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CONTENTS

Digital Marketing in Transition Economies: Approaches and Challenges in Ukraine and Azerbaijan

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Abstract

The article analyzes the main approaches to defining digital marketing and identifies its specific features in transition economies, using Ukraine and Azerbaijan as case studies. The purpose of the research is to systematize theoretical approaches to digital marketing, conduct a comparative analysis of its development in Ukraine and Azerbaijan, classify digital marketing drivers, and integrate international experience (from Poland, Turkey, Georgia, China, and Indonesia) into the context of transition economies. The methodological framework is based on a combination of systemic, comparative, and classification approaches. Content analysis of scientific publications in leading international journals was used to trace the evolution of digital marketing approaches. Comparative analysis made it possible to identify similarities and differences between Ukraine and Azerbaijan, while the classification method was applied to structure the main drivers of digital marketing development — technological, economic, socio-ecological, institutional, and organizational. The results show that in both countries digital marketing is developing in a fragmented manner: in Ukraine — due to limited resources, shortage of qualified specialists, and pressure from European integration processes; in Azerbaijan — due to the mono-sectoral structure of the economy and regional digital disparities. Further progress requires a transition toward strategic and value-oriented models based on investment in human capital, technological innovation, the development of digital culture, and the implementation of circular economy principles. The proposed conceptual model and driver classification provide a theoretical foundation for understanding digital marketing as a strategic factor of sustainable development and for integrating transition economies into the global digital environment.

Keywords: digital marketing, transition economy, Ukraine, Azerbaijan, drivers, strategic approaches, sustainable development.

1. Introduction

Digital marketing has become one of the most dynamic areas of business transformation in the 21st century. It reshapes the interaction between producers and consumers, determines competitiveness in the digital economy, and accelerates the transition toward data-driven management models. In developed countries, digital marketing functions as a strategic component of corporate governance and sustainable growth. However, in **transition economies**, where digital infrastructures and institutional frameworks are still being formed, its development remains uneven and fragmented.

Over the past decade, the integration of digital technologies into marketing has evolved from simple internet advertising and social media promotion to comprehensive systems of customer experience (CX) management and data analytics. Scholars such as Kotler, Kartajaya, and Setiawan (2021), as well as Chaffey and Ellis-Chadwick (2022), emphasize that digital marketing has shifted from a purely technological

function to a strategic mechanism for creating value and achieving sustainability. Yet, this transformation requires not only technological innovation but also institutional adaptation, human capital development, and cultural readiness for digitalization.

In countries with transition economies, such as Ukraine and Azerbaijan, digital marketing operates under specific conditions. Ukraine's development is shaped by European integration, the introduction of GDPR and the Digital Services Act, and the consequences of the ongoing war, which simultaneously constrain and stimulate digital innovation. Azerbaijan's case, in contrast, is defined by the dominance of the energy sector, regional disparities in IT infrastructure, and limited integration of sustainable and "green" marketing practices.

Despite the growing body of literature on digital marketing in developed markets, studies on its evolution in post-socialist and transitional contexts remain scarce. Existing research often focuses on isolated aspects — technological tools, e-commerce, or social media marketing — without addressing systemic interconnections between technological, institutional, and socio-ecological factors. This creates a gap in understanding the drivers and barriers that determine the trajectory of digital marketing transformation in emerging economies.

1.1. Research Aim and Objectives.

The aim of the study is to identify the main approaches to digital marketing in transition economies and to analyze their challenges and prospects using the cases of Ukraine and Azerbaijan.

To achieve this aim, the following objectives were accomplished:

to systematize the main approaches to digital marketing — traditional, instrumental, strategic, comprehensive, and value-based;

to conduct a comparative analysis of the development of digital marketing in Ukraine and Azerbaijan, taking into account the structural differences in their economies;

to propose a classification of digital marketing drivers and determine their impact on the pace and direction of transformation;

to summarize and compare international experience (Poland, Turkey, Georgia, China, Indonesia) with the national contexts of Ukraine and Azerbaijan.

1.2. Materials and Methods

The methodological framework of the research is based on the **systemic, comparative**, and **classification** approaches, which allow for a comprehensive study of digital marketing in transition economies. These approaches made it possible to identify theoretical foundations, analyze practical cases, and systematize the drivers of digital transformation in Ukraine and Azerbaijan.

Information base.

The empirical and analytical foundation of the study includes:

academic publications in leading international journals such as *Journal of Business & Industrial Marketing*, *Results in Engineering*, *International Marketing Review*, *Journal of Retailing and Consumer Services*, and *Journal of Open Innovation*;

analytical reports by *OECD (2022, 2024)*, *Deloitte (2023)*, *Ministry of Economy of Ukraine (2025)*, and other international organizations;

statistical data on digitalization levels in the EU, China, and Southeast Asia;

applied cases from research in Indonesia, Turkey, Georgia, and Poland that reflect cross-country differences in the development of digital marketing systems.

Research methods.

Content analysis was applied to scientific publications to identify conceptual approaches to defining digital marketing and its evolution from traditional to value-oriented models.

Comparative analysis was used to highlight similarities and differences between Ukraine and Azerbaijan, with particular attention to structural economic factors, digital maturity, and institutional frameworks.

Classification method enabled the structuring of digital marketing drivers into five groups — technological, economic, socio-ecological, institutional, and organizational — following recommendations of international research (Chaffey & Ellis-Chadwick, 2022; Liu et al., 2025).

Generalization and synthesis were applied to formulate practical recommendations and integrate international experience (Poland, Turkey, Georgia, China, Indonesia) into the context of transition economies.

2. Results

2.1. Approaches to Defining Digital Marketing: Theoretical Foundations, Critical Analysis, and Challenges for Ukraine and Azerbaijan

Traditional Approach. The traditional approach was one of the earliest perspectives in the academic literature, which interpreted digital marketing as a direct continuation of internet marketing. In this context, the key task was not the creation of a fundamentally new concept but rather the adaptation of existing marketing tools to new communication channels that emerged with the development of internet technologies.

The conceptual foundation of the traditional approach is the classical 4P model (Product, Price, Place, Promotion) proposed by Edmund Jerome McCarthy in the 1960s (Smith, J., & Brown, A., 2025). This model was transferred into the digital environment and adapted to such channels as websites, banner advertising, search engine optimization (SEO), and e-mail marketing. Over time, the classical logic of marketing was gradually embedded into the digital sphere, which allowed the formation of basic tools for interaction with customers online.

These features became the defining characteristics of the traditional approach, which can be summarized through the following key aspects:

Evolution of Internet Marketing. Digital marketing is not considered a revolutionary phenomenon but rather a logical stage in the development of internet marketing. In other words, it emerges as a "superstructure" built upon the already existing tools of customer interaction in the virtual environment (Shashi et al., 2025).

Integration of Internet Marketing into a Broader System. The traditional approach assumes that internet marketing is a component of the broader concept of digital marketing. While the former is limited to the use of internet-based channels, the latter also encompasses mobile applications, digital platforms, multimedia, and other electronic tools.

Use of Electronic Technologies as a Foundation. The central idea of this approach is that both internet marketing and digital marketing are based on the use of electronic technologies for promoting products and services, communicating with customers, and building brand identity (Romic, 2025).

Practical Examples of Implementation. The spread of e-mail in the 2000s became a classic example of the transformation of traditional methods into digital ones. Initially, e-mail newsletters were perceived as an auxiliary tool replacing printed materials; however, over time they became an integral part

of comprehensive digital campaigns (Benchmark Email, 2023). Similarly, social media, which in the early stages were used primarily for information dissemination, gradually evolved into integrated marketing platforms.

Despite its significance as a starting point, the traditional approach has a number of limitations. It is focused on the simple adaptation of existing practices to new channels but largely overlooks:

- changes in consumer behavior in the digital environment;

- the integrative role of emerging technologies such as big data, artificial intelligence, or customer experience (CX) analytics (Romic, 2025);

- the need for strategic development of digital ecosystems rather than the mere application of separate tools (Shashi et al., 2025).

At the same time, although the traditional approach played an important role as a starting point in the development of digital marketing, it has significant methodological limitations. Excessive focus on tools without considering changes in consumer behavior and technological advancements narrows its strategic potential. In Ukraine, this is reflected in the widespread practice among small and medium-sized enterprises that limit themselves to basic digital solutions without developing systematic strategies. In Azerbaijan, a similar model is typical mainly for regional companies, where digitalization is constrained by insufficient internet infrastructure outside the capital.

Instrumental Approach. The evolution of digital marketing has gradually demonstrated the limitations of the traditional perspective. There emerged a need to move beyond perceiving it merely as a continuation of internet marketing toward a broader and more practical approach. At this stage, the focus shifted to the application of specific technologies and tools, which laid the foundation for the instrumental approach.

Further development of the academic literature (Ruban, 2018; Romanenko, 2019) defines digital marketing primarily as a set of tools and technologies that companies use to promote goods and services in the digital environment. In this context, digital marketing is associated with the use of technological solutions capable of ensuring rapid reach to target audiences and precise measurement of results.

These conclusions are consistent with international studies, particularly in Indonesia, where it has been demonstrated that the use of digital tools significantly contributes to the competitiveness of small and medium-sized enterprises (Saputra et al., 2023). Thus, the instrumental approach reflects the shift toward the practical application of digital solutions, as confirmed by both national and international research. Its essence is most clearly revealed through the identification of key characteristics that define its strengths and limitations.

Expansion of the Technological Spectrum. Unlike the traditional approach, which focused on SEO, banner advertising, and e-mail marketing, the instrumental approach encompasses a much wider range of tools. These include social media (Facebook, Instagram, TikTok), CRM systems, video marketing, chatbots, push notifications, Google Analytics, and other analytical solutions. This allows businesses to flexibly combine tools depending on their specific goals and objectives (Peace, R., 2025).

Focus on Practical Effectiveness. The primary emphasis is placed on the efficiency of individual tools within specific campaigns. For instance, a company may evaluate the success of social media marketing (SMM) by the number of followers or likes, while e-mail marketing is assessed by open rates and click-through rates (CTR). In this way, marketing activity is perceived as a set of independent instrumental solutions that deliver localized results.

Focus on the Operational Level. Unlike the strategic approach, where digital marketing is integrated into the overall business model, the instrumental approach concentrates on tactical actions:

launching advertising campaigns on social media, implementing CRM systems for collecting contacts, or conducting video marketing activities.

The generalized characteristics of the instrumental approach make it possible to assess its practical value for businesses and confirm its importance as an intermediate stage in the development of digital marketing. At the same time, a more detailed analysis reveals that its application is accompanied by several significant limitations.

Risk of Fragmentation. Companies apply individual tools without proper integration, which complicates the creation of a holistic marketing strategy.

Formalism in the Use of Technologies. In Ukraine, it is common to observe the implementation of CRM or e-mail marketing "for the sake of formality," without data analysis or performance evaluation. This leads to wasted resources without significant improvement in efficiency.

Lack of Strategic Dimension. The instrumental approach answers the question of "how to promote?" but does not provide answers to "why?" and "in what way is it integrated into the business model?".

The analysis shows that the instrumental approach shares common features in both countries but with different emphases.

In Ukraine, it is primarily reduced to the use of basic digital tools by small and medium-sized enterprises (for example, launching targeted advertising on Facebook) without building long-term customer-oriented strategies.

In Azerbaijan, it is manifested in the dominance of social media as a means of direct trade, but without integration with CRM or analytical systems, which significantly limits the effectiveness of marketing practices. However, this trend is observed not only in Ukraine or Azerbaijan but also in Southeast Asian countries, where SMEs are largely focused on individual digital tools without a holistic strategy *(*Saputra et al., 2023; Rizkita et al., 2025).

Thus, the instrumental approach represents an important stage in the development of digital marketing, as it enabled the transition from elementary internet marketing to a broader use of technologies. At the same time, it has revealed its limitations, being focused on tools rather than on systemic integration and strategic management of marketing processes.

Strategic Approach. The third stage in the evolution of digital marketing concepts is the strategic approach, which reflects the transition from using individual technological tools to the formation of comprehensive strategies for customer experience (CX) management. In the works of *Kotler, Kartajaya & Setiawan (2021) and Chaffey & Ellis-Chadwick (2022)*, digital marketing is defined as an integrated system that combines marketing tools, business processes, data analytics, and customer interaction management into a single ecosystem. In this context, digital ceases to be merely a promotional channel and transforms into a strategic element of the business model.

2.1.1. The key characteristics of the strategic approach are as follows:

Personalization of Interaction. The use of customer data makes it possible to create personalized offers, content, and communications. Modern companies employ machine learning algorithms for audience segmentation, consumer behavior forecasting, and the construction of relevant marketing messages. This not only enhances the effectiveness of promotion but also fosters long-term customer relationships (Jia, 2025).

Omnichannel Experience. Within the strategic approach, customer experience is built as a unified system of communications, where all interaction channels (online stores, social media, offline retail points,

mobile applications, customer support services) are fully integrated. This helps to avoid fragmentation of marketing activities and ensures the consistency of the customer journey regardless of the channel used.

Use of Big Data and Artificial Intelligence. Big data analytics and AI solutions are central elements of the strategic approach (Romic, 2026). They enable real-time monitoring of customer behavior, demand forecasting, advertising budget optimization, and automation of managerial decisions. This elevates marketing from the level of operational tools to the level of strategic planning.

Building a Unified Customer Journey. Companies adopting the strategic approach design the entire path of customer interaction — from the first contact to after-sales service. The focus is not only on attracting the customer but also on ensuring loyalty, repeat purchases, and recommendations, thereby forming long-term competitive advantage.

Despite its evident advantages, the strategic approach remains difficult to implement in transition economies.

In Ukraine, the main limitations are the shortage of specialists in data science, cybersecurity, and digital platform management. Another significant barrier is the lack of investment in business digital transformation, especially among small and medium-sized enterprises. The wartime context amplifies these challenges but simultaneously stimulates the development of e-commerce and online services, which may serve as a driver for further strategic integration.

