for organisational competitiveness in conditions of global turbulence using integrated accounting, analytical and management approaches.

Findings. The study substantiates an analytical model that combines the demographic characteristics of human capital with indicators of enterprises' marketing potential. An integrated Marketing Human Capital Pressure Index (MHCPI) was developed to aggregate the impacts of population decline, a decline in the working-age population, and consumer ageing. In Ukraine, from 2016 to 2021, the MHCPI increased from 0.052 to 0.059, reflecting a gradual structural demographic pressure. Structural analysis showed that during this period, more than 85% of the index value was due to population ageing. In contrast, in 2022–2023, the solvent consumer outflow factor became dominant, accounting for over 50%. The study results emphasise the need for enterprises to transition to adaptive mechanisms to ensure the potential of marketing support for organisational competitiveness.

Implications. Human capital transformation is a system-forming factor that shapes the marketing environment and organisational competitiveness. The proposed conceptual model of human capital's impact on the potential of marketing support for competitiveness provides a basis for substantiating an adaptive mechanism to minimise demographic risks and transform human capital into a source of sustainable competitive advantage. Integrating accounting and analytical blocks ensures that key human capital indicators are linked to marketing results, thereby increasing the validity of management decisions amid increasing global turbulence.

Keywords: Human Capital, Consumer, Marketing, Competitiveness, Adaptive Mechanism.

1. Introduction.

Against financial crises, geopolitical instability, migration flows, labour market changes, and digital business transformation, human capital has become a key factor in the sustainability and long-term competitiveness of enterprises. It stimulates production potential while also enhancing innovative capacity, the quality of management decisions, adaptability, and responsiveness to an unstable external environment. The creation of added value in a knowledge-driven economy depends predominantly on knowledge, competencies, creativity, and employees' social capital integrated into enterprises' marketing and competitive strategies (Becker, 1993; Wright & McMahan, 2011).

Human capital not only supplies goods and services through the professional, innovative, and managerial competencies of staff but also determines effective demand, consumer expectations, consumer behaviour patterns, and the dynamics of market segments. It directly affects the consumption structure, brand perceptions, and customers' readiness to adopt innovations, influenced by income, education, digital skills, and social mobility (Sebastian et al., 2017).

Human capital is a driver of marketing potential for organisational competitiveness, shaping both internal capabilities to deliver market value and external factors influencing consumer perceptions. Population decline, ageing, and active labour migration, typical of Ukraine and other post-socialist economies, have significantly transformed not only labour markets but also the structure of domestic consumer demand, market scale, and consumer behaviour.

The outflow of young, highly qualified workers decreases innovative and entrepreneurial potential, while an increasing share of the older population shifts consumption priorities towards stability, services, medical, and financial services. Under such conditions, traditional marketing models focused on a demographically balanced mass market lose their effectiveness, forcing enterprises to review their segmentation, positioning, and value proposition strategies.

In this context, human capital is considered not only a social and economic category or production resource but also a key marketing asset that determines market capacity, demand levels, consumer loyalty, and an enterprise's ability to adapt strategically. The quality of human capital ensures a connection between macro-demographic trends and micro-level indicators of enterprise competitiveness, such as brand value, customer capital, the effectiveness of marketing investments, and long-term financial sustainability.

Despite extensive research on human capital, a holistic model explaining how its transformation shapes marketing-driven strategic management of enterprise competitiveness during demographic changes is still lacking. Most approaches either focus on the macro-level social and economic consequences or consider human capital within the framework of internal HR processes, without systematically linking it to marketing potential and consumer behaviour. This gap highlights the need to develop an integrated model of the impact of human capital on the potential of marketing support for competitiveness, reflecting the mechanisms of marketing-driven strategic management.

This study aims to identify and quantify the impact of human capital on the potential of marketing support for enterprise competitiveness in the context of global turbulence using accounting and analytical approaches. This study provides solutions to the following research questions (RQ):

RQ 1. What are the conceptual foundations of the model reflecting the interaction of human capital and demographic pressure on the potential for marketing support of enterprise competitiveness?

RQ 2. What are the methodological approaches to constructing and calculating the integrated Marketing Human Capital Pressure Index (MHCPI) as a comprehensive indicator of demographic dependency for the period 2015–2024?

RQ 3. What adaptive, accounting, and analytical mechanisms can be substantiated to ensure the potential of marketing support for enterprise competitiveness?

2. Literature Review.

The European Union's Financial Support Program for Ukraine (Ministry of Economy of Ukraine, 2024) considers human capital to be one of the key elements of Ukraine's recovery and post-war sustainable growth. In particular, there is a need to stop human capital outflows and create conditions for citizens to return and improve their knowledge, skills, and health, thereby providing a competitive, qualified workforce capable of supporting economic development and adapting to labour-market requirements amid global turbulence.

Human capital is a strategic resource for ensuring innovative business capacity and increasing the effectiveness of marketing support for enterprise competitiveness, as the quality of human capital determines an organisation's ability to analyse markets, develop customer-oriented value propositions, and manage brands and digital communication channels. In modern economic theory, human capital is considered a fundamental factor in long-term economic growth, structural modernisation, and innovative development.

Becker (1993), Schultz (1961), and Mincer (1974) laid the foundations for understanding human capital as a set of investments in education, vocational training, and health that maintain individuals' productive skills and determine the economic return on labour. In further studies of endogenous growth, Romer (1990) and Lucas (1988) show that accumulating human capital not only increases the productivity of individual agents but also generates positive externalities that accelerate technological progress and enhance the competitiveness of the economic systems.

Sen's (2001) concept of capabilities expanded the interpretation of human capital, focusing on freedom of choice, standards of living, and the institutional environment, realising an individual's economic potential. Moskalenko (2025) develops and applies Sen's concept in studies of human capital and social development to analyse the feminisation of displacement, showing that restrictions on the freedom of choice and activity of displaced women increase their social and economic vulnerability in crises.