In Azerbaijan, the dominance of the energy sector hinders the digitalization of retail and services. While modern digital solutions are implemented in the capital and large cities, regional enterprises remain distant from the strategic level of digital marketing development.

Thus, the strategic approach represents a qualitatively new stage in the evolution of digital marketing, where digital is integrated into the business model and ensures the construction of customer-oriented strategies. At the same time, its practical implementation depends on the level of digital maturity of companies, the availability of investments, human resources, and institutional support (Liu et al., 2025).

Complex (Integrative) Approach. The most recent stage in the development of digital marketing is associated with the formation of the complex (integrative) approach, which involves moving from the use of separate tools or strategies toward the construction of a unified digital management system. In the works of Shpak et al. (2022) and Chukurna et al. (2024), digital marketing is viewed as a multi-component ecosystem that combines marketing, information technologies, data analytics, customer experience management, and principles of sustainable development. This approach integrates digital marketing with corporate management systems (ERP, CRM), creating conditions for the synergy of all business processes.

Similar integrative practices can also be observed in international cases. In particular, Indonesian research demonstrates that the inclusion of PR and journalistic tools in marketing strategies contributes to increased sales and enhanced competitiveness of small businesses (Strategi Komunikasi…, 2025; Rizkita et al., 2025).

2.1.2. The key characteristics of the complex approach are as follows:

Systemic Nature. Digital marketing no longer exists as an autonomous function but is integrated into operational, financial, and managerial processes of the company. For example, a CRM system not only collects contacts but also synchronizes with ERP for inventory management, enabling marketing campaigns to be automatically adapted to actual product availability.

Focus on Business Process Synergy. The complex approach ensures alignment of all functional areas: marketing, sales, logistics, customer support, and finance. Through integrated platforms, end-to-end business processes are formed, where customer data are used not only for advertising but also for production forecasting, supply chain management, and investment planning (Shirwa et al., 2025).

Emphasis on Long-Term Value. Unlike previous approaches that focused mainly on sales growth or short-term outcomes, the integrative approach emphasizes the creation of sustainable competitive advantage. This includes developing customer loyalty, building a value-oriented brand, and integrating ESG principles and circular economy practices into marketing activities.

Technological Integration. The complex approach actively employs modern tools — from big data and AI analytics to cloud services, omnichannel platforms, and automation technologies (Romic, 2026; Liu et al., 2025). This creates a "digital hub" of the company, where marketing ceases to be a separate direction and becomes the central element of the business model.

Despite its clear advantages, the complex approach remains the most difficult to implement in practice.

In Ukraine, the main limitations include insufficient integration of ERP, CRM, and analytical platforms, as well as the low digital maturity of small and medium-sized businesses. Large companies are gradually implementing integrative solutions, but for SMEs such innovations remain financially and organizationally inaccessible (Mosiy, L., Kozbur, H., Strutynska, I., Mosiy, O., & Yatsyshyn, V., 2024; OECD, 2024).

In Azerbaijan, the key barrier is regional inequality: while Baku implements modern complex solutions, most local enterprises in the regions remain at the level of instrumental or strategic approaches. This creates a digital divide that slows the establishment of a nationwide system of marketing transformation *(OECD, 2022; Guluzade, T., 2025; Caliber, 2025).*

Thus, the complex approach embodies the highest level of digital marketing development, where it is regarded as an integrated management system capable of combining business processes, technologies, and socio-ecological values. Its implementation requires substantial resources, a high level of digital maturity, and a favorable institutional environment (*Shashi et al., 2025*).

Value-Oriented (Sustainable) Approach. The final stage in the evolution of digital marketing concepts is associated with the transition to the value-oriented (sustainable) approach, which emerges at the intersection of digital technologies, corporate social responsibility, and consumer environmental awareness. Contemporary studies (*Savytska & Chmil, 2020; Deloitte, 2023*) emphasize that digital marketing is no longer merely a tool for sales or customer experience management, but a means of creating social and environmental value. This approach integrates marketing strategies with the concepts of sustainable development, ESG (Environmental, Social, and Governance) (*Savytska & Chmil, 2020; Deloitte, 2023; Rizkita et al., 2025*), and the circular economy.

2.1.3. The key characteristics of the value-oriented approach are as follows:

Transparency of Supply Chains. The use of digital technologies enables companies to ensure transparency in tracking the origin of raw materials, stages of production, and logistics. Blockchain and IoT technologies contribute to building customer trust in the brand by ensuring control over ethical practices and environmental safety of production.

Focus on Responsible Consumption. Within this approach, digital marketing promotes not only products but also values — responsibility, environmental sustainability, and social inclusiveness. Marketing campaigns aim to cultivate a new culture of consumption where not only quality or price matters, but also the impact of goods or services on the environment and society.

Customer Engagement in Sustainable Practices. An important feature of this approach is the integration of customers into sustainability processes through digital tools. These may include participation in recycling programs, eco-campaigns, "green" branding, and the use of mobile applications for tracking

carbon footprints or earning bonuses for environmentally responsible behavior. Thus, the customer becomes not only a consumer but also a co-creator of value.

Emphasis on Long-Term Social Benefits. The value-oriented approach focuses not on immediate profits but on sustainable growth supported by building a positive brand reputation, customer loyalty, and a socially and environmentally responsible image of the company.

The development of the value-oriented approach faces several constraints in transition economies.

In Ukraine, this approach has significant potential in the context of European integration and the implementation of the Green Deal. It may become an important factor in post-war recovery by fostering new business models oriented toward circularity and customer-centered sustainable value. However, practical cases of implementation remain limited, particularly among small and medium-sized enterprises (Ministry of Economy, Environment and Agriculture of Ukraine, 2025; Erasmus+ National Office Ukraine, 2025; Ukraine Government, 2025).

In Azerbaijan, ecological marketing is at an early stage of development. The demand for "green" products remains limited due to the dominance of the energy sector and low environmental awareness among the population. The lack of institutional incentives hinders the development of sustainable digital marketing, although potential for growth exists in tourism, agribusiness, and retail.

Thus, the value-oriented (sustainable) approach represents a new level in the evolution of digital marketing, where technologies are combined with social and environmental responsibility, creating conditions for long-term competitive advantages and a positive societal impact. Its further development will depend on the combination of economic incentives, legislative initiatives, and the readiness of businesses to integrate sustainability principles into marketing strategies.

2.2. Comparative Analysis of Ukraine and Azerbaijan

Despite the rapid global development of digital marketing, its implementation in transition economies has a number of specific features and constraints. The analysis of the Ukrainian and Azerbaijani contexts shows that although both countries are undergoing digital transformation, they face different barriers that determine the speed and depth of digital strategy implementation.

In Ukraine, a key characteristic is ***the asymmetry of access to digital tools***. While large cities and transnational corporations are actively adopting modern CRM platforms, big data analytics, and AI-based solutions, most small and medium-sized enterprises (SMEs) remain at the level of basic use of social media or e-mail marketing. This creates a gap between different segments of the economy and increases the risk of uneven development of digital competencies.

The second barrier is the shortage of qualified specialists in data science, marketing analytics, and cybersecurity. Even when businesses are interested in implementing modern digital solutions, the lack of skilled professionals significantly limits the ability to integrate strategic and complex approaches to digital marketing.

The **wartime context** has a particular influence: on the one hand, it restricts investment resources and reduces the financial resilience of companies; on the other, it stimulates the development of online services, e-commerce, and social media marketing (SMM) as a response to the destruction of traditional infrastructure. This creates a paradoxical situation — the war constrains large-scale digitalization but simultaneously acts as a catalyst for certain innovations.

An additional factor influencing Ukraine's digital marketing development is the **pressure of European integration processes**. Ukraine must adapt its marketing strategies to the requirements of the **GDPR**, the **Digital Services Act**, and the **European Green Deal** (Shashi et al., 2025; Shirwa et al., 2025).

This opens new opportunities for sustainable marketing but simultaneously requires legislative harmonization, investment in cybersecurity, and enhanced transparency of business processes.

In Azerbaijan, the situation differs due to the structural characteristics of its economy. The most significant challenge is the **digital divide between the capital and the regions**. While Baku is actively implementing modern solutions — from omnichannel platforms to integrated CRM systems — most regional companies limit themselves to the basic use of social media for direct sales. This creates inequality in access to digital technologies and slows the development of a nationwide digital ecosystem.

In countries with a similar level of SME development, the effectiveness of digital strategies also depends on **organizational communication practices**. For instance, the Indonesian case demonstrated that combining digital marketing with PR and journalistic tools can be an effective way to increase sales (Strategi Komunikasi…, 2025).

The **second major constraint** is dependence on the energy sector. The concentration of resources in the oil industry leads to insufficient attention and investment in other sectors — such as retail, services, and the creative industries — which hinders large-scale digital transformation.

Another major issue is the **underdevelopment of e-commerce**. Despite the popularity of social media as sales channels, integrated e-commerce platforms remain at an early stage of development. This limits opportunities for systematic customer experience analytics and the creation of comprehensive digital strategies.

Finally, **Azerbaijan demonstrates low demand for "green" practices** (Rizkita et al., 2025). Ecological marketing is still emerging, and the value-oriented approach remains uncommon due to the dominance of the energy-based economy and the insufficient promotion of circular economy principles among consumers.

Thus, digital marketing in both countries is developing **fragmentarily**:

In Ukraine — due to limited resources, a shortage of qualified personnel, and the need for adaptation to European standards;

In Azerbaijan — due to the mono-sectoral nature of the economy, regional disparities, and low integration of sustainable practices.

This highlights the **necessity of transitioning** from instrumental and strategic levels toward more complex and value-oriented models of digital marketing, which can not only ensure business performance but also promote integration into global markets and the advancement of sustainable economic practices.

2.3. Drivers of Digital Marketing Development and Their Management.

In this context, there arises a need to systematize the factors that determine the development and management of digital marketing. The classification of drivers makes it possible not only to theoretically outline the driving forces of digital transformation but also to practically understand which groups of factors have the greatest impact on enterprise competitiveness and their ability to integrate circular economy principles.

Digital marketing evolves under the influence of a variety of factors that can be considered **drivers of digital transformation**. These drivers determine the speed, scale, and depth of digital technology integration into business models, as well as shape the trajectory of transition from instrumental to strategic, complex, and value-oriented approaches. In the academic literature (Chaffey & Ellis-Chadwick, 2022; Shpak et al., 2022), it is proposed to group these drivers according to their nature and functions.

For **Ukraine and Azerbaijan**, it is appropriate to distinguish five key groups of drivers: **technological, economic, socio-ecological, institutional, and organizational**.

Technological Drivers. These are factors related to the development of digital technologies that directly form the foundation of digital marketing.

Essence: implementation of innovative solutions for automation, data collection and analysis, personalization, and customer experience management.

Examples: AI-based predictive analytics, Big Data, CRM platforms, AR/VR in marketing campaigns, omnichannel platforms, chatbots, and advertising automation systems.

Challenges for Ukraine: low digital maturity of SMEs, high implementation costs, and limited access to advanced technologies due to the wartime context.

Challenges for Azerbaijan: concentration of IT infrastructure in the capital, a digital divide between the capital and the regions, and dependence on imported technologies.

Economic Drivers. These are factors that encourage businesses to adopt digital tools to optimize costs and explore new sources of revenue.

Essence: digital marketing enables business scaling, market expansion, and cost reduction in promotion activities.

Examples: the development of e-commerce, globalization of online markets, the need to optimize advertising budgets, and investment in digital innovations.

Challenges for Ukraine: unstable domestic demand, limited investment resources, and dependence on external markets.

Challenges for Azerbaijan: high dependence of the economy on the energy sector, weak diversification, and a low share of e-commerce in GDP.

Socio-Ecological Drivers. These factors are linked to the evolution of consumer expectations and societal demands for greater corporate responsibility.

Essence: the growing demand for transparency, environmental sustainability, and corporate accountability stimulates the integration of sustainable development principles into digital marketing.

Examples: eco-marketing, transparent supply chains, socially driven branding, and customer participation in recycling and "green" campaigns.

Challenges for Ukraine: low environmental awareness among businesses and weak state support for circular practices.

Challenges for Azerbaijan: limited demand for "green" products and insufficient integration of circular economy concepts into marketing activities.

Institutional Drivers. These are factors that define the regulatory environment of digital marketing.

Essence: the presence or absence of legal frameworks regulating the use of digital technologies and data protection.

Examples: GDPR, Digital Services Act, European Green Deal, national digitalization strategies, and personal data protection laws.

Challenges for Ukraine: slow harmonization of national legislation with EU standards, insufficient level of data protection, and weak implementation mechanisms of regulatory policies.

Challenges for Azerbaijan: absence of a comprehensive cybersecurity strategy, inadequate legal framework for personal data protection, and low transparency of regulatory processes.

Organizational Drivers. These factors relate to the internal capacity of companies for digital transformation.

Essence: the organization's ability to integrate digital solutions into business processes, foster an innovative culture, and effectively manage human capital.

Examples: presence of a corporate digital strategy, development of competencies in data science and marketing analytics, and integration of customer experience (CX) into the business model.

Challenges for Ukraine: shortage of skilled professionals in digital technologies, limited innovation culture within companies, and insufficient institutional support for SMEs.

Challenges for Azerbaijan: lack of support for digital start-ups, shortage of qualified personnel outside the energy sector, and a weak innovation ecosystem.

The proposed classification of digital marketing drivers allows for the systematization of key factors that determine the pace and direction of transformation in transition economies. It considers not only technological innovations but also economic, socio-ecological, institutional, and organizational conditions that shape the ability of companies to integrate digital solutions into their business models. For clarity, the results are summarized in **Table 1**, which presents the essence of each driver group, examples of their implementation, and the main challenges for Ukraine and Azerbaijan.