In the modern knowledge economy, these approaches were supplemented by OECD (2021) and World Bank (2020) studies, which show that levels of education, digital competencies, and population health are directly correlated with business productivity, investment attractiveness, and resilience to crises. In management theory, human capital is recognised as a core component of an enterprise's resource base (Barney, 1991; Schulze & Dada, 2025; Wright et al., 1994), as employees' knowledge, skills, and organisational culture create sustainable, hard-to-imitate competitive advantages. Abidin et al. (2025) further emphasise human capital as a key intangible asset driving innovative capacity, strategic adaptability, and effective strategy implementation.

The concept of internal marketing, introduced by Berry (1981) and developed by Grönroos (2023), is gaining increasing relevance in contemporary marketing. In this concept, service workforce is its "internal customers" and their motivation and involvement directly affect service quality and external customer satisfaction. Further development of these ideas occurred within the service-dominant logic of marketing by Vargo and Lusch (2008), in which value creation is understood as a mutual interaction among the company, its employees and consumers. In this paradigm, human capital is the key to delivering customer experience and long-term loyalty.

A separate area of research concerns employer branding, initiated by Azhar et al. (2024) and further developed in the studies of Backhaus and Tikoo (2004). These studies show that a company's ability to attract and retain talent shapes its market reputation, influences customer perceptions of the brand, and increases the effectiveness of marketing communications.

Hlushchenko et al. (2025) and Kuzmynchuk et al. (2016) strive to substantiate approaches to assessing and developing the social and economic potential as a basis for ensuring the sustainable development of economic systems. Thus, Plaksiuk et al. (2023) consider human capital a strategic resource that enhances the efficiency and competitiveness of enterprises by developing staff professional competencies and increasing productivity.

Further research was conducted by Kucharcikova et al. (2024). An empirical analysis of small retail enterprises shows that implementing human capital management increases organisational sustainability and enhances management effectiveness. Of particular value for studying the relationship between human capital and marketing competitiveness are the research results of Mohammad Shafiee et al. (2024), who argue that human and relational capital are the basic drivers of competitiveness for knowledge-intensive firms and that their influence is realised through marketing knowledge and export orientation. Mishchuk et al. (2023) demonstrate that social capital is an important component in ensuring competitiveness and human development, providing the institutional basis for trust, cooperation, and long-term economic sustainability.

At the same time, Libanova (2024), Kolot et al. (2022), and Bloom et al. (2010) show that population ageing, depopulation, and labour migration significantly transform labour and consumption markets, reducing domestic markets' capacity and changing the demand structure. However, these processes are analysed either at the macroeconomic level or in the context of social policy, without proper integration into marketing and the competitive models of enterprises.

Thus, despite significant research on human capital, brands, service quality, and demographic changes, the academic literature remains insufficiently developed regarding the systemic integration of these issues and the potential of marketing support for enterprise competitiveness, especially under conditions of global economic and social instability.

3. Methodology.

To achieve the aim of this study, a set of economic, statistical, and specialised analytical methods was used. In the first stage, economic and statistical methods were applied to analyse demographic trends and their impact on market potential. Based on the trend defined for the population dynamics in Ukraine from 2015 to 2024, a linear regression equation was outlined as follows:

$$y = -917907x + 5 \cdot 10^7 \quad (1)$$

where,

y – the population of Ukraine, number of people (dependent variable);

x – the ordinal number of the year in the dynamic series (2015 = 1, ..., 2024 = 10).

According to approximation results, an exponential model in the standard trend form was obtained:

$$y = 4.78 \cdot 10^7 \cdot e^{-0.025x} \quad (2)$$

To reduce the impact of random and military-shock fluctuations on Ukraine's population dynamics, it was necessary to apply logarithms to the original data and approximate it with a second-degree polynomial. After switching to natural variables, the following generalised regression equation is obtained:

$$\ln y = a + bx + cx^2 \quad (3)$$

where,

y – number of people;

x – the year number in the series (2015 = 1, ..., 2024 = 10).

After converting back to natural variables, the model takes the following form:

$$y = e^{a+bx+cx^2} \quad (4)$$

According to approximation results:

$$y = e^{17.687 - 0.021x - 0.0018x^2} \quad (5)$$

The coefficient of determination for this model is $R^2 \approx 0.96$. This indicates a high-quality approximation and shows that more than 96% of the population-size variation is due to time. Equation (5), calculated using the least squares method, is intended to reproduce the general trend of demographic dynamics as accurately as possible. The quadratic term (x^2) is introduced to account for the accelerated depopulation after 2022. The polynomial regression model enabled the identification of both long-term depopulation trends and structural breaks caused by military and migration shocks. The study of the impact of human capital on the potential of marketing support for enterprise competitiveness involves creating a conceptual model of the interrelationship among demographic processes, human capital, and marketing potential (Fig. 1).

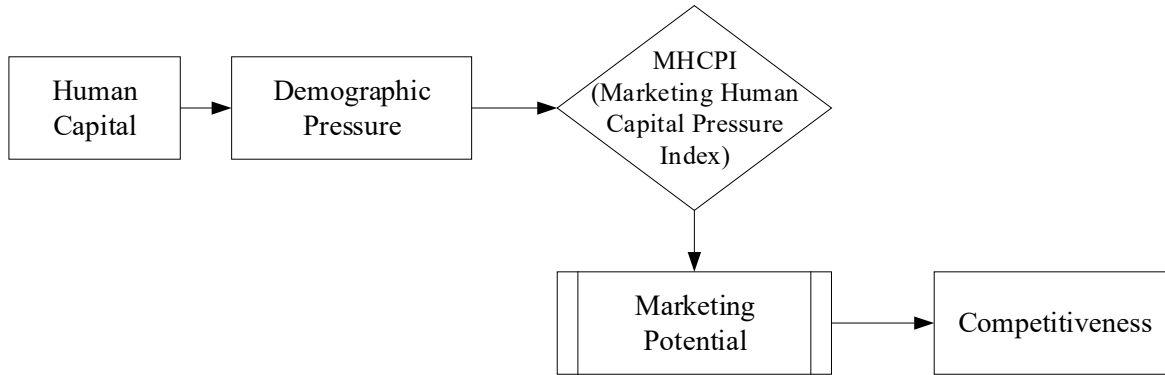


Fig. 1. Human Capital and Demographic Pressure in Enterprise Competitiveness.