Table 1. Classification of Drivers of Digital Marketing Development in Ukraine and Azerbaijan

Driver group	Essence	Examples	Challenges for Ukraine	Challenges for Azerbaijan
Technological	Digital tools for automation, analytics, personalization	AI, Big Data, CRM, AR/VR, chatbots, omnichannel platforms (Romic, 2026; Jia, 2025)	Low digital maturity of SMEs; high implementation costs; limited access to innovation	IT infrastructure concentrated in Baku; regional digital gap; dependence on imported technologies
Economic	Cost optimization and new revenue sources	Global competition, e-commerce, online market scaling (Saputra et al., 2023; Liu et al., 2025)	Limited investment resources; dependence on external markets; unstable domestic demand	High dependence on energy sector; weak diversification; low e-commerce share in GDP
Socio-ecological	Focus on sustainability, transparency, ethics	Green products, eco-marketing, recycling, digital agricultural technologies (Balayev & Mirzayev, 2022; Rizkita et al., 2025)	Low ecological awareness; weak regulation of circular practices	Limited integration of circular economy; weak demand for eco-products
Institutional	Regulatory norms and standards shaping digitalization	GDPR, Digital Services Act, Green Deal, national digitalization strategies (Shashi et al., 2025; Shirwa et al., 2025)	Slow harmonization with EU law; weak data protection mechanisms	Lack of personal data protection law; weak cybersecurity strategy; low regulatory transparency
Organizational	Internal capacities to integrate digital solutions	Corporate digital strategy, CX management, human capital development (Strategi Komunikasi, 2025; Shirwa et al., 2025)	Shortage of data science and analytics specialists; weak innovation culture	Limited support for digital start-ups; lack of skilled workforce beyond energy sector; weak innovation ecosystem

Common to both countries is that they face challenges related to **staff shortages**, **uneven levels of digital maturity among businesses**, and **insufficient integration of circular economy principles into marketing strategies**.

However, in **Ukraine**, digitalization is constrained by wartime destruction and the urgent need to adapt to EU standards. In **Azerbaijan**, the key challenge is the mono-sectoral nature of the economy — high dependence on the energy sector — which slows the development of digital services and marketing innovations. While Ukraine's main issue lies in the instability of domestic demand, Azerbaijan struggles with the concentration of digital infrastructure in the capital and a significant regional divide.

This classification of drivers makes it possible to view digital marketing not as an isolated set of tools, but as a **multidimensional system**, the development of which depends on the interaction of technological, economic, socio-ecological, institutional, and organizational factors. For **Ukraine**, the main task is to integrate these drivers within the context of wartime challenges and European integration processes. For **Azerbaijan**, the priority is to overcome mono-sectoral dependence and regional inequality in order to build a **resilient digital economy**.

3. Discussion

The results of the study show that the development of digital marketing in transition economies is uneven and multidirectional. **Ukraine and Azerbaijan** share common challenges, including a shortage of specialists in data science and digital technologies, a low level of integration of circular economy principles into marketing practices, and limited investment resources. At the same time, the differences between the two countries are driven by their distinct structural characteristics and strategic priorities.

A comparison with other countries confirms that the transition from **instrumental models of digital marketing** to **strategic and value-oriented ones** is possible only under conditions of comprehensive reforms. **Poland** demonstrates a rapid harmonization with EU norms, where businesses were forced to adapt to GDPR requirements and invest in cybersecurity. **Turkey**, initially focused on social media and mobile marketing, is gradually moving toward strategic models through the use of big data and omnichannel platforms. **Georgia** illustrates a situation similar to Ukraine and Azerbaijan: regional disparities coexist with the active development of small businesses that employ instrumental solutions but increasingly adopt strategic approaches through international projects and cooperation with European institutions (Smart Solutions, 2025; IT Ukraine Association, 2025).

These findings align with the results of a systematic review by *Shashi, Ertz, Cerchione & Kumar (2025),* who state that the transformation of B2B marketing from traditional practices to digital strategies requires the simultaneous development of methodologies, infrastructure, and new business models. Similarly, *Shirwa, Hassan, Hassan & Kilinc (2025)* emphasize that digital transformation is not only a technological process but also a cultural and organizational change that demands close collaboration among stakeholders.

An additional dimension is illustrated by the agricultural sector. *Balayev & Mirzayev (2022)* demonstrate that digital agricultural technologies can serve as a driver for sustainable rural development; however, their effectiveness depends on institutional support, infrastructure, and the readiness of local communities. This conclusion directly resonates with the issues of digital marketing in Ukraine and Azerbaijan, where the availability of technology is often constrained by socio-economic and institutional barriers.

An important aspect of the international discussion concerns the **role of artificial intelligence**. *Romic (2026)* demonstrates that AI is radically transforming customer experience management, value creation, and decision-making processes, while simultaneously introducing ethical risks related to consumer behavior manipulation and privacy protection.

Another crucial dimension involves the **cultural adaptation of digital strategies**. *Rizkita, Winarno, Suwono & Nik Malek (2025)* show that the inclusion of local cultural elements — language, symbols, and traditions — in digital campaigns significantly enhances customer loyalty and the resilience of MSMEs. This finding is particularly relevant for Ukraine and Azerbaijan, where the cultural component of marketing strategies remains underestimated.

The **Chinese experience** further broadens the analytical perspective. *Liu, Zou, Lv & Yao (2025)* demonstrate that digitalization influences international marketing decisions of private enterprises; however, its effectiveness depends on innovation capacity and corporate governance. Meanwhile, *Jia (2025)* highlights that digital marketing strengthens brand competitiveness through the development of marketing and operational capabilities. This is especially relevant for transition economies, where weak managerial competencies often hinder the shift from instrumental to strategic models.

Against this background, particular importance is attached to the **classification of digital marketing drivers** proposed in this study — technological, economic, socio-ecological, institutional, and organizational. This framework provides a systematic explanation of why Ukraine and Azerbaijan are progressing unevenly toward strategic and value-oriented models. While international research typically focuses on individual aspects of digital transformation, this classification offers a **comprehensive conceptual framework** that accounts for the full spectrum of influencing factors.

4. Conclusion

The conducted research made it possible to generalize the evolution of theoretical and practical approaches to digital marketing and to identify its distinctive features in transition economies, using Ukraine and Azerbaijan as case studies.

The study proposes a **conceptual model of digital marketing development in transition economies, which integrates technological, economic, socio-ecological, institutional, and organizational drivers.** This model explains the **evolutionary transition** from traditional and instrumental practices toward strategic, complex, and value-oriented approaches. It highlights the **interdependence between digital technologies, human capital, institutional regulation, and sustainability principles** as key determinants of marketing transformation. The proposed conceptual framework provides both theoretical and practical guidance for policymakers and businesses seeking to align national digital strategies with global standards of sustainable development.

Theoretical results. Digital marketing has evolved through several distinct stages — from the **traditional** (adaptation of internet tools) and **instrumental** (focus on technologies and tactical actions) to **strategic, complex,** and **value-oriented** approaches, in which digital marketing becomes an integral part of business models and sustainability systems.

Comparative analysis. Both Ukraine and Azerbaijan face similar challenges such as a shortage of qualified professionals, limited investment resources, and low digital maturity among SMEs. However, while Ukraine operates under wartime constraints and the pressures of European integration, Azerbaijan is hindered by the dominance of the energy sector and pronounced regional digital inequality.

Classification of drivers. The proposed system of drivers — technological, economic, socio-ecological, institutional, and organizational — forms a comprehensive analytical framework that explains the unevenness of digital transformation and helps identify key leverage points for policy and business interventions.

International experience. The cases of Poland, Turkey, Georgia, China, and Indonesia confirm that the transition from instrumental to strategic and value-oriented models of digital marketing is possible only through the synergy of **technological innovation, human capital development, cultural adaptation, and institutional support.**

Practical implications. For Ukraine and Azerbaijan, the priority is to develop **complex and value-oriented models** of digital marketing that promote sustainable competitiveness. This requires investments in **digital infrastructure and human capital,** integration of **sustainable development and circular economy principles** into marketing strategies, strengthening **institutional and legal frameworks**, and the **adaptation of international best practices** to national contexts.

In summary, digital marketing in transition economies is not merely a set of promotional tools but a **strategic driver of sustainable transformation and global integration.** Future research should focus on developing **applied models for implementing complex and value-oriented digital marketing strategies** and evaluating their impact on business competitiveness and national economic growth.

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Exploring Trends and Research Focus of Artificial Intelligence and Digital Economy: A Bibliometric Approach

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Abstract

This study aims to analyze publication trends and the impact of artificial intelligence (AI) and the digital economy across different institutions and countries, based on bibliometric data. Through the use of citation analysis and keyword mapping methods, the study found that Russia and China dominate publications in this field, with AI and digitalization as the main focus. In addition, the research identified a large number of citations that demonstrated the significant influence of AI-related works in social and economic contexts. The findings illustrate the importance of international collaboration in sustainable technology development and provide recommendations for future research to include more perspectives from developing countries and broader social aspects.

Keywords: Artificial Intelligence, Bibliometric, Digital Economy

1. Introduction

The rapid development of digital technology has brought significant impacts in various aspects of life, including the global economy (Li et al., 2020; Shahbaz et al., 2022). Artificial intelligence (AI) is now not only an important topic in the field of technology, but has also penetrated into the realm of economics, creating a new synergy known as the digital economy (Zekos 2021; Nguyen et al., 2023). This phenomenon has triggered intensified research on how artificial intelligence can drive economic growth through various digital technology innovations and applications.

The digital economy is a concept that encompasses all economic activities based on information and communication technology (ICT) (Wu et al. 2022; Wang et al. 2024). Artificial intelligence acts as a catalyst that allows various business processes to be more efficient, fast, and accurate in the world of digital economy. Artificial intelligence also facilitates the creation of new business models based on data and analytics, which are at the core of digital transformation in the current era. The merging of AI and the digital economy has attracted the interest of researchers to understand how this technology can be used to improve productivity and create new economic value.

Globally, the research focus on artificial intelligence and the digital economy is growing, fueled by increased investment in these technologies (Lyu & Liu 2021; Johnson et al., 2021). Many countries and

companies are beginning to realize the huge potential of artificial intelligence in optimizing industrial processes, improving market competitiveness, and creating new product and service innovations. This trend is also supported by advances in digital infrastructure and the availability of big data that is increasingly accessible. Therefore, the role of AI in the digital economy is becoming increasingly relevant, especially in driving operational efficiency, data-driven decision-making, and automation of various economic sectors. In view of this, it is important to conduct a comprehensive and thorough study of artificial intelligence and the digital economy from different perspectives. One approach that can be used to obtain complex results can use a method that is currently being used by researchers, namely the bibliometric approach.

In the context of research, bibliometric methodology is an effective tool to understand the trends and focus of research in artificial intelligence and digital economy. Through this approach, researchers can analyze the development of research based on scientific publications, citations and collaborations between researchers. Bibliometric analysis also helps identify key themes that dominate academic discussions and technological trends in the field (Vinayavekhin et al. 2023; Hao et al., 2020). By mapping the existing research map, researchers can gain in-depth insights into issues that are prioritized among researchers and understand future challenges and opportunities.

It is important to understand that artificial intelligence and the digital economy are closely intertwined in terms of data utilisation and digital technologies (Vinayavekhin et al., 2023; Zhang 2023; Pigola et al., 2021). Research in these fields often focuses on using artificial intelligence to maximise the potential of data to support economic decision-making. Artificial intelligence can help analyze patterns in big data, identify market opportunities, and provide accurate predictions of economic developments. Artificial intelligence serves not only as a technological tool, but also as a driver of innovation in the digital economy.

In recent years, many studies have shown increasing attention to the role of artificial intelligence in sectors such as finance, manufacturing, commerce, and public services (Di Vaio et al. 2022; Sharma et al. 2022). Each sector has unique challenges and opportunities in adopting artificial intelligence technologies. Therefore, research on artificial intelligence in the context of the digital economy focuses on developing customized applications tailored to the needs of specific industries. This encourages collaboration between academia, industry and government to develop artificial intelligence solutions that can support inclusive and sustainable economic growth. There are significant challenges that need to be addressed such as data security, privacy, and regulations that are not yet fully prepared to keep pace with technological advancements. Therefore, studies that focus on the legal and ethical aspects of using artificial intelligence in the digital economy are also growing. Proper regulation is essential to ensure that these technological innovations can be applied responsibly without compromising individual rights or economic stability.

The bibliometric approach applied in this article aims to comprehensively describe the research trends and key foci in the field of artificial intelligence and digital economy (Vinayavekhin et al. 2023; Hao et al., 2020). Through this analysis, it is expected to identify the most developed research areas and those that still require further exploration. This article will make an important contribution to understanding the research landscape at the intersection of artificial intelligence technologies and the digital economy and the future implications of existing trends.

2.Method

This research uses a bibliometric approach to analyze the trends and focus of research on the topics of 'Artificial Intelligence' and 'Digital Economy'. Bibliometrics is a commonly used technique in measuring scientific impact, mapping research trends, and identifying the focus of studies in various fields of science Muhammad & Triansyah (2023), Triansyah et al. (2023a), Jäntti & Triansyah (2024), (Jäntti & Triansyah 2024; Xiong & Zhao 2020). Bibliometric data was obtained from the Scopus database, one of the main sources of international academic and research references, accessed on 5 October 2024. The use of Scopus

was chosen due to its wide coverage and globally recognized data quality, thus providing representative results for this study.

The data retrieval process began with a search for relevant scientific documents using the keywords 'Digital Economy' AND 'Artificial Intelligence'. These keywords were chosen to capture research that focuses on the relationship between the two topics, both in terms of concepts and practical applications. In the initial search, 880 documents were found that contained both terms in the title, abstract or keywords. The next step was filtering to ensure that only scientific articles were included in the analysis, as scientific articles are more relevant for describing scientific contributions than other types of publications such as proceedings or short reviews.

After filtering the document type, only scientific articles were retained with a result of 332 documents. The next step was to apply a language filter, where only articles written in English were included. This filter was applied to maintain consistency and ensure the analyzed documents could be understood globally by the scientific community. After the language filter, the remaining number of articles was 278 documents. These documents form the basis of the analysis in this study.

In the bibliometric analysis, various indicators are used such as the number of publications per year, research topic distribution, citation patterns, and collaboration between researchers or institutions. In addition, bibliometric analysis software such as VOSviewer and Biblioshiny were used to visualise research thematic maps, global collaboration trends, and citation networks. This approach helps identify key emerging themes in AI and digital economy studies, as well as map the scholarly influence of specific researchers or institutions in the field. Armed with data that has been screened and analysed bibliometrically, this study aims to provide a comprehensive overview of the direction and focus of research at the intersection of AI and the digital economy. The results of this analysis are expected to provide insight into the dynamics of topic development, identify research trends, and provide recommendations for future research.

3. RESULTS AND DISCUSSION
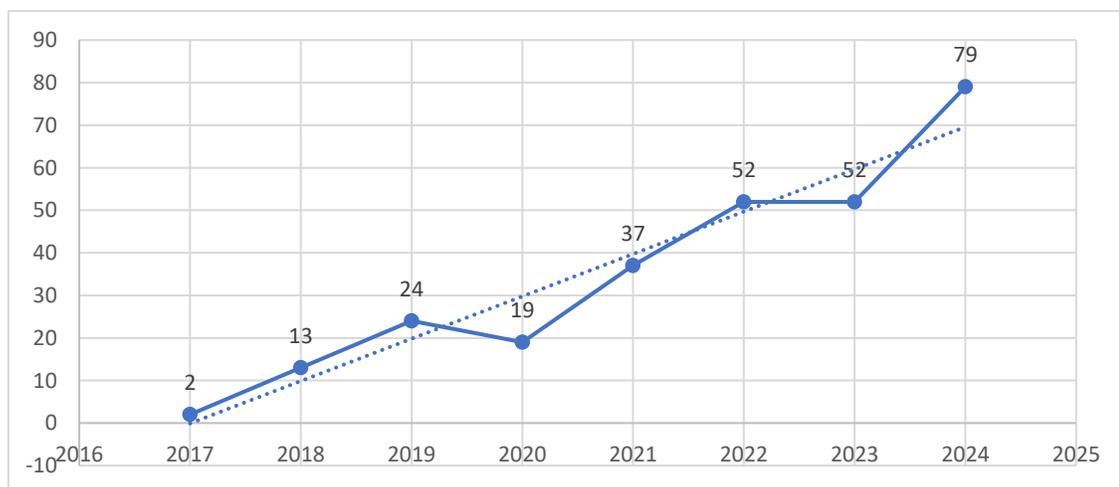
3.1 Trends by Year

Figure 1: Trends Documents by Year

Source: World Bank (2024).

The trend in the number of documents published on 'Artificial Intelligence' and 'Digital Economy' from 2017 to 2024 shows a significant increase. In 2017, the topic was still relatively new with only two documents published. This may reflect the early stage of integration between AI and the digital economy, where research in both fields has not been explicitly brought together. However, the trend began to pick up in 2018 with 13 publications, indicating a growing interest from the scientific community to explore the relationship between these two concepts.

In 2019, the number of documents increased to 24, and continued to grow until it peaked in 2024 with 79 documents. This increase shows that 'Artificial Intelligence' and 'Digital Economy' are becoming increasingly relevant and important topics, especially in the era of accelerating digital transformation. In 2020, although there was a decrease in the number of publications to 19 documents, this is likely due to the impact of the COVID-19 global pandemic which disrupted the research and publication process. However, in the following years, namely 2021 to 2024, the number of documents continued to increase significantly, with the most striking growth occurring in 2024.

The peak in document issuance in 2024, which reached 79 articles, shows that research on AI and the digital economy has become a top priority in the global scientific discourse. This steady growth reflects the importance of AI's role in driving the digital economy, especially with the increasing adoption of digital technologies in various industry sectors. It also shows increased collaboration between researchers, institutions, and countries highlighting the importance of AI integration in technology-driven global economic strategies.

3.2 Trends by Source

Table 1: Top 10 Trends by Source

Source	Documents
Sustainability switzerland	12
Plos one	7
Economic annals xxi	6
Mathematical problems in engineering	5
Ieee access	4
Computational intelligence and neuroscience	3
Engineering applications of artificial intelligence	3
Humanities and social sciences communications	3
Intertax	3
Journal of business research	3

Source: World Bank (2025).

Based on the data regarding the distribution of documents from various sources, it can be seen that the Sustainability Switzerland journal is the main source with 12 documents related to the topics of 'Artificial Intelligence' and 'Digital Economy'. This shows that the topics of AI and digital economy have strong relevance in the context of sustainability and resource management, in line with the journal's focus. Other journals that also contributed significantly were Plos One with 7 documents, and Economic Annals XXI which contributed 6 documents. Both journals are recognised as sources that include interdisciplinary research and focus on global economic issues, signalling that the discourse around AI and the digital economy extends across disciplines.

A smaller distribution of documents was also seen in other journals, such as Mathematical Problems in Engineering (5 documents) and IEEE Access (4 documents), indicating more in-depth attention to the technical and engineering aspects of applying AI in the context of the digital economy. Contributions from engineering journals highlight the importance of AI technologies in addressing technical and operational challenges in the digital economy, including in the areas of automation, data analytics, and industrial process optimisation. In addition, journals such as Computational Intelligence and Neuroscience and Humanities and Social Sciences Communications with 3 documents each, show that the application of AI is not only limited to the hard technology sector but also extends to interdisciplinary studies, including social sciences and humanities.

This data shows the diversity in publications, with more than 100 journals contributing one to two documents each. This diversity shows that research into AI and the digital economy crosses disciplinary boundaries, covering fields ranging from law, business, education, to healthcare. Journals such as Journal of Business Research, Journal of Cloud Computing, and Technological Forecasting and Social Change each contributed 3 documents, confirming that AI adoption in the digital economy is studied across a wide range of sectors and institutions. The involvement of these journals indicates that the topic is broad and relevant in many contexts, with applications ranging from business management, technological innovation, to socio-economic impact.

3.3 Trends by Country

Table 3: Top 15 Trends by Country

Country/Territory	Documents
China	94
Russian Federation	55
United States	22
United Kingdom	13
Ukraine	12
Germany	11
Italy	10
Poland	8
Australia	6
Canada	6
Spain	6
France	5
Malaysia	5
India	4
Jordan	4

Source: World Bank (2025).

Based on document distribution data by country, China tops the list with 94 documents, followed by the Russian Federation with 55 documents. China's dominance in research related to Artificial Intelligence and Digital Economy reflects the country's national policy of aggressively supporting

technological innovation and the development of the digital economy. China has invested heavily in AI research and applications, making it a global leader in this field. Meanwhile, the Russian Federation also had a significant contribution with 55 documents, signalling a strong focus on AI and digital economy research, driven by the country's top research institutions.

The United States with 22 documents ranks third, indicating that while the US is known as a global centre of technological innovation, its contribution to research related to AI and the digital economy is slightly smaller than China and Russia. This may be due to the different focus between academia and the tech sector in the US, which is more segmented in specific subfields of AI. In Europe, contributions from the UK (13 documents), Germany (11 documents) and Italy (10 documents) show that the region is also active in AI and digital economy research, although the volume is not as large as China and Russia. Countries such as Ukraine (12 documents) and Poland (8 documents) also show that the Eastern European region plays an important role in this research.

Contributions from other countries, such as Australia, Canada and Spain, with 6 documents each, highlight the global interest in this topic beyond the dominant regions. Countries such as France, Malaysia, India, and Jordan with 4-5 documents each were also involved in the research, signalling that research related to AI and the digital economy has reached out to countries with different economic conditions. Countries from Asia, such as Vietnam, Taiwan, and Malaysia, show active involvement from Asia other than China. This reflects the global influence of AI and the digital economy covering a wide range of sectors and regions, not limited to the largest economies.

In addition, countries such as Finland, Greece, Indonesia, Japan, and Singapore, each contributing 3 documents, show that the topic of AI and the digital economy is not only of interest to countries with large economies, but also to emerging countries and new markets looking to adopt these technologies. Indonesia's involvement with 3 documents shows that developing countries in Southeast Asia are also starting to pay serious attention to AI research and its application in the digital economy. Other countries such as Brazil, Turkey, and South Africa, despite their smaller contributions, still play a role in the global development of this field. This broad engagement reflects the cross-border nature of research in AI and the digital economy, with potential impacts around the world.
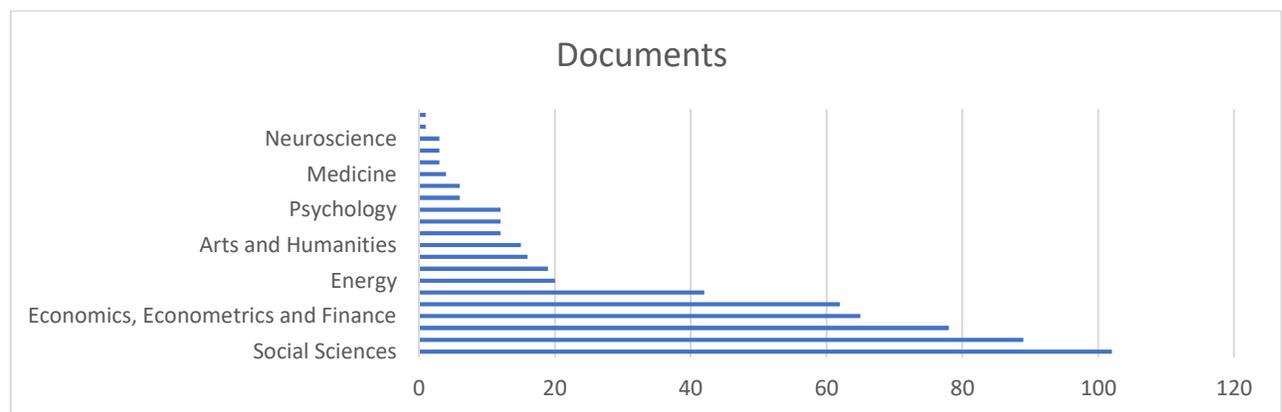
3.4 Trends by Subject Area

Figure 3: Trends Documents by Subject Area

Source: World Bank (2025).

Based on document trends by subject area, Social Sciences took the top spot with 102 documents. This shows that research related to Artificial Intelligence (AI) and Digital Economy does not only focus on technical aspects, but is also strongly related to its social impact. Research in this area includes studies on how AI and the digital economy affect society, employment, education and public policy. This signifies a great deal of attention to the social implications of these technologies, including the distribution of economic justice, influence on social inequality, and ethical and regulatory challenges.

Computer Science with 89 documents and Business, Management and Accounting with 78 documents came second and third. This underlines that AI and the digital economy are highly relevant to the development of new technologies as well as how these technologies are applied in a business context. In Computer Science, the focus may be on algorithms, data processing and AI applications. Meanwhile, in Business, Management and Accounting, research may be more related to digital transformation in corporate management, the application of AI for business efficiency, and digitalisation strategies. The Economics, Econometrics and Finance subject with 65 documents also shows that AI and the digital economy have a great influence on the way the economy functions, especially in the aspects of forecasting, data analysis, and financial management.

On the other hand, fields such as Engineering (62 documents), Environmental Science (42 documents), and Energy (20 documents) are also quite prominent, showing that AI and the digital economy play a role in the technology infrastructure and sustainability sectors. The application of AI in engineering, environmental solutions, and energy efficiency is gaining attention as the need for smarter and greener technologies increases. Other fields such as Arts and Humanities (15 documents) and Psychology (12 documents) also show that the research is not limited to the exact sciences and engineering, but also includes the impact of culture, human behaviour, and human values in the digital age.

3.5 Trends by Citation

Table 4: Top 10 of Citation

Cites	Authors	Title	Year
282	Z. Allam, A. Sharifi, S.E. Bibri, D.S. Jones, J. Krogstie	The Metaverse as a Virtual Form of Smart Cities: Opportunities and Challenges for Environmental, Economic, and Social Sustainability in Urban Futures	2022
276	J. Moll, O. Yigitbasioglu	The role of internet-related technologies in shaping the work of accountants: New directions for accounting research	2019
262	Q. Yang, Y. Zhao, H. Huang, Z. Xiong, J. Kang, Z. Zheng	Fusing Blockchain and AI With Metaverse: A Survey	2022
191	P.K. McClure	"You're Fired," says the Robot: The Rise of Automation in the Workplace, Technophobes, and Fears of Unemployment	2018
162	H.W. Volberda, S. Khanagha, C. Baden-Fuller, O.R. Mihalache, J. Birkinshaw	Strategizing in a digital world: Overcoming cognitive barriers, reconfiguring routines and introducing new organizational forms	2021
136	L. Caruso	Digital innovation and the fourth industrial revolution: epochal social changes?	2018
132	D. Ivanov	Digital Supply Chain Management and Technology to Enhance Resilience by Building and Using End-to-End Visibility During the COVID-19 Pandemic	2024

120	E. Ernst, R. Merola, D. Samaan	Economics of Artificial Intelligence: Implications for the Future of Work	2019
115	C. Watanabe, K. Naveed, Y. Tou, P. Neittaanmäki	Measuring GDP in the digital economy: Increasing dependence on uncaptured GDP	2018
109	W.D. Holford	The future of human creative knowledge work within the digital economy	2019

Based on the trend analysis of documents with the most citations, it can be seen that the most cited topics focus on how digital technologies, such as Metaverse, Blockchain, AI, and automation, affect various aspects of life, from work, to the economy, to smart cities. The most-cited article, written by Allam et al. (2022), explores the Metaverse as a form of virtual smart city. This shows that research related to the integration of new technologies in urban management and sustainability is in high demand, especially in the context of the role of digital technologies in shaping urban futures that are environmentally friendly, economically efficient and socially inclusive. Through 282 citations, this research provides an important foundation for understanding the future of urbanism in the digital age.

The second highest-cited study, by Moll & Yigitbasioglu (2019), discussed the impact of internet technologies on the work of accountants, with 276 citations. This signifies a great attention to the changing role of traditional jobs due to digital disruption. Jobs such as accounting are becoming increasingly digitalised with internet technology, demanding further research into how these jobs will change and what is needed to remain relevant. This research is relevant in an increasingly digitised and automated world of work, showing the importance of understanding the role of humans in increasingly complex digital systems.