Time-series analysis and index methods were used to assess the dynamics of the population, the working-age group, and ageing processes for the period 2015-2024. To quantify the demographic pressure on the marketing potential of enterprises, an integrated Marketing Human Capital Pressure Index (MHCPI) was developed. The index calculation uses an additive aggregation method, which allows for summarising the impact of three key demographic channels: the rate of total population decline (ΔPOP), the rate of decline in the “15–64” working-age group ($\Delta WORK$), and the share of the population aged 65+ ($AGE65$). This approach enables one to assess not only the level of demographic changes but also their dynamic impact on enterprises’ marketing environment. To calculate the index of demographic pressure of human capital on enterprises’ marketing potential, this study proposed the following formula:

$$MHCPI_t = w_1 \cdot \Delta POP_t + w_2 \cdot \Delta WORK_t + w_3 \cdot AGE65_t \quad (6)$$

where,

ΔPOP_t – the annual rate of population decline;

$\Delta WORK_t$ – the annual rate of “15–64” age group decline;

$AGE65_t$ – the share of the population aged 65+, and w_1 , w_2 , and w_3 are the weights (marketing influence).

An expert and analytical approach was used to determine the weight coefficients of the Marketing Human Capital Pressure Index (MHCPI). The survey involved 12 experts representing marketing, human resource management, demography, and strategic management.

The experts conducted a pairwise comparison of three demographic components – the total population, the working-age population (aged 15–64), and the share of the population aged 65 and older – based on their impact on enterprise marketing competitiveness.

According to the results of generalising the estimates, the following vector of weights was obtained: working-age population – 0.40; ageing population – 0.30; and total number – 0.30. The obtained coefficients indicate that experts consider effective demand to be the key channel through which human capital influences marketing potential and, in turn, enterprise competitiveness. The consistency of the experts’ judgments was assessed using the Kendall concordance coefficient, which yielded $w = 0.78$ ($p < 0.01$), indicating a high level of estimate consistency.

The results confirm that the decline in the share of the economically active population is the most serious demographic risk to the marketing sustainability and competitiveness of enterprises in modern conditions. At this stage, the demographic pressure on human capital is outlined using the *MHCPI* integral indices. For each year, the rates of total population decline (ΔPOP_t) and the number of “15–64” working-age group ($\Delta WORK_t$) are calculated by comparing the corresponding indicators with the previous year, which allows one to consider not the absolute level of demographic changes but their dynamics that directly affect the enterprises’ marketing environment. The total demographic pressure on the marketing potential for 2016–2024 is calculated using the following formula:

$$MHCPI_t = 0,3 \cdot APOP_t + 0,4 \cdot AWORK_t + 0,3 \cdot AGE65_t \quad (7)$$

Researching the impact of demographic pressure on the marketing potential and competitiveness of enterprises using economic and mathematical modelling tools enabled the identification of the dominant channels of influence (decline in effective demand, consumer ageing, market narrowing) and their contribution to marketing risks.

4. Results.

Human capital is a source of value creation and the basis for consumer demand. The population's education level, digital skills, mobility, and health determine not only the demand structure but behavioural consumption patterns, channel choices, and readiness for technological innovations. In particular, a more qualified population contributes to higher demand for complex, technologically intensive products and services. Groups with basic or secondary education ensure a stable demand for traditional consumer goods.

Demographic dynamics in Ukraine indicate a profound demographic crisis which directly affects the labour market and consumer potential. The population of Ukraine continues to decline every year, as even before the full-scale war, the decline numbers exceeded 400,000 people per year, mainly due to the excess of mortality over the birth rate and migration processes (Libanova, 2024).

The coefficient for the x (-917,907) variable in the linear regression equation indicates that, on average, the population of Ukraine decreased by almost 918,000 people per year during the studied period. This negative coefficient reflects the results of long-term negative demographic processes, which sharply intensified after 2022 due to war losses, migration, and the decline in the birth rate. The trend graph shows that the relevant population dynamics are clearly nonlinear: until 2021, the decline was relatively smooth, and in 2022–2023, there was a sharp structural decline (Fig. 2).

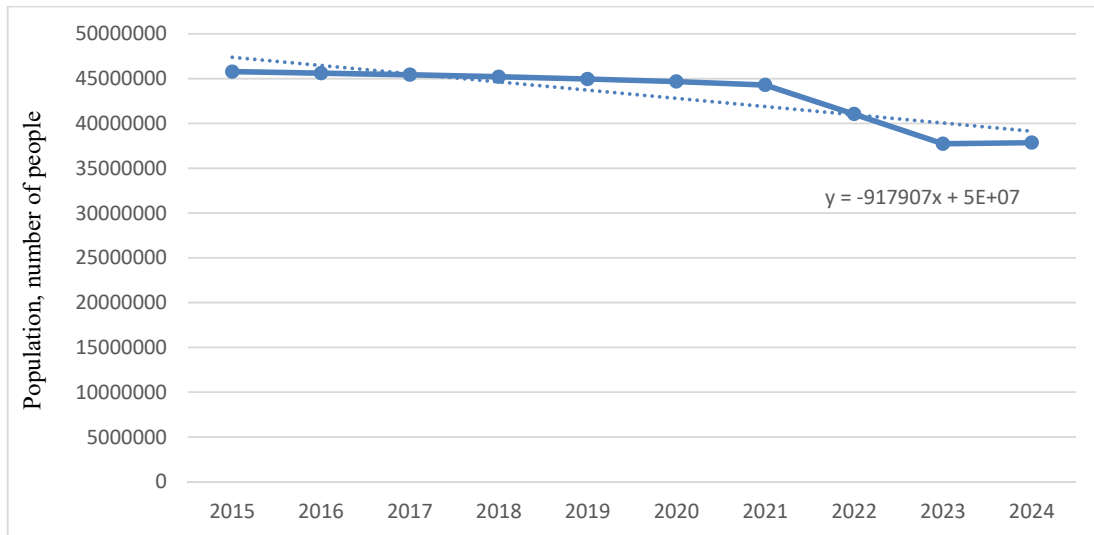


Fig. 2. Dynamics of Ukraine's Population as the Basis for Consumer and Labour Market, 2015-2024.

Source: based on Libanova (2024).

This is why the linear model does not fully capture the depth of the demographic shock during the war period, although it captures the general declining trend. In this regard, even with a relatively high determination coefficient (which usually

exceeds 0.9 in such a sample), the linear model is impractical for long-term forecasting, since the most significant errors occur at the ends of the interval, precisely when sharp structural fractures are observed (2022–2024).

The negative coefficient b is -0.025 in the exponential model, indicating that the population of Ukraine declines by approximately 2.5% each year, and this decline is not uniform in absolute terms but is relatively proportional to the numbers available. The exponential model is more applicable to measuring Ukraine's population dynamics than the linear model, as it accounts for the accelerated rate of population decline, especially after 2022.

This trend reflects the cumulative impact of war losses, mass migration, and declining birth rates, with each decline occurring from a smaller base. Using a polynomial regression model (Equation 5), Ukraine's population is projected over the next five years, showing a continued decline but at a gradually slowing pace (Table 1). The chain coefficients rise from 0.976 in 2025 to 0.982 in 2029, indicating a transition from a rapid demographic collapse to a slower population decrease.

Table 1. Demographic Forecast Based on Polynomial Model.

Year	Population forecast, number of people	Basic Coefficient	Chain Coefficient
2025	36950000	0,976	0,976
2026	36120000	0,955	0,977
2027	35350000	0,934	0,978
2028	34640000	0,915	0,980
2029	34000000	0,898	0,982

This means that, provided that migration processes stabilise and the economy recovers, there will soon be a strong basis for a partial recovery of human capital and the domestic consumer market, which is critically important for the competitiveness of Ukrainian enterprises and the effectiveness of their marketing strategies. Population decline narrows both consumer and labour markets, directly affecting the potential of domestic demand, enterprises' personnel base, and the effectiveness of marketing strategies.

Demographic declines structurally constrain the potential to support competitive marketing. Enterprises are forced to switch from extensive growth models to intensive strategies based on human capital quality, labour productivity, and precise market segmentation. The working-age population share has decreased significantly and now accounts for approximately 40% of its pre-war level. This poses unprecedented challenges for economic recovery and ensuring domestic demand (Fig. 3).

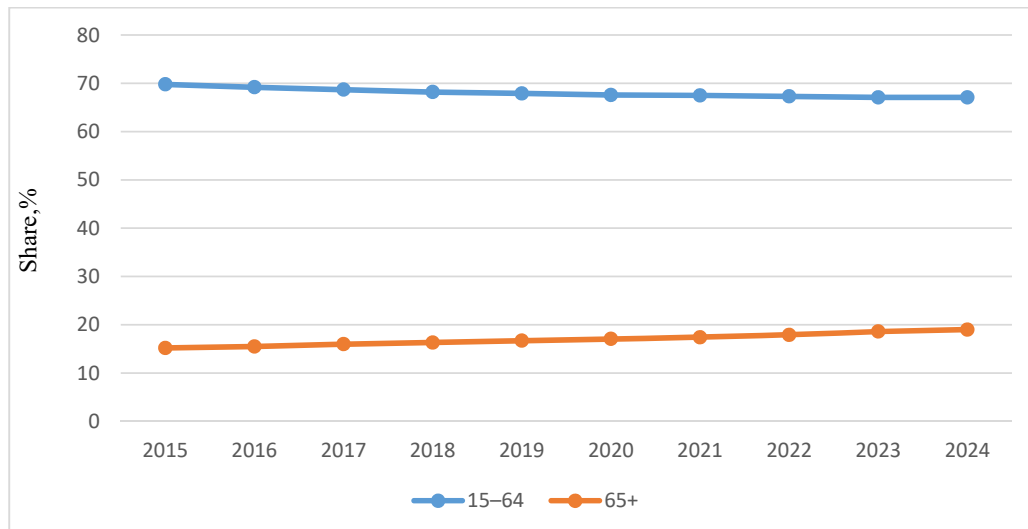


Fig. 3. Working-Age and Older Population Dynamics Affecting Demand Structure.
Source: based on Libanova (2024).

The growing older population means not only fewer workers available, but also a significant decline in active consumers who could sustain demand for medium- and high-priced goods and services. Moreover, population ageing is changing the structure of market demand: the share of people aged 65 and older in Ukraine increased from 12% in 1991 to 22% in 2024 (Marchak, 2025), indicating a growing number of consumers with consumption priorities in medical, financial, insurance, and other services.

Population ageing also means an increase in the proportion of groups dependent on social transfers, which increases the pressure on household budgets and reduces their solvency in durable goods markets. Migration, especially the outflow of highly qualified specialists, adds another dimension to human capital assessment (OECD, 2025; World Bank, 2023).

A significant share of educated, digitally mobile workers leave the country in search of security and better economic conditions, leading to the loss of innovative potential and a decrease in service quality in critical sectors of the economy (Hunt & Gauthier-Loiselle, 2019; Kuzmynchuk et al., 2016).

Consequently, the decline in the working-age population, population ageing, and migration losses lead to changes in consumer behaviour, the transformation of distribution channels, and a decrease in overall market capacity (Sung & Yoon, 2024). This stimulates enterprises to adjust their marketing strategies and adapt their supply to new realities.