Yang et al. (2022) with 262 citations reviewed the merging of Blockchain, AI, and Metaverse technologies, signalling that interdisciplinary studies between various advanced technologies are in high demand. The use of Blockchain for data security, AI for optimisation, and Metaverse as a virtual space shows how these technologies synergise to form a more secure and efficient digital ecosystem. The popularity of this research reflects that the development of cutting-edge technology-based solutions is becoming a highly dynamic and important research area for the future of the digital economy.

McClure's (2018) with 191 citation article highlights the fear of job loss due to automation and robotisation. It highlights the social concerns that arise from the adoption of technology in the workplace, where the advent of advanced technology fuels fears about mass unemployment. This research is crucial in the discussion about the social impact of technological development, especially how society deals with the disruption of traditional jobs due to automated technology.

Ivanov's (2024) with 132 citation research focuses on Digital Supply Chain Management and technology's ability to strengthen supply chain resilience, particularly during the COVID-19 pandemic. It shows that digital technologies, especially those that enable end-to-end visibility in the supply chain, are crucial in dealing with the global crisis. The pandemic has highlighted the importance of adaptability and resilience in businesses through digitalisation, and this research offers concrete solutions on how technology can be applied to address such challenges. Overall, this research provides important insights into future trends in the digital economy triggered by the pandemic.

3.6 Focus Study

Figure 4: Network Visualization of Keywords

Figure 5: Overlay Visualization of Keywords

Source: World Bank (2025).

The frequently occurring keyword data in this study shows a range of important themes related to the digital economy and artificial intelligence (AI). The keyword 'artificial intelligence' dominated with 147 occurrences and a total relationship strength of 537, indicating a significant research focus on AI in various aspects of the digital economy. In addition, the keyword 'digital economy' appeared 121 times with a total relationship strength of 397, indicating that AI is often studied in the context of economic transformation driven by digital technology. Thus, it appears that many studies link the use of AI to the digital transformation of the economy.

'Machine learning' is one of the most important themes with 26 occurrences and a total relationship strength of 114. This suggests that machine learning is a frequently discussed sub-topic in the context of AI and the digital economy. In addition, 'big data' appeared 23 times with a relationship strength of 116, showing how big data and data analytics play an important role in the implementation of digital technologies and AI. The use of big data enables more accurate and efficient decision-making, especially in an increasingly digitally integrated economy.

In addition to these main themes, the aspect of 'innovation' was also an important part of the discussion, with 21 appearances and a relationship strength of 95. This innovation was often associated with 'digital transformation' which appeared 24 times, highlighting the importance of innovation in adopting digital technology in various sectors. Technological innovation drives progress in the field of 'internet of things' which appeared 20 times, with a relationship strength of 116, as well as in the application of 'cloud computing' which is closely related to data management and technological efficiency.

The keyword 'blockchain' appeared 15 times with a relationship strength of 72, indicating the importance of blockchain technology in supporting the digital economy, especially regarding transaction security and transparency. Blockchain was often used in various contexts such as 'commerce' and 'automation' which appeared 5 and 7 times respectively, illustrating how this technology helps strengthen automation processes and safer digital transactions. The topic of 'cybersecurity' was also an integral part of the discussion, appearing 4 times with a relationship strength of 21, underscoring the importance of data protection amid the massive adoption of digital technologies.

Other themes that emerged in the context of the digital economy included 'economic development' and 'sustainable development', which appeared 16 times each. This shows the attention to the economic impact of digital technology and how it can be sustained. In addition, 'economic growth' (6 occurrences) and 'industrial economics' (4 occurrences) highlight the important role of industrial economics in integrating AI and digital technologies to accelerate economic growth.

Keywords such as 'e-commerce' (5 occurrences) and 'productivity' (9 occurrences) highlight the transformation of commerce and productivity sectors through digital technologies. Together with 'virtual reality' and 'smart cities,' this data indicates that research in the digital economy and AI is not only limited to core technologies, but also to how these technologies affect the way people live and change urban environments and social interactions as a whole.

3.7. Discussion

The results of the analysis of publication trends related to artificial intelligence (AI) and the digital economy show very significant patterns in several aspects. From the data on publication trends based on institutional affiliation, it can be seen that institutions from Russia and China dominate the number of publications. Institutions such as the Russian Academy of Sciences and Huaqiao University, as well as Peter the Great St. Petersburg Polytechnic University, play an important role in advancing research related to AI and the digital economy. This dominance reflects their heavy investment in AI-based economics and technology research. In addition, the United States and some European countries such as the United Kingdom and Italy also have significant contributions, although not as intensively as Russia and China, indicating a geographical balance in the development of this science.

Meanwhile, from a national perspective, China is the clear leader with the largest number of publications, followed by the Russian Federation, the United States, and several European countries. These results show that large economically and technologically powerful countries dominate research related to AI and the digital economy. China, for example, is very active in publishing research that focuses on digital technologies, AI, and their impact on the global economy. Russia also shows strong influence, which can be interpreted as the country's efforts to compete in global technological innovation. Countries outside of Asia and Europe, such as the United States and Canada, show a strong focus in the same areas, albeit with fewer publications than China.

In terms of citations, the most-cited AI and digital economy-related publications show strong links to topics such as the metaverse, blockchain, and the impact of AI on the future of work and industrial

innovation. The most cited articles, such as those on the metaverse in the context of smart cities and sustainability, show that the concept of AI is not only being studied in terms of its technology, but also in terms of its impact on various aspects of social and economic life. High citations on publications examining digital transformation during the COVID-19 pandemic also signalled that the global crisis accelerated AI research and applications on a larger scale.

The recurring occurrence of buzzwords such as 'artificial intelligence,' 'digital economy,' 'machine learning,' and 'blockchain' in many studies emphasises the importance of these concepts in global scientific discussions. These buzzwords describe not only the key technologies in focus, but also their implications on the economy, such as increased productivity, big data management, and how AI aids in better decision-making. In addition, keywords such as 'sustainable development' and 'economic growth' show that the discussion on technology is not only technical, but also relates to the broader impact on economic growth and sustainability.

Overall, research into AI and the digital economy focuses on how these technologies can be applied to accelerate social, economic and industrial transformation. In both developed and developing countries, AI is seen as a key pillar for building a more efficient and sustainable future economy. This is also evident from the attention given to aspects such as 'smart cities,' 'sustainability,' and 'green innovation,' which highlight the importance of technology in creating environmentally friendly and sustainable solutions to global economic and social challenges. These discussions show that AI and the digital economy have been, and will continue to be, key topics in future scientific and industrial development.

4.Conclusion

The conclusions of this study show that artificial intelligence (AI) and the digital economy are rapidly growing research areas, with significant contributions from institutions in Russia and China. Through their dominance in number of publications and citations, these two countries lead the development of science related to digital technologies, while other countries, such as the United States and the United Kingdom, also show an important presence. The findings illustrate the relevance of AI and digital technologies in supporting economic and social sustainability in various sectors, as well as creating innovations that can respond to current global challenges.

The implications of this research highlight the need for greater international collaboration in AI and the digital economy to foster more effective innovation and sustainability. However, this study has limitations in terms of data coverage and possible bias in the selection of publications analysed. Therefore, for future research, it is recommended that more data from developing countries be taken into account and consider various methodological approaches that can provide a more comprehensive perspective on AI development. In addition, further studies are needed to explore the specific impacts of this new technology on various social and economic aspects in more depth. The next subsections provide instructions on how to insert figures, tables, and equations in your document.

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Conceptual Framework for Management of Development and Formation of Human Capital

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Abstract

The recognition of the decisive role of education in the development of society and man was the basis of the theory of human capital, which at the time became the theoretical prerequisite for the emergence of the concept of human development and its most important component.The theory of human capital represents a fundamentally new, qualitatively new approach to the social function of education. In many theories, education was considered either as a factor in increasing labor productivity or as a driving force for scientific and technical progress, but in all cases it was assigned a secondary, auxiliary role. Kasym-Jomart Tokaev pointed out the importance of developing human capital in the country at the plenary session of the Majilis on March 30, 2023. The President stated that it is necessary to consistently and systematically improve the quality of human capital. Only considering knowledge as capital, society could truly appreciate it, and it was the most valuable and reliable capital. Certain prerequisites for the concept of human capital were laid in classical political economy, Marxism and other currents of world economic thought, but it received a complete and clear formulation only in the 20th century. The scientific and public recognition of the theory of human capital and its development was significantly influenced by the participation of Peter Drucker, an outstanding representative of economic, managerial and social science of the 20th century. His article "Knowledge Revolution" caused a wide resonance in the scientific and political sphere. In it the author writes: "Education is modern real private capital. The development of state education is the most important tool for creating capital, and the number of educated people, the quality of their education and the use of this knowledge are the most important indicators of the country's ability to produce wealth"

Keywords: man, human capital, economy, living conditions, working conditions, lifestyle, salary.

1.   Introduction

Human capital, possessing the same characteristics as any other type of capital, has significant differences. Leading Russian specialist in the theory of human capital S.A. Dyatlov highlighted the following features of this phenomenon:

1. The profitability of investments in human capital is directly related to the life expectancy (duration of labor activity) of its owner. The sooner the investment is made in a person, the faster the return. However, it should be remembered that higher-quality and long-term investments give higher and more stable results.

2. Human capital is not only subject to natural and moral wear and tear, but also capable of accumulation and increase. The wear and tear of human capital is determined, firstly, by the degree of natural wear and tear of the human body and psychophysiological functions inherent in it, and secondly, by the degree of moral (economic) wear and tear that occurs as a result of depletion of knowledge or changes

in the value of acquired knowledge. Replenishment of human capital occurs in the process of retraining and accumulation of production experience of employees. If this process proceeds smoothly, then depending on the degree of use of human capital, its qualitative and quantitative characteristics (quality, volume, cost) improve and increase.

3. Depending on the degree of depletion of human capital, its profitability increases up to a certain limit, limited by the upper limit of the active labor force (ARS), and then sharply decreases.

4. When creating capital, there is a "stick with two ends". Its essence is that in the process of training, the characteristics and abilities of not only the student, but also the teacher develop and strengthen, which subsequently increases the profit of both the former and the latter.

5. Not all investments in a person are equally recognized as investments in human capital, only those that serve social goals and economic needs are subject to such investments. For example, expenses related to criminal activity are not considered investments in human capital, since they are socially undesirable and harmful to society.

6. The nature and types of harm caused to a person are determined by historical, national, cultural features and traditions. For example, the level of education and the choice of a child's profession are largely determined by family traditions and the level of education of parents.

7. Compared to investments in other forms of capital, investments in human capital are more profitable both individually and collectively .

Human capital is both individual and social capital. It has a decisive influence on the status of an individual person and the level of development of society as a whole. Before the emergence of the theorist of human capital, education was considered in economic terms only as a means of creating a workforce, training personnel and improving their qualifications. The theorist of human capital first raised the question of general economic returns from education (Melnik & Karintseva, 2012)

According to A. Smith, educated labor can repeatedly pay off the cost of education and bring higher profits than ordinary labor.

D.Ricardo basically confirmed the opinion of A. Smita. Ricardo also highly valued the role of education. He considered the country's backwardness in economic development to be, among other reasons, "a lack of education among all groups of the population." J. K. Mill, on the contrary, considered human abilities as a factor of labor productivity, and labor associated with education and training is related to productive activity. J. K. Mill was the first to point to education as an example of "market failure", that is, the inefficiency of the market mechanism (Vyvarets, 2012).

K. Marx also paid great attention to the creative abilities of a person in his economic theory. K. Marx considered abilities "the most important accumulated wealth, the preserved significant result of labor spent in living labor." Also K. Marx emphasized the necessity of certain knowledge for the formation of readiness and skills of a person in a certain sphere of work, as well as the cost of acquiring this knowledge. Marx used the concept of capital in a special sense as applied to labor power, emphasizing that the economy of working time in the immediate process of production can be considered as the main producer of capital. Here the economist chose a person as the main capital. However, the main idea of the system of views of K. Marx is far from the theory of human capital. According to him, labor power is the wealth of labor, and capital in the hands of his buyer-capitalist turns into variable capital. Among the main components of human capital, it is possible to distinguish mentality (internal culture of the population), education, health and accumulated skills. Qualified specialists, the use of knowledge and innovations, as well as the development of entrepreneurial resources contribute to the growth of human capital. When all components are in constant interaction and constantly improved, the quality of the capital increases. The absence of one of the

components of human capital disrupts the functioning of the entire system. At the same time, reverse synergistic (non-linear) and multiplicative effects arise.

Analyzing the views of the above-mentioned representatives of classical political economy, it is possible to come to the following conclusions:

1. Research shows that human qualities are an important factor in production efficiency;

2. Important human qualities are formed through education and training;

3. Formation costs as much as the ability;

4. Human abilities are recognized as an element of capital;

5. Education directly contributes to economic growth (Government of the Republic of Kazakhstan. (2010).

Further, in the late 19th and early 20th centuries, the introduction of the concept of "human capital" into economic analysis was based on the works of such economists as Fisher, J. Clark, A. Marshall, L. Walras, V. Pareto et al.

For the first time in the works of these economists, there was a wise theoretical basis for the need to consider individuals or their productive abilities as capital. The following reasons serve as the basis for considering a person or his productive abilities as capital: firstly, productive abilities can be used and form a reserve; secondly, the costs of education and training are recognized as real investments; thirdly, funds spent on the formation and development of human abilities are productive in nature, which, in turn, increases future income, labor productivity and national wealth.

Factors forming human capital can be divided into 4 groups:

1. Genetically, each person is born with certain natural abilities, which are transmitted from parents through genes;

2. Time and resources spent on raising children are very important. The level of education of parents has a significant impact: women with higher education spend 1.4 times more time than women with special education, and 1.6 times more than women with secondary education;

3. The level of education and the family's income determine a child's access to education.

4. Human capital is regulated as a result of individual expenses, state and corporate investments (Pipiya, 2013).

Currently, human participation in the production process requires deep education. Human capital must meet the requirements of modern innovative production. Only then will it be possible to receive benefits in the form of high-quality services and products from investments in human capital.