To estimate the impact of demographic changes in human capital on the potential of marketing support for enterprise competitiveness, this study proposes an integrated Marketing Human Capital Pressure Index (MHCPI) that measures the demographic pressure on human capital and its impact on enterprises' marketing potential. Marketing support for the competitiveness of industrial enterprises should be understood as a systematically organised set of digital tools, methods, and processes.

These instruments are aimed at enhancing market adaptability, customer orientation, and enterprise resilience in the context of digital transformation (Volkov, 2025). The MHCPI reflects the extent to which the population's demographic structure provides constraints or opportunities for business development through key channels of market interaction. Human capital performs a dual function: on the one hand, it supplies goods and services through employees' knowledge, skills, and productivity; on the other hand, it determines the parameters of effective demand, consumer behaviour, and the dynamics of market segments.

This duality makes demographic processes critically important to the marketing of enterprise sustainability. The MHCPI integrates four key factors of human capital impact on the marketing environment of an enterprise:

- The total population determines the market size.
- Levels of education, income, and social mobility influence consumer demand for quality.
- Service personnel base, which defines the availability and quality of human resources to provide services and support the brand.
- Customer innovativeness reflects consumers' readiness to accept new products, digital channels, and non-standard business models.

Accordingly, the higher the MHCPI value, the more unfavourable the conditions for implementing effective marketing strategies and maintaining enterprise competitiveness. In contrast, low index values indicate the demographic potential that drives market expansion, innovation, and growth in customer value. The logic of calculating the MHCPI is that the demographic dynamics of human capital affect the marketing potential of enterprises through several interconnected channels. Within the framework of this study, three basic demographic channels have been identified that most directly determine the state and dynamics of the market environment (Table 2).

Table 2. Demographic Channels for Outlining the Marketing Human Capital Pressure Index (MHCPI).

Demographic Component	Economic Growth	Channel of Marketing Influence	Consequences for Enterprise Competitiveness
Decline in Population Number	Decline in the Total Number of Potential Consumers	Decrease in Market Capacity and Overall Demand	Limitations on Business Scaling Opportunities, Increasing Competition for Customers
Decline in Working-Age Population (aged 15–64)	Decline in the Core of Economically Active and Solvent Consumers	Decrease in Effective Demand and Average Check	Increasing Customers' Sensitivity to Prices, Decreasing Effectiveness of Marketing Investments
Population Aging (Increasing Proportion of 65+ Group)	Change in the Age Structure of the Market and Consumption Patterns	Demand Redistribution in Favor of Medical, Social and Financial Services	The Need to Adapt Product Portfolios and Brand Strategies to New Customer Structure

The MHCPI dynamics demonstrate a relatively stable level of demographic pressure in 2016–2021, which indicates the structural nature of changes in human capital (Fig. 4).

The sharp increase in the index in 2022–2023 indicates a significant decrease in market capacity and the core of solvent demand, which is critical for the marketing sustainability of enterprises. In 2024, the index decreased but remained significant due to further population ageing, which altered the consumption structure and service requirements.

The MHCPI indicates a transition from gradual demographic trends to a period of increased instability, underscoring the need for adaptive marketing strategies. Structural analysis shows that in 2016–2021, AGE65 was the main contributor to the index. Population ageing is a long-term structural factor in the transformation of demand. In contrast, in 2022–2023, the Δ POP and Δ WORK contributions increased significantly, indicating that reductions in population and the working-age group were dominant.

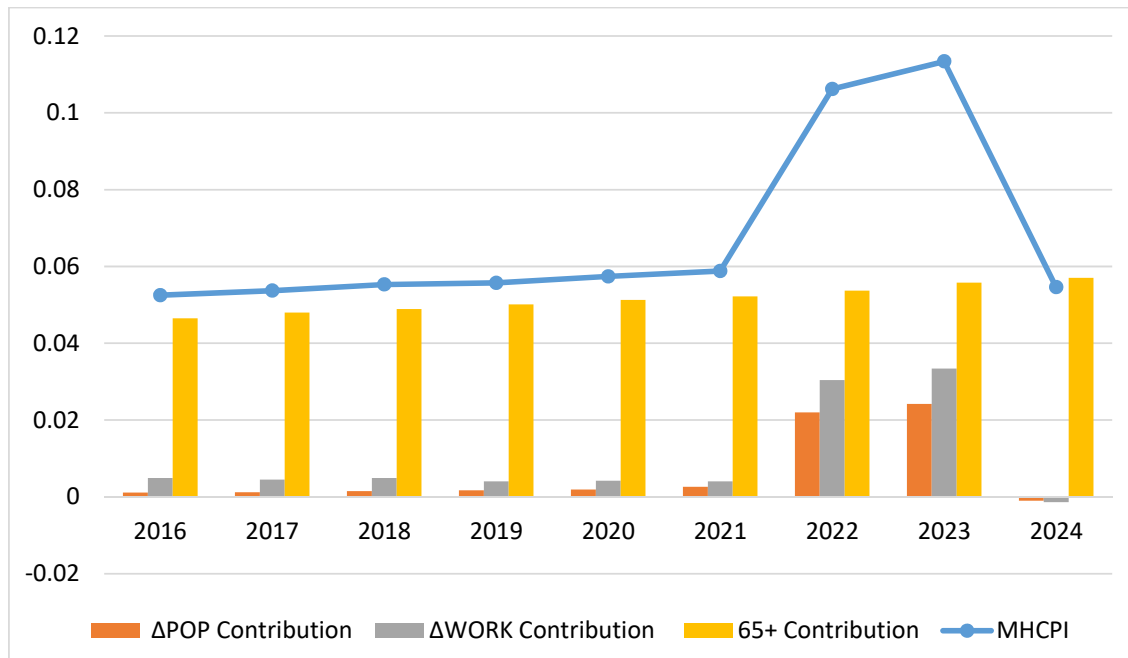


Fig. 4. Dynamics of the Marketing Human Capital Pressure Index (MHCPI) and Contributions of Demographic Components in 2015–2024.

This demonstrates the increasing risks of falling effective demand, rising customer-acquisition costs, and intensifying competition in active segments. Demographic pressure lies in both market narrowing and changes in its age structure, which directly affect the market's potential and, in turn, the competitiveness of enterprises.

5. Discussion

Global turbulence intensifies labour market instability, accelerates migration, and intensifies competition for qualified human resources. For enterprises, this means increasing personnel costs, increasing the risk of customer base outflow, and the need to revise marketing strategies. Under such conditions, enterprises must move from mass marketing to segmented, personalised, and service-oriented models based on a deep understanding of human capital in their markets.

The adaptation mechanism for ensuring marketing potential and supporting organisational competitiveness in conditions of human capital depletion involves systematically coordinating enterprises' marketing strategies with the demographic, social, and behavioural realities of the market, which are heavily influenced by global turbulence.

The strategy aims to mitigate negative demographic pressure by increasing the value of each client, improving the efficiency of human capital use, and reorienting the business model from extensive to intensive development (Aldieri et al., 2025).

The conceptual model of the impact of human capital on the potential of marketing support for organisational competitiveness is illustrated in Fig. 5.

The key elements of the adaptation mechanism include the following:

- Reorientation of the product portfolio to ageing and small segments, which involves the development of goods and services focused on stability, safety, quality service, user-friendliness, and long-term value, which meet the needs of older age groups and reduce the solvent consumer base.

- Development of customer service and loyalty programs. In conditions of market narrowing, the key target is not to attract new customers, but retain the existing ones, increasing their lifetime value (LTV) and reducing the cost of acquisition (CAC), which requires implementing personalised communications, service support and omnichannel interaction models.

- Investments in corporate human capital as a source of brand differentiation. Improving staff's qualifications and developing service, digital and communication competencies allow enterprises to provide a unique customer experience, which becomes more important than price and product features.

- Adaptation of sales and communication channels to the population's demographic structure. The growing share of older age groups requires a combination of digital and traditional channels, simplification of interfaces, increased accessibility of information and focus on trust as key components of a brand.

- Transition from mass marketing to micro-segmentation and personalisation. In conditions of consumer decline, the importance of precise targeting, as well as the use of CRM and data analysis to maximise the value of each contact, is increasing.

- Integration of human capital indicators into the marketing analytics system. Personnel training costs, staff turnover, service quality, and customer satisfaction are key marketing indicators that directly affect brand capital and financial results.

The adaptation mechanism transforms demographic constraints into strategic development imperatives, enabling enterprises to maintain and enhance competitiveness amid human capital decline and an unstable market. Human capital should be considered not only an expense item but also a strategic intangible asset that enables the company to create, promote, and maintain market value. In the context of increasing demographic pressure, as evidenced by the MHCPI, the efficiency of human capital use is becoming a critical factor in maintaining a business's marketing and financial stability.

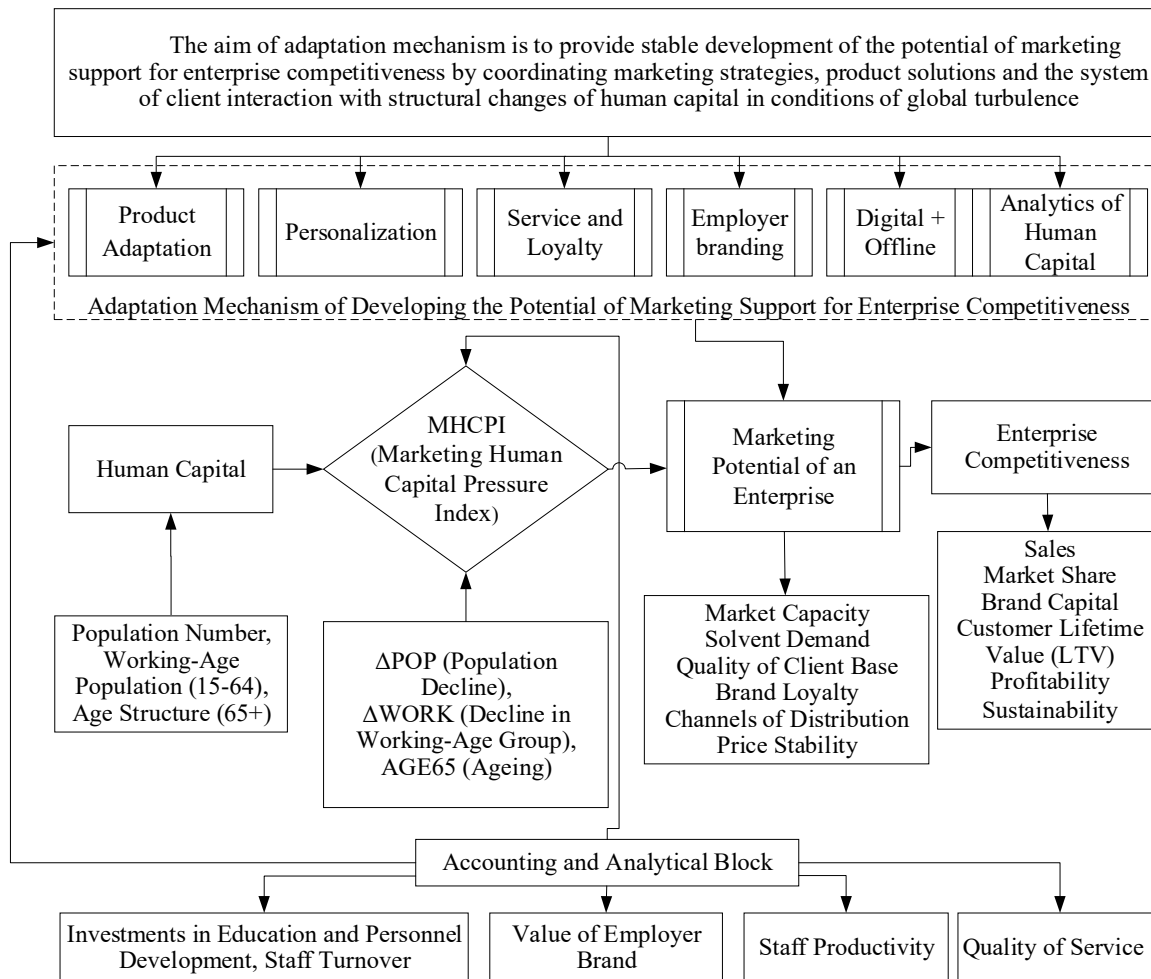


Fig. 5. Conceptual Model of Human Capital Impact on the Potential of Marketing Support for Organisational Competitiveness.