Only in the process of creative consumption of knowledge does a person increase his productivity. Therefore, we consider all education costs as a factor in the development of human capital. According to Grayson, "the success of Japan is due not only to the high quality of its production, but also to the ability of Japanese people to learn." Japan pays great attention to education from birth to death, at school, at work, in life."

The entrance of any country to the world market increasingly depends on the general level of education of its citizens. Therefore, raising the level of national education is not only a condition of economic and political stability of the country, but also a way of its entry into the world economic community. Therefore, all countries of the world strive to increase the amount of financing of the education sphere. However, it is unclear which level of education (primary, secondary, higher) should be given more attention.

As a result of comparative studies, it was revealed that countries rich in natural resources are more prone to the development of material and physical capital, while countries with less resources are more prone to the development of human capital. A country capable of developing the knowledge and skills of its citizens and increasing the efficiency of their use is more likely to produce and develop only one product at a time.

Human health also requires significant efforts to regulate and develop human capital. In general, the health of a person characterizes the psychophysiological possibilities of his physical condition. Deterioration of health is a threat to productivity. World experience and the experience of the CIS countries in the field of effective use and development of human capital allow us to draw the following conclusions: the person is a vital factor in the national economy; the acquired abilities of a person constitute the basis of the wealth of the whole society; the qualitative qualities of a person directly depend on the system of upbringing and education.

Summing up our arguments, we understand human capital as a certain fund of knowledge, skills, abilities, health and motivations, which are formed and maintained as a result of investments, purposefully used in any sphere of public production or in civil life, are a source of future human satisfaction and future profit, as well as a key factor of public production and economic growth.

The new paradigm of sustainable development of the social and economic system required the understanding of human resources as a means of social development, raising the standard of living, as well as the main value and goal of economic modernization.

Table 1. Formation of views on the concept of "human resources"

Foreign economists	
1	2
A.Smith	Basic capital includes tools, buildings, land, as well as "useful abilities possessed by all residents and members of society." These abilities are an integral part of a particular person and, therefore, become part of the wealth of the society in which this person lives.
G.Becker, T.Schultz	Human capital is an assessment of a person's potential earnings, abilities, knowledge, qualifications and skills of individual employees.
R.McIntyre	Human resources in a broad sense describe the skills, professional qualifications, talents and knowledge of people that are available or can be used in the production of goods and services.
Russian economist	
S.A.Kapelyushnikov	Human resources are a set of knowledge, skills and motivations possessed by each person, which constitute capital, the formation of which requires the allocation of funds at the expense of current consumption and serve as a source of labor productivity growth.
G.G.Melikyan, R.P.Kolosova	Human resources, as well as material, reflect the country's economic development. These are people who, on the one hand, produce material goods, and on the other - are recognized as their consumers.
Kazakh economists	
B.L.Tatibekov, M.K. Meldakhanova	Socio-economic aspect: Human resources are people with a high level of education, professional and entrepreneurial skills, which are considered an important strategic resource of the country. Economic aspect: Human resources are a part of the population that is available or can be used to influence the economic growth and development of the country. These include the labor resources of foreign states, the entire

	population (with the exception of disabled people of groups I and II),
A.A. Gorkopko	Human resources is a general social category that represents a set of natural, economic (production), social and political qualities of the population..
Author's definition	
Human resources are a certain level of innate, acquired and developed knowledge, skills, abilities, motivations, experience of a particular person, group of people, and society as a whole. They are purposefully used in a certain sphere of production in society, and their formation requires costs from a person, enterprise and society as a whole.	
Source: Systematized by the author based on theoretical sources.	

This is largely due to the integration and convergence of the instrumental and sociological approaches to the concept of man, which dominated global economic science in the 20th century. The theory of human resource development emerged from the synthesis of these approaches through the application of theoretical knowledge from various social sciences (Nguyen & Schuessler, 2013).

The concept of "human resources" is one of the fundamental branches of economic science. This concept is associated with solving large-scale problems of the socio-economic system. Analysis of the topic and problems of "human resources" related to the development, management, and employment of human resources is particularly relevant in the context of sustainable development. The theory of the conceptual principle of human resources assumes that the most important priority, the main subject, and the primary goal in the development of modern post-industrial society are humans.

Human resource development is a process of continuous, sustainable expansion of human capabilities, adapted to changes in the external environment. Currently, at every stage of human development, three main opportunities are recognized: free access to resources that ensure a decent standard of living; a full, healthy, and long life; and obtaining the necessary professional education throughout life. These concepts form the foundation of human resource development theory and shape the progressive social dimensions of society (Taylor, 2013).

An analysis of the concept of human resources led the author to the conclusion that this concept is aimed at improving the quality of life, ensuring the development of society and its socioeconomic self-sufficiency, as well as the internal strengths, opportunities, and abilities of the individual in implementing the social program of a market economy, including health, education, intellectual potential, labor, creativity, sociopolitical factors, and cultural and humanitarian values aimed at improving the quality of life and ensuring the socioeconomic self-sufficiency of the population. This allowed us to determine whether the indicator assessing internal and external conditions in the circle will serve as an indicator of the social process (Table 1).

Human resources, possessing a dual social and material-natural balance, have a number of advantages over material resources, which allows them to be identified as the main factor in the sustainable development of the country (Table 2).

Human resource development is based on the following fundamental principles:

-All people should have equal opportunities, therefore, it is necessary to eliminate restrictions based on gender, religion, nationality, and place of residence;

-All citizens should have the opportunity to increase their productivity, fully participate in the income-generating process, and receive fair monetary compensation for their work;

-Access to opportunities should be ensured not only for the present but also for future generations, therefore, the continuous production of all types of capital (material, human, and environmental) must be ensured in an appropriate manner;

-Development should be driven by people's own efforts. Citizens should be fully involved in the

decision-making process that affects their lives;

-The quantitative and qualitative development of human resources must correspond to the main development priorities of the state; - Human resource development should be aimed at increasing their competitiveness. That is, it is necessary to rely on international standards in the training and retraining of personnel (Rink et al., 2013)

We agree that these principles continue to expand, but the following three fundamental opportunities for citizens must remain unchanged: free access to the resources necessary to ensure a quality standard of living; the ability to live a long, healthy life free from disease; the need to obtain desired and necessary professional education throughout life.

According to the above characteristics, human resources can be classified as follows: educational resources, healthcare resources, and labor resources; social and cultural resources serve as the basis for development.

Table 2. Characteristics of Human Resources

1	It is formed by each individual and is an integral part of his personality.
2	Their formation occurs throughout life and requires certain material costs for both the individual and society as a whole.
3	The level of use and impact depends on their responsibility, demand, willingness to pay attention, high appreciation, as well as general worldview and culture.
4	Abilities, health, talents, knowledge, skills and experience are viewed as assets that require constant development and maintenance.
5	The family, the individual, the workplace, social institutions, and the state all contribute to the development of human resources, but their effectiveness depends on the strengths and development potential of the individual.
6	The quality and efficiency of human resources are becoming a key factor in economic growth, competitiveness and production efficiency.
7	Effective use of human resources has many benefits: economic, social, psychological, cultural and ideological.
8	They are subject to natural wear and tear (aging of the human body, improper development of the body, deterioration of health, death).
Source: Compiled by the author as a result of theoretical research	

The above-mentioned connection implies the development of human resources, the expansion of human choice, and the improvement of human well-being. These priorities are the fundamental concerns of every member of modern society, and their resolution depends on the following factors: income level, education level, and life expectancy at birth. As noted by Kazakh economist Yu.K. Shokamanov, people are not only the means or source of economic development, but also the goal of economic development. Consequently, the essence of the concept of human development is that economic development should serve the benefit of people.

Human resource development is considered in conjunction with the process of human development. This is due to the fact that the concept of human development also aims to ensure that all residents of our country enjoy a quality life, a decent income, education, and health, as well as environmental protection (Bouvier & Nisar, 2013).

The process of human resource development is influenced by many factors, the driving forces of which are economic and social phenomena and trends.

Due to the specific nature of this process, human resource development factors can be divided into

direct (internal) and indirect (external). Factors that directly influence human resource development and correspond to basic human needs include demographic conditions, healthcare and education, material conditions, employment, and crime rates in society. The author considers indirect or external factors to include natural, technical, economic, environmental, informational, and regional institutional conditions that facilitate the development of human capabilities and their subsequent manifestation in various life activities. The process of managing regional human resource development arises from the influence of state conditions on these factors.
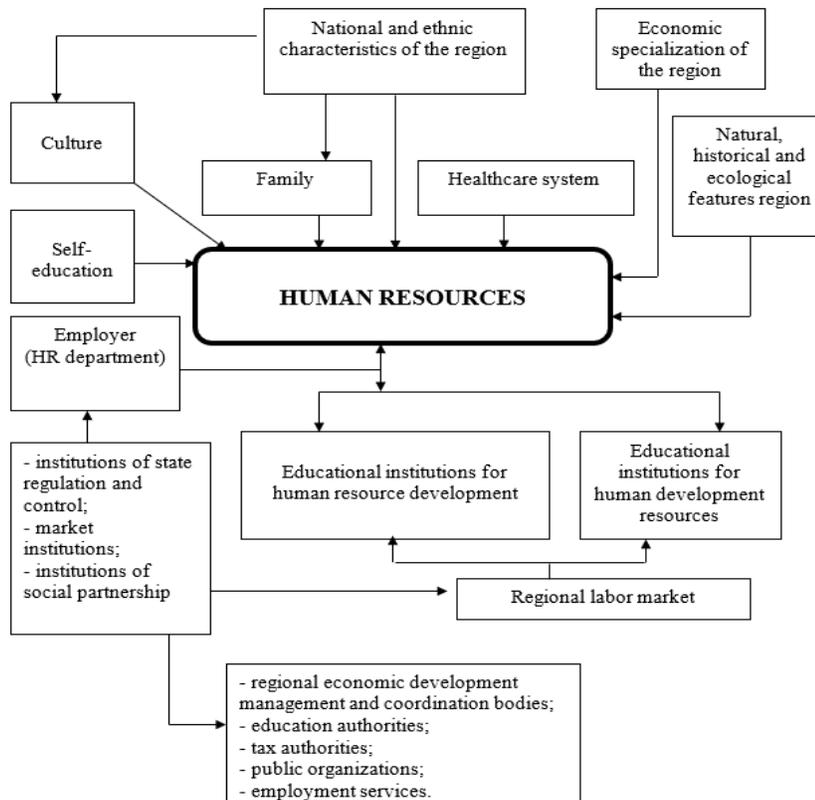

Figure 1. Conceptual model of human resource development and regional development with the participation of government institutions.
Source: Compiled by the author based on research.

Sustainable human resource development in this context is a continuous process that ensures the achievement of goals and the expansion of the range of opportunities for each individual in various fields of activity without harming the external environment and the surrounding environment, resulting in positive changes in their natural, socio-psychological, and intellectual abilities. Implementing this process requires the interaction not only of the individual but also of local governments, government agencies, and public institutions at various levels in the development of human resources (Figure 1).

Sustainable human resource management is a process of systematic and targeted influence on human resources, ensuring the improvement and preservation of accumulated potential. A prerequisite for sustainable human resource management is an accurate assessment of the state of their development (Guo et al.,2013).

2. Conclusion

An enterprise's human resources are the health, knowledge, skills, and experience of an individual used to obtain labor for its production activities. The continuous development of an enterprise's production process and human resources is linked to the development of the labor market and employee investment in their

own human capital. A region's labor force is the totality of the labor force of enterprises of all types of ownership who are actually employed and can be used in production. They possess socio-demographic, professional, and qualification characteristics. They are constantly involved in the production process, and their development depends on the socio-economic development and investment activity of the region and its enterprises.

While there is no single, practically applicable method for assessing human resource development, it is crucial that research in this area be based on a prospective assessment of the quantitative and qualitative parameters characterizing the state of human resources. Such a comprehensive assessment system allows for a comprehensive analysis of the socio-economic situation in the region, identifying challenges for further human resource development, as well as goals and methods for addressing them.

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Objective Evaluation of the Consumer Market and the Study of its Potential Advantages

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Abstract

This article analyzes the issues of objectively evaluating the consumer market and identifying its potential advantages. The main purpose of the study is to determine real opportunities for economic development through a comprehensive assessment of demand, supply, price dynamics, and consumer behavior existing in the market. The research employs economic-statistical methods, comparative analysis, and observation techniques. The findings indicate that the objective evaluation of the consumer market plays a significant role in shaping economic policy, ensuring efficient resource allocation, and strengthening the competitive environment. The article also examines the impact of market participants' potential advantages—such as innovation-oriented production, quality improvement, and enhancement of consumer satisfaction—on economic sustainability. The results show that a well-assessed consumer market not only increases the efficiency of the national economy but also stimulates the development of competitive production.

Keywords:consumer market, marketing research, market infrastructures, objective evaluation, economic potential, demand and supply, competitive advantage.

1. Introduction

Analyzing the domestic market in the Republic is essential for ensuring its effective operation. Such analysis involves a phased study of the development patterns of the domestic market arising from the influence of macro and micro environments, analysis of local production supply, product specialization, and the competitive position of the market, in order to plan and forecast market conditions in both the short and long term.

The methodology for evaluating the state and development of the consumer market has a complex structure and cannot be standardized. The main goal of a comprehensive study of the consumer market is to identify inconsistencies and unused opportunities in its development for the purpose of developing a program for its future growth. The evolution of real monetary relations in the national economy has necessitated a methodological revision of economic research on the processes occurring in the consumer market, taking into account the modern conditions and regional characteristics of its actors.

In the modern consumer market, not only categories, prices, and supply matter—factors such as sustainability, ecological aspects, and consumer social responsibility also play a significant role in evaluating the market and identifying competitive advantages (Murtaza Haider, Randall Shannon, & George P., 2022, p. 12).