In a management accounting system, human capital should be presented through an integrated system of indicators that reflects not only costs but also the market value it creates. These indicators include:

- Investments in personnel training and development, which enable companies to adapt to changes in customer needs and digital channels.
- Staff turnover, which defines the stability of service quality and employer branding.
- Employer brand value helps attract qualified human resources and shapes the brand's reputation in customers' eyes.
- Staff productivity, which is directly related to the cost per unit of sale and speed of customer service.

– The impact of service quality on customer loyalty (NPS, LTV, retention rate), turning human capital into a source of brand capital and long-term income.

Integrating these indicators into management and marketing analytics systems enables quantitative linkage of human capital with an enterprise's financial results, which is especially important amid a decline in effective demand and increased competition for clients. The accounting and analytical block collects data on human capital efficiency, including personnel costs, turnover, service quality, and customer loyalty. It provides for measuring demographic pressure (the MHCPI) into business risks, assessing adaptive marketing measures, and adjusting product, service, and communication strategies based on metrics.

The accounting and analytical aspects provide a transition from the conceptual assessment of human capital to the operational management of marketing potential (Arseneault & Gagnon, 2024). This ensures organisational competitiveness, enables businesses to respond to demographic constraints, and systematically transforms human capital into a source of sustainable market advantage (Van der Lugt, 2024).

6. Conclusions.

Human capital is a system-forming factor in marketing potential. Its degradation leads to market narrowing, higher costs, and the loss of competitive positions. This study substantiates the feasibility of an integrated analytical model that enables the calculation of the degree of demographic pressure on the market environment. The MHCPI was developed to aggregate the impact of three key demographic factors: total population decline, decline in the working-age population, and population ageing. It should be noted that calculating the MHCPI involves several constraints due to the availability of statistical data and methodological assumptions.

The index is based exclusively on macro-demographic indicators (population, working-age population, share of the 65+ population), which do not consider the qualitative characteristics of human capital, such as income levels, education, and digital competencies.

The index weights were determined using an expert method, introducing a degree of subjectivity and requiring further empirical validation. The use of aggregated national data fails to account for regional disparities, which can significantly affect local marketing environments.

Demographic estimates for the war period are predictive in nature, which also affects the accuracy of integral indicators. The conceptual model of human capital's impact on the potential of marketing support for enterprise competitiveness substantiates an adaptation mechanism aimed at minimising the adverse effects of a decline in effective demand and transforming human capital into a source of sustainable competitive advantage for an enterprise.

The integration of the accounting and analytical blocks with key indicators of human capital ensures its transition from an abstract category to a measurable, manageable factor that supports marketing and enhances enterprise competitiveness amid increasing turbulence.

Conflict of Interest Statement.

The authors declare that there is no conflict of interest.

Funding Disclosure.

This research received no external funding.

REFERENCES

- Abidin, M. K. F. B., Sade, A. B., & Saad, N. M. (2025). Aligning people for digital transformation in ports: The role of internal marketing, learning, and leadership. *Open Journal of Business and Management*, 13(4), 2890–2914. <https://doi.org/10.4236/ojbm.2025.134153>
- Aldieri, L., Nese, A., & Vinci, C. P. (2024). The role of migration-innovation nexus for population aging. *Eurasian Economic Review*, 15, 965–983. <https://doi.org/10.1007/s40822-024-00294-8>
- Arseneault, R., & Gagnon, J. (2024). Managerial accounting practices, HR metrics, and firm performance. *Advances in Accounting*, 64, 100730. <https://doi.org/10.1016/j.adiac.2024.100730>
- Azhar, A., Rehman, N., Majeed, N., & Bano, S. (2024). Employer branding: A strategy to enhance organizational performance. *International Journal of Hospitality Management*, 116, 103618. <https://doi.org/10.1016/j.ijhm.2024.103618>

- Backhaus, K., & Tikoo, S. (2004). Conceptualizing and researching employer branding. *Career Development International*, 9(5), 501–517. <https://doi.org/10.1108/13620430410550754>
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120. <https://doi.org/10.1177/014920639101700108>
- Becker, G. S. (1993). *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education* (3rd ed.). University of Chicago Press. <http://dx.doi.org/10.7208/chicago/9780226041223.001.0001>
- Berry, L. L. (1981). The employee as customer. *Journal of Retail Banking*, 3(1), 33–40.
- Bloom, D. E., Canning, D., & Fink, G. (2010). Implications of population ageing for economic growth. *Oxford Review of Economic Policy*, 26(4), 583–612. <https://doi.org/10.1093/oxrep/grq038>
- Grönroos, C. (2023). Business model innovation through the adoption of service logic: Evolving to servification. *Journal of Service Theory and Practice*, 34(3), 387–408. <https://doi.org/10.1108/JSTP-12-2022-0295>
- Hlushchenko, O., & Ivashchenko, M. (2025). Integration of sustainable development principles into the economic behavior of financial entities. *Social Economics*, 69, 190–201. <https://doi.org/10.26565/2524-2547-2025-69-16>
- Hunt, J., & Gauthier-Loiselle, M. (2019). Skilled migration and innovation in European industries. *Research Policy*, 48(3), 706–718. <https://doi.org/10.1016/j.respol.2018.11.002>
- Kolot, A., & Herasymenko, O. (2022). Temporal imperatives of social and labor development in the first half of the 21st century. *Economy of Ukraine*, 65(11(732)), 3–25. <https://doi.org/10.15407/economyukr.2022.11.003>
- Kucharcikova, A., Durisova, M., & Staffenova, N. (2024). Implementation of the human capital management concept: An empirical study of a small trading company. *Humanities & Social Sciences Communications*, 11(1), 1620. <https://doi.org/10.1057/s41599-024-03946-x>
- Kuzmynchuk, N. V., & Kutsenko, T. M. (2016). Approaches to diagnosing the socio-economic potential of a region as a basis for an effective management strategy. *Marketing and Management of Innovations*, 4, 269–284.
- Libanova, E. M. (2024). “War migration” from Ukraine: Problems and development prospects. *Ukrainian Geographical Journal*, 4, 3–11. <https://doi.org/10.15407/ugz2024.04.003>
- Lucas, R. E. (1988). On the mechanics of economic development. *Journal of Monetary Economics*, 22(1), 3–42. [https://doi.org/10.1016/0304-3932\(88\)90168-7](https://doi.org/10.1016/0304-3932(88)90168-7)
- Marchak, D. (2025). Through the demographic crisis, Ukraine must eradicate ageism in the labour market – Ministry of Social Policy. *Delo.ua*. <https://delo.ua>
- Mincer, J. (1974). *Schooling, experience, and earnings*. Columbia University Press. <https://www.nber.org/books-and-chapters/schooling-experience-and-earnings>
- Ministry of Economy of Ukraine. (2024). *Ukraine Facility Plan 2024–2027*. <https://www.ukrainefacility.me.gov.ua/wp-content/uploads/2024/03/plan-ukraine-facility.pdf>
- Mishchuk, H., Bilan, Y., Androniceanu, A., & Krol, V. (2023). Social capital: Evaluating its roles in competitiveness and ensuring human development. *Journal of Competitiveness*, 15(2), 1–17. <https://doi.org/10.7441/joc.2023.02.01>
- Mohammad Shafiee, M., Warkentin, M., & Motamed, S. (2024). Do human capital and relational capital influence knowledge-intensive firm competitiveness? The roles of export orientation and marketing knowledge capability. *Journal of Knowledge Management*, 28(1), 138–160. <https://doi.org/10.1108/JKM-11-2022-0921>
- Moskalenko, O. (2025). On the feminization of internal displacement during war in terms of Amartya Sen’s capability approach. *Sociological Studios*, 2(27), 40–50. <https://doi.org/10.17721/2306-3971-2025-02-21-21>
- OECD. (2021). *The OECD jobs strategy 2021: Shaping the future of work*. <https://www.oecd.org/employment/jobs-strategy>

- OECD. (2025). Pensions at a glance 2025: OECD and G20 indicators. OECD Publishing. <https://doi.org/10.1787/e40274c1-en>
- Plaksiuk, O., Horvathova, V., & Yakushev, O. (2023). Human capital as a factor increasing the efficiency and competitiveness of an enterprise. *Academic Review*, 1(58), 160–174. <https://doi.org/10.32342/2074-5354-2023-1-58-12>
- Romer, P. M. (1990). Endogenous technological change. *Journal of Political Economy*, 98(5), 71–102. <https://doi.org/10.1086/261725>
- Schultz, T. W. (1961). Investment in human capital. *The American Economic Review*, 51(1), 1–17. <https://www.jstor.org/stable/1818907>
- Schulze, A., & Dada, L. (2025). Building strategic human capital resources: The effects of strategic entrepreneurship on employee recruitment and retention. *Journal of Small Business Management*, 63(1), 388–421. <https://doi.org/10.1080/00472778.2024.2322985>
- Sebastian, I. M., Ross, J. W., Beath, C., Mockler, M., Moloney, K. G., & Fonstad, N. O. (2017). How Big Old Companies Navigate Digital Transformation. *MIS Quarterly Executive*, 16 (3), 197-213.
- Sen, A. (2001). *Development as freedom*. Oxford University Press.
- Sung, Y., & Yoon, C. (2024). Social and cultural influences on older consumers. *Current Opinion in Psychology*, 55, 101740. <https://doi.org/10.1016/j.copsyc.2023.101740>
- Van der Lugt, C.T. (2024). The role of management accounting in human capital management: Lessons from the services sector. *South African Journal of Business Management*, 55(1), a4223. <https://doi.org/10.4102/sajbm.v55i1.4223>
- Vargo, S. L., & Lusch, R. F. (2008). Service-dominant logic: Continuing the evolution. *Journal of the Academy of Marketing Science*, 36, 1–10. <https://doi.org/10.1007/s11747-007-0069-6>
- Volkov, A. H. (2025). Methodical toolkit for forming a strategy of digital transformation of marketing support for the competitiveness of industrial enterprises. *Current Issues of Economic Sciences*, 15. <https://doi.org/10.5281/zenodo.17088470>
- World Bank. (2020). The human capital index 2020 update. <https://www.worldbank.org/en/publication/human-capital>
- World Bank. (2023). *World development report 2023: Migrants, refugees, and societies*. World Bank. <https://doi.org/10.1596/39696>
- Wright, P., & McMahan, G. (2011) Exploring Human Capital: Putting “Human” Back into Strategic Human Resource Management. *Human Resource Management Journal*, 21, 93-104. <https://doi.org/10.1111/j.1748-8583.2010.00165.x>
- Wright, P. M., McMahan, G. C., & McWilliams, A. (1994). Human Resources and Sustained Competitive Advantage. *The International Journal of Human Resource Management*, 5(2), 301–326. <https://doi.org/10.1080/09585199400000020>