Since the market for consumer goods and services is a complex social as well as economic category, its study must inevitably be carried out in a systematic and comprehensive manner (Mammadov, 2019, p.

27). Success in business primarily depends on the ability to offer a useful, demanded product, and secondly, on the ability to present it effectively to potential consumers.

Objective evaluation of market volume indicators allows determining whether a product is needed in the market, how many individuals or companies constitute its potential consumers, and to what extent they are ready, capable, and financially able to consume it.

In marketing, market volume is generally understood as the consumption of a product or service within a specific territory over a given period (usually one year), i.e., the number of purchase and sale transactions expressed in monetary terms. Depending on the objectives of marketing analysis, the features of the market and the region's economy, and the characteristics of the product, measurement can be carried out in quantitative terms.

Market volume represents a system of indicators reflecting actual, maximum possible, or existing demand for a particular format or brand, as well as the real or expected consumption of a product. It denotes the total volume of purchase and sale transactions for goods or services in a geographically limited market over a certain period (Qafarov, 2023, p. 10).

Attempts to promote goods or services that lack demand, bring no benefit, or fail to meet the needs of local residents or businesses operating in the region lead to inefficient expenditures, including advertising and marketing costs, which ultimately prove unjustified. This statement holds true for both consumer segments and the business-to-business (B2B) sector.

Comprehensive research methods for the consumer goods and services market should incorporate leading economic-mathematical approaches while including not only quantitative but also qualitative indicators. These may involve empirical studies, surveys, tests, questionnaires, segmentation, typological classification, and other complex methods. Given the complexity and systemic nature of the consumer market, it is essential that all these methods be implemented in a systematic manner (Mammadov, 2019, p. 28).

As a diagnostic process, "marketing diagnostics" is used as a tool for monitoring an enterprise's internal and external environment (Krivoruchko, 2013, p. 228).

A comprehensive diagnosis of the consumer market, analysis of processes, and forecasting are conducted based on the following principles:

the principle of a systematic approach;

the principle of a dynamic approach;

the principle of considering scientific and technological progress and structural changes;

the principle of accounting for regional characteristics.

In the process of studying the consumer market, the comprehensive evaluation of its state and development in the region is carried out in connection with socio-economic development indicators, including:

the balance between the population's monetary income and expenditures;

food security;

growth in the production of consumer goods and paid services;

satisfaction of demand, etc.

2. Market Infrastructure – Definition and Evaluation of Development Level

Market infrastructure refers to the organizational and legal forms, institutions, systems, service enterprises, and a set of specific functions that regulate the movement of goods and services, control sales transactions, and ensure the proper functioning of the market (Mustafayeva & Mammadova, 2018, p. 53).

When assessing the level of development of the consumer goods market infrastructure, indicators such as the share of services in the gross regional product, capital investments, and the number of employees are analyzed. Various methods can be used to evaluate the state and development of the consumer market: system analysis, statistical methods (balance, index, etc.), sociological research methods, factor, regression, and correlation analyses, as well as expert methods (based on the intuitive forecasting of the studied object's development by expert specialists).

Knowing the actual market size for a year or a month is not sufficient without understanding its dynamics and identifying the factors that shape it. Research becomes valuable when an investor deciding to allocate funds can identify growth points, strengths, and weaknesses in the production or sale of a product in a particular market. Therefore, market size calculation should not be limited to a single indicator—it must include a system of indicators that reflect market trends and existing opportunities.

Market size should generally be evaluated in two directions: **"actual market size"** and **"potential market size"**—that is, on the one hand, the value of products or services currently being sold, and on the other, the unrealized potential of the market (Proctor, 2002, p. 25).

The most common technique analyzes three indicators: existing, actual, and potential size. Considering the characteristics of the 21st-century information market, the four most progressive metrics—**PAM, TAM, SAM, and SOM**—are also analyzed.

Different experts and research schools use and promote various approaches and formulas, which are often determined by the characteristics of the market, the resource base of a company or marketing agency, and the marketer's knowledge and experience. Several methods are used to assess the potential of the consumer market.

2.1. Method 1: Existing, Actual, and Potential Market Size
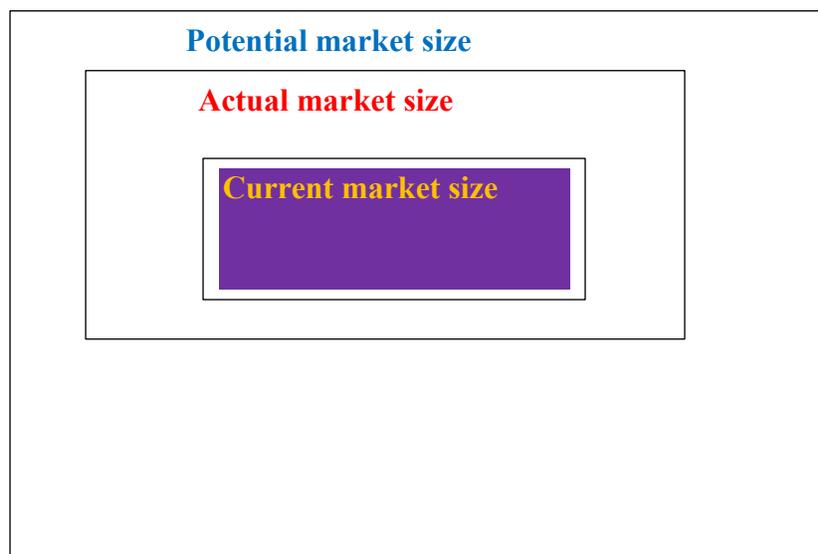
The **potential market size** represents the ultimate boundary of market expansion. It indicates the maximum possible level of demand when the consumption culture reaches its peak and additional marketing investments no longer yield results. This indicator is particularly important for equipment manufacturers

and other producers where assessing the potential demand for end products is difficult—errors here can lead to significant financial losses.

Ideally, not only startups seeking investment or credit funding but also established companies' management should rely on such data before making major strategic decisions. These data help visualize prospects and potential, guide changes in product structure, stop investing in unprofitable areas, and prevent losses from inefficient investments.

The **actual market size** represents the current effective demand or consumption of a product in monetary terms. Actual data are mainly needed for comparison; they help evaluate dynamics and determine whether the market is expanding or shrinking.

The **existing market size** is the volume of the market in which a particular company, brand, or product can compete. For making strategic decisions, it is essential not only to understand what is expected but also why it is necessary. Therefore, during research, it is crucial to determine how demand for a company's products and competitors' products will change based on strengths and weaknesses (Markus Blut, 2023, p. 24).

This indicator is important not only for evaluating market size during new product launches, entry into new markets, or establishment of new businesses, but also for implementing plans to enhance competitiveness. Such data are necessary for companies aiming to increase their market share by outperforming competitors. If a product demonstrates growth potential in a specific market, these findings justify investment in the project.

2.2. Method 2: PAM, TAM, SAM, SOM

The study of market size using the PAM, TAM, SAM, and SOM indicator system serves the same general objectives as traditional models. However, it is more often used for informal purposes, such as evaluating prospects for increasing competitiveness. Traditional indicators are frequently utilized when preparing a business plan to obtain credit.
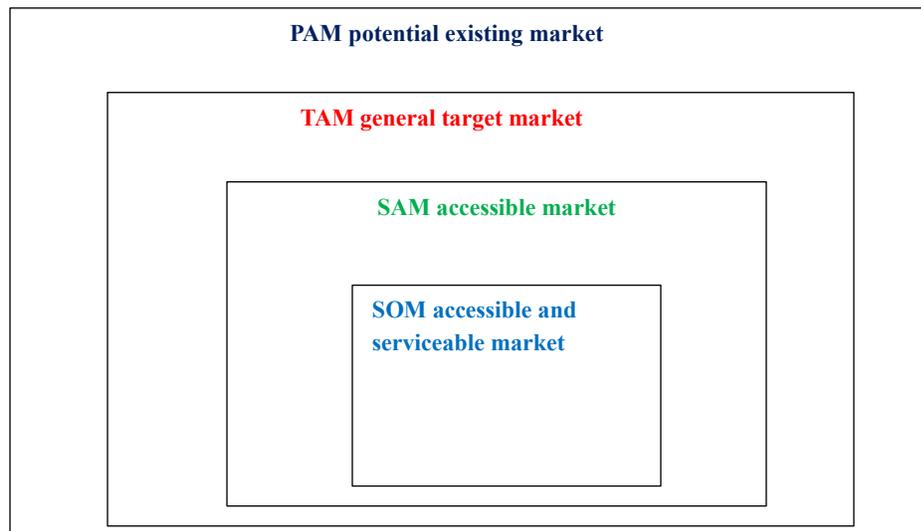
2.2.1. Potentially Accessible Market – PAM

PAM literally translates as "potentially accessible market." This indicator reflects the total market capacity without any limitations, including geographical ones. In practice, products are usually promoted gradually—

starting from regional markets, expanding to neighboring regions, and eventually covering the entire country or even entering foreign markets.

Manufacturers of consumer goods often limit themselves to regional markets, which can be justified in cases such as companies producing environmentally friendly perishable food products (Zeithaml, 2001, p. 203). In the B2B segment, especially in equipment production, this approach is rarely economically viable. Therefore, when investing in development, it is essential to assess in advance the potential of the product in foreign markets. Objective marketing data allows for long-term forecasting and helps identify market needs and demand for specific equipment capacities and functionalities.

During research, it is important to evaluate PAM over time to observe existing market trends and determine whether growth or decline is expected. The PAM indicator is particularly useful when assessing whether a product has a viable future or if a sharp market expansion (increasing demand) can be anticipated. For instance, one might ask: what are the real prospects for the global electric vehicle or energy industries? Is it worth investing in related projects, or will medium-term (10-year) demand remain low?

2.2.2.   Total Addressable Market – TAM

TAM literally translates as "total addressable market." This represents the total potential of the company's target market. Evaluating this helps determine the overall scope of growth opportunities. It includes not only the actual market volume but also potential demand—that is, both companies already purchasing products (including from competitors) and those that could become future buyers. For example, all agricultural enterprises engaged in farming require irrigation and, consequently, related equipment.

2.2.3.   Serviceable Available Market – SAM

SAM literally translates as "serviceable available market." This refers to the actual market volume—the consumer expenditures on competing and analogous products.

Although SAM, like TAM, has potential, it focuses not on the development of a market where there is enough space for everyone, but rather on cases where growth is possible through enhancing competitiveness, pushing out competitors, and reducing their market shares.

2.2.4.   Serviceable Obtainable Market – SOM

SOM literally translates as "serviceable and obtainable market." A company that possesses objective data on the market can determine this indicator independently or with the assistance of marketing consultants.

Measurement of Market Volume and Share

Each size indicator corresponds to a specific market segment.

PAM reflects the total opportunities available for product development, branding, and promotion.

TAM represents a portion of PAM—the market on which the company will concentrate its efforts.

SAM is an actual indicator, encompassing real consumption in the existing market—a subset of PAM.

SOM is the segment on which the company is currently focused. It shows the market share that the company plans to capture and maintain.

Market share indicates a company's position relative to its competitors and its level of competitiveness. It is measured as a percentage and calculated using the following formula:

2.3. Market Share and Market Capacity Assessment Methods

Market Share = (Company's Product Sales Volume ÷ Total Market Size) × 100%

Market research and objective comparison of your product with others serve as a means of finding opportunities for improving and assessing the effectiveness of marketing plans. If the market is growing but a company's share is shrinking, an increase in sales does not necessarily indicate real development. Without constant monitoring, a company may face an unexpected decline once the product boom passes. Regular observation allows identifying sales growth points, detecting weaknesses in time when long-term competitiveness is at risk, and diversifying business activities to protect capital.

Knowing market share also makes it easier to justify a company's position to investors, creditors, partners, and suppliers—or even potential buyers during a business sale. A company that owns 10% (or at least 5%) of the market is considered more stable and promising than one that remains statistically invisible and is grouped under "Others" in data reports.

Market volume research and analysis form the basis of a business plan and simultaneously provide feedback on how successfully the previous plan has been implemented. Implementing a project without obtaining objective market data carries significant risk.

Statistics show that over 75% of companies close within their first year because they misjudge product demand (SOM). Entrepreneurs often fail to realize that poor demand estimation is not limited to overoptimistic expectations and overproduction—it primarily involves inefficient allocation and expenditure of financial resources.

Since market capacity calculations are always variable, results may differ depending on the methods and formulas used. It must be noted that there are no universal methods for calculating market capacity because each market is unique.

According to Gryaznova (2015, p. 34), the market capacity for certain product types is characterized by the production volume of that product or group of goods within a specific territory and time period.

1. Estimating Market Capacity Based on Production Volume
   To determine market capacity, the leading producers and their production levels are analyzed. For instance, a sample analysis can be conducted on major producers that manufacture similar products in large quantities. For this method, the shares of large, medium, and small producers are calculated as percentages, and each ratio is multiplied by a sample coefficient within its category.

Example:

- Large enterprises: 10% share × coefficient 6

- Medium enterprises: 5% share × coefficient 2

- Small enterprises: 0.01% share × coefficient 1
  Market capacity = 70.01% (10% × 6 + 5% × 2 + 0.01% × 1)

2.Estimating Market Capacity Based on Consumption and Expenditure Rates
This method relies on existing consumption levels and is more suitable for determining potential market capacity. It is based on per capita consumption of a product, measured over a specific period (e.g., monthly), and the number of consumers using the product.

Example:

If the per capita consumption of a product is 20 kilograms per month and there are 500 consumers, the total market capacity will be:

20 × 12 × 500 = 120,000 kilograms.

3.Estimating Market Capacity Based on Sales Volume

This method involves analyzing the total sales volume of products across all trading companies. At least 80% of organizations in the sector should participate in this analysis, excluding warehouse stocks and unrealized inventory.

Market capacity is then calculated by dividing the total sales volume over the studied period by the number of months and multiplying by 12.

Example:

If the total sales volume in a studied region over two years is 562.6 million AZN, then the annual market capacity will be: 562.6 × 12 / 24 = 281.3 million AZN.

2.4. Market Capacity Assessment Based on Nomenclature, Price, and Advertising Evaluation

This method is based on comparing the total nomenclature of all market participants with the sales volume of one's own enterprise. The same comparative approach applies to pricing and advertising. The result will be more accurate if the comparison range is consistent.

Market Potential (Market Potential) — representing the possible upper limit of demand in the market — is an essential advantage that determines enterprises' growth opportunities and profitability (Kotler, 2003, p. 68).

According to this approach, the potential advantages of the consumer market may include:

- Opportunity for new development areas — when the market is not yet saturated and additional sales potential exists.

- Profitability and growth prospects — if the market has potential, companies can achieve higher income and expand their market share.

- Competitive advantage — a company that accurately assesses market potential can enter ahead of competitors, capture market share, and strengthen its position.

- Strategic and decision-making rationality — analyzing market potential enables efficient resource allocation and risk reduction.

The identification of the consumer market's potential advantages is one of the main directions of economic theory and marketing science. This concept aims to uncover the growth, profitability, and competitiveness potential of the market through analysis of its current state and development prospects.

Direction	Content
Demand Potential	Existing and expected purchasing power, consumer trends
Innovation Potential	Open segments for new products and services
Competitive Potential	Opportunities for differentiation and market advantage
Economic Potential	Probability of sales growth, profitability, and export capacity
Social and Environmental Factors	Advantages in sustainable consumption and social responsibility

The methods used to identify consumer market potential advantages are among the main tools of economic analysis, marketing, and consumer behavior research:

1. Analytical and Diagnostic Methods:

- SWOT Analysis (Strengths, Weaknesses, Opportunities, Threats): Identifies the market's strengths and weaknesses, as well as opportunities and threats. It helps reveal potential advantages. "SWOT analysis is the simplest and most effective tool for understanding market potential and a firm's market position." (Kotler, 2003, p. 101)

2. Statistical and Econometric Methods:

- Trend Analysis: Examines changes in sales, production, import-export, and income over the years to identify whether the consumer market is expanding or contracting. "Potential advantages of the consumer market can be revealed only through forecasts based on past dynamics." (Samuelson & Nordhaus, 2009, p. 221)

- Correlation-Regression Analysis: Determines the relationship between variables such as consumption level, income, price, production volume, and population to identify which factors create market advantages.

3. Marketing Research Methods:

- Survey and Interview Techniques: Analyze consumer preferences, satisfaction, and purchasing motivations to reveal which factors are prioritized — indicating hidden market advantages.

4. Competitive Analysis Methods:

- Porter's Five Forces Model: Evaluates five factors (competition, suppliers, buyers, new entrants, substitute products) to determine market attractiveness and potential advantages. This analysis identifies the directions of market growth and competitiveness.

5. Innovation and Value-Oriented Methods:

- Value-Based Analysis: Evaluates the value (functional, emotional, social) perceived by consumers. This method reveals the emotional and social advantages of the market.

6. Integrated Approach (Combined Methods):

The potential advantages of the consumer market are usually identified through a combination of methods:

- Statistical Analysis → Market reality
- Surveys and Focus Groups → Consumer behavior
- SWOT and Porter Analyses → Competition and opportunities
- Innovation and Value Analysis → Social and emotional advantages.

The consumer market is a complex economic category; therefore, its assessment must always account for the economic and integrative processes of the past, present, and future. Market capacity is not static — it is constantly evolving. New competitors enter, while others exit. Demand for products and services fluctuates. Market participants must be prepared for these changes.

For sustainable development of the consumer market, it is necessary to improve inventory management methods, create an efficient distribution system, and expand infrastructure to ensure that the diverse consumption needs of the population — particularly for locally produced goods and services — are fully met.

Facilitating market development requires significant investment, additional technical assistance, and coordinated multilateral efforts. In our opinion, all these recommendations will form a solid foundation for developing and implementing a comprehensive state program aimed at the formation and advancement of the consumer market.

3.Conclusion

The research presented in this article demonstrates that an objective assessment of the consumer market is a key prerequisite for accurately identifying market development prospects and the competitive capabilities of enterprises. The combination of analytical, statistical, and marketing methods enables a comprehensive evaluation of the actual state of the market, consumer demand, purchasing power, and the competitive environment.

The market's potential advantages reflect its growth and profit opportunities, open segments for new products and services, and possibilities for achieving competitive advantage. SWOT analysis, trend and forecast analysis, surveys and focus group studies, Porter's Five Forces model, and value-based analysis constitute the primary methods for effectively assessing market potential.

In conclusion, the accurate identification of the consumer market's potential advantages provides enterprises with a foundation for making strategic decisions, ensuring efficient allocation of resources, and achieving competitive advantage. This, in turn, creates favorable conditions for market participants to operate successfully in both the short and long term.

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Artificial Intelligence as the Basis of a Marketing Strategy

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Abstract

This article is aimed at studying the application of artificial intelligence technology in the theory of marketing communications. The paper considers the theoretical and practical aspects of the use of artificial intelligence. Using the example, the effectiveness of the technology is considered, and the main advantages and disadvantages of using this tool in brand promotion are identified.

Keywords: intelligence, system, marketing, strategy, technology

1. İntroduction

We live in an era when much of the information about ourselves and the world around us (including its commercial component) is digitized. This data is collected by the websites where we make purchases, the services we use, banks, fitness clubs, medical centers, etc.

Definitions of artificial intelligence vary depending on the goals that they are trying to achieve with it.:

– creation of systems that simulate human thinking (general, strong or broad AI). In this case, the result can be used not only to create systems that work in several areas, but also to explain how the human brain works.;

– development of systems designed to solve specific tasks in a chosen field (weak or narrow AI). Such systems, as a rule, cannot work in other areas. For example, IBM's Deep Blue system can beat a human in chess, but it cannot be used in other games.

2. Using Human Reasoning as a Guide to Provide Quality Services or Create Quality Products.

The goal is not to accurately copy the work of the human mind. So, the creators of IBM Watson were guided by the observation that people can come to conclusions without having hard and fast rules, and then collect evidence. As a result, IBM Watson justifies its decisions by reviewing thousands of text fragments (Lee & Chen, 2021, pp. 130–138)

Traditionally, AI technologies are considered as a set of technologies, processes, software systems, and algorithms, characterized in that they allow solving certain tasks in the same way as a human does. Thus, in the National Strategy for the Development of Artificial Intelligence for the period up to 2030, artificial intelligence technologies include computer vision technologies, natural language processing, speech recognition and synthesis, intelligent decision support, and promising artificial intelligence methods (Mitchell, 2019, pp. 50–65).

The accelerated development of artificial intelligence technologies in recent years has been driven by the following factors:

– a high degree of influence on the effectiveness of organizations and people, including those related to managerial decision-making;

– increased availability of computing resources for the development of technological solutions based on artificial intelligence;

– the growing need to process large amounts of data generated by both humans and technical devices.

3. The Actual Topic of Today's is Artificial Intelligence

The use of artificial intelligence (AI) in marketing and advertising is one of the most relevant topics at present, as technological innovations are already leading to changes in the field of business. This technology is used to collect and analyze large amounts of data, which helps to make more informed decisions and improve efficiency in various aspects of product or service promotion. Thus, according to a Dentons study, as of 2024, artificial intelligence is actively used by 30% and tested by 78% of large and medium-sized businesses around the world. In order to understand what tasks AI can solve, it is necessary to refer to its technology.

AI technology is the creation of computer systems that can perform tasks that require intellectual abilities that are usually associated with the human mind. It includes:

1.Machine learning: A computer technology that studies data and trains itself to process new information.

2.Neural networks: systems that are built by analogy with the brains of living beings, simulating networks of neurons.

3.Natural language processing: Systems that allow a computer to analyze, understand, and generate natural language using context, grammar, and semantics.

4.Computer vision: systems that allow a computer to analyze and process images and videos.

5.Robotics: intelligent control systems for robots and automated processes.

Nowadays, AI is increasingly being used by companies to attract new customers en masse. Examples of the use of artificial intelligence in marketing are the collection, analysis and interpretation of large amounts of information about audience behavior, as well as the use of information about previously purchased products or services to create personalized advertising based on the interests of a particular consumer. Using AI to process data allows marketing specialists to quickly identify trends in the industry, understand what is working and what is not effective enough.

One of the most common examples of the use of AI in marketing is chatbots, which are used to automate customer service. Most companies hire employees to process user requests, but this requires high costs to pay such specialists. Chatbots, in turn, can answer frequently asked questions, suggest appropriate solutions, communicate in real time, help consumers place an order, and offer suitable products or services.

In addition, artificial intelligence can also be used to develop advertising campaigns. By scanning a large amount of data on the effectiveness of advertising, AI is able to determine the best strategies that can lead to maximum results.

By scanning a large amount of data on the effectiveness of advertising, AI is able to determine the best strategies that can lead to maximum results. An example, in this case, is the Lexus automobile concern, which was one of the first to use this method in its promotion strategy. The company has used machine

learning technologies to analyze car ads over the past 15 years, which have been awarded prestigious international awards. (Harari, 2022, pp.70-77)

In turn, the AI was taught the concepts of emotional impact on the viewer, the creation of spectacular shots, the basics of consumer feedback and the impact on the perception of information. The main task was to write an emotional script based on which, later, a commercial was shot. Thus, speaking about the advantages of AI, we can single out the following:

— Optimization of the advertising budget. By using artificial intelligence in their marketing strategy, advertisers can reduce advertising costs by eliminating inefficient distribution channels or automating communication processes with the audience.

— More precise targeting settings. So, thanks to the use of machine learning tools, you can more accurately configure the parameters for targeted advertising: age, interests, geography. (Tegmark, 2018, pp.25-43)

- Increase the conversion rate. Thanks to more precise targeting settings and increased prediction accuracy, artificial intelligence can help increase the conversion rate of advertising campaigns.

But with all the advantages, using this technology, you need to keep in mind its imperfections and the risks that follow from this, for example: Imperfection of algorithms. AI can make mistakes in its work that can lead to incorrect conclusions or recommendations.

-Automatic dissemination of prejudice. Algorithms can spread prejudice if they use data that contains stereotypes or discrimination. (Bostrom, 2014, pp.33-34)

-Automatic replies in chatbots. When chatbots use only automatic responses, this can lead to users encountering unwanted responses and not getting the help they need. In addition, automated responses may be inadequate in a number of situations, which may also negatively affect the company.

-Privacy issue. The use of AI in marketing can lead to the collection of a lot of data about consumers, which can violate the confidentiality of their personal information.

-Problems with personalization. If AI is used incorrectly, then the personalization of advertising offers may be incorrect and not meet the needs of users. This can lead to a loss of trust on the part of customers and their outflow.

-Public opinion. Advertising banners that are created with the help of AI and monitor the user seem annoying and intrusive to many people. This can lead to a negative attitude towards the company and reduce the effectiveness of the advertising campaign.

-Using too much information. This may make it impossible for users to cope with information overload.This can cause them to become irritated and have a negative attitude towards advertising.

Some measures that can help reduce these risks:

-Learning algorithms. Continuous training of AI can help it avoid mistakes and understand the nuances of a particular business. (Kurzweil, 2005, pp.90-99)

-Compliance with regulatory standards. Companies must follow the regulatory standards and laws that govern the use of customers' personal information.

-Verification and testing of algorithms. Companies should conduct rigorous checks and testing of algorithms before using them in business.

-Creation of ethical standards. Companies should develop ethical standards that deter them from using AI for undesirable purposes.

-Work with the public. Companies need to do a better job of explaining how their AI is being used to prevent it from feeling opaque or misunderstood.

4. Future AI Trends In Marketing Strategy

The application of artificial intelligence in marketing continues to expand and will go further in the future. However, some trends are also emerging that could further accelerate the development of SI. Let's take a look at some potential future trends:

Micro-moments and customer experience: micro-moments represent small but critical moments that customers decide directly. By analyzing these moments, artificial intelligence allows customers to present the right message at the moment and place they need it. For example, when a customer searches for a specific product, he may be presented with special discount offers or product recommendations in real time. (Kotler et al., 2022 p.823)

Video and visual content created by artificial intelligence: artificial intelligence is able to create not only texts, but also image and video content. Brands will start using tools that will automatically generate videos for their advertising or social media campaigns. For example, there are already AI algorithms for video editing or applying special effects.

Emotion analytics and analysis of customer reactions: artificial intelligence also offers tools that allow you to analyze the emotional reactions of customers. This can help brands further customize the customer experience. For example, by having a deeper understanding of how videos, ads, or social media posts are perceived by customers, more emotionally engaging content can be created in the future (https://en.wikipedia.org/wiki/Artificial_intelligence)

Personal digital assistants: brands can start providing personal digital assistants to deepen the relationship with customers. These assistants will provide solutions tailored to the client's needs, send personal suggestions, and may even answer certain questions. Artificial intelligence can make these assistants smarter and closer to the client.(https://cloud.google.com/learn/what-is-artificial-intelligence)

Website and application optimization: artificial intelligence can perform optimizations on sites and applications by analyzing how users behave on websites and applications. For example, a better user experience can be provided by tracking what the customer clicks on the site and which pages they spend more time on. (https://az.wikipedia.org/wiki/Marketinq)

Social influencers marketing: artificial intelligence allows a more accurate analysis of the activity of social media influencers and the behavior of their followers. Also, brands can better select their target audience using these reviews and develop effective campaigns. Artificial intelligence will facilitate the analysis and selection of influencers.

5. Conclusion

Improving hyper-targeting and advertising: artificial intelligence can more accurately analyze target audiences and display ads that match them. This ensures that the advertising budget is spent more efficiently. For example, it is possible to present more personalized ads based on the customer's age, interests, past purchases and social behavior. (https://www.ibm.com/think/topics/artificial-intelligence)

As a result, I would like to inform that trends like these will make marketing more accurate, more effective, and more customer-oriented in the future. The introduction of artificial intelligence into marketing will allow companies to move faster in the market and build deeper relationships with customers.

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