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*Solosich O. S., Ocheretiana O. V.***FEATURES OF BUILDING INTELLECTUALIZED ECONOMIC SYSTEMS IN THE
PARADIGM OF SUSTAINABLE DEVELOPMENT: FUNCTIONAL ASPECT****National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute”, Kyiv, Ukraine**

The growth of sustainable development and intellectualization in business is leading to an increase in conflicts within economic systems that require coordination and integration. This article outlines the crucial steps for implementing intellectualization processes to achieve sustainable development. A system comprising interconnected functional aspects has been established. The principles for integrating the intellectual economy with sustainable development within enterprise activities have been determined by examining their fundamental differences. As the key functional aspects of the analytical study, the technical and technological (covers the technological aspects of building a sustainable production and technical environment of the enterprise), personnel (determines the features of an intellectualized approach to personnel management on the basis of sustainability), financial (characterizes the features of cash management based on an intellectualized approach), informational (determines the key characteristics of the functioning of the intellectual approach and sustainable development in the modern information field), political and legal (covers the issues of the normative and legal dimension of the functioning of enterprises and their respective positioning to the problems of intellectualization and sustainability), marketing (characterizes the conjunctural aspects of sustainable intellectualized development of economic structures) and ecological aspects (explains the place of the ecological component of sustainable development in the system of intellectualized development of the enterprise). This article holds practical significance for enterprises striving to strike a balance between efficaciously executing intellectualization processes and ensuring steadfast sustainable growth, as they seek pertinent actionable insights. The scientific novelty of the article lies in the conceptual integration of the basic provisions of the sustainable development theory and economic security of the enterprise with thorough detailing of the relevant provisions in terms of business entities functional components.

Keywords: intellectualization, intellectual economy, sustainable development, sustainability, enterprise, sustainable development of the enterprise.

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Introduction and formulation of the problem

One essential characteristic of any economic system's functioning is the active developmental processes and its evolutionary transformation. This is influenced by system-forming factors from the conjunctural environment. Such influences are evident in scientific and technical advancements, shifts in the

foundational value models of social systems, political and legal transformations, and natural and ecological phenomena. Currently, we observe a paradigm shift in the trajectory of economic systems' progressive development towards post-industrial socio-economic models. These models position the intangible component, encapsulated in the concept of intelligence

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– and its resulting assets like information, knowledge, creative resources, and technologies – as the primary resource for intensifying the development of economic entities. This move away from traditional industrial economic practices towards post-industrial models has laid the groundwork for the emergence of the intellectual economy and intellectualization, concepts that define this forward-thinking economic structure.

As Yu. O. Ereshko aptly points out in her scientific work, the intellectual economy, as a system, is defined by the mediated entropy of technology and intellectual-technological transformations of productive forces. These transformations in conjunction with exchange and commodity-monetary relations constitute a new sixth technical-technological structure of the initial neo-industrial era [1].

At the same time, alongside the aforementioned transformation processes regarding approaches to ensuring progressive economic growth, there was a shift in the value foundation underlying such processes. This shifted the primary focus from purely economic motives (such as profit growth, added value, productivity, and the like) to the external impacts of economic actors on the social and ecological environment in which they operate. This change was driven by increasing internal contradictions within economic systems. In their pursuit to maximize productivity metrics, these systems inadvertently exacerbated existing structural imbalances. This, in turn, became a source of adverse social phenomena and an accelerating degradation of the natural and ecological environment.

Given these considerations, to address the fundamental challenges of economic growth, the concept of sustainable development was formulated. It aims to harmonize the economic, social, and ecological dimensions of economic systems, ensuring their synergistic collaboration. Consequently, a prevailing area of academic inquiry within economic research revolves around the challenge of amalgamating the conceptual tenets of sustainable development theory with the distinctive characteristics of the intellectual economy. These are manifested in the dynamic processes of intellectualization, all with the objective of fostering sustainable economic growth through an intellectualized approach to structuring economic relations, all the while adhering to the core principles of sustainability.

Analysis and research of publications

A dominant focus of contemporary academic discourse within the economic sciences concerns sustainable development. This encompasses the establishment of foundational theoretical and

methodological principles of this concept, examination of potential incentives for enacting sustainable development principles both at macro and micro levels, and devising tools to facilitate the execution of these processes within managerial structures, among other aspects. Such scientists as O. Amosha, O. Bilous, V. Bogolyubov, S. Voytko, Yu. Matseyko, L. Melnyk, O. Osaulenko, O. Pinyaga, N. Skorobogatova, M. Fomina, M. Khvesyuk, L. Shostak, and O. Shubravska have made significant contributions to establishing fundamental frameworks for economic research on sustainable development within the domestic scholarly realm. Concurrently, there's a vibrant academic interest in the formation of the intellectual economy, especially in understanding its prerequisites, primary characteristics, pinpointing its fundamental elements, tools for propelling intellectualization processes, and adopting methodological approaches for evaluation. In this context, it's worth highlighting the notable contributions to the theoretical and methodological foundations of intellectualization and the intellectual economy made by economists such as O. Bodaretska, N. Gavkalova, A. Galchynskyi, O. Grishanova, B. Dergalyuk, Yu. Yereshko, B. Kvasnyuk, A. Kolot, V. Korzhenko, I. Lunina, L. Meltser, V. Prokhorova, V. Seminozhenko, S. Tulchynska, and A. Chuhno.

While there exists a robust theoretical foundation for research in the identification of fundamental principles and applied tools for managing intellectualization processes and ensuring the sustainable development of entrepreneurial entities, there remains a notable gap in the theoretical exploration of the seamless integration of intellectualized and sustainable approaches for economic structure development. Additionally, there is a lack of comprehensive functional detailing concerning the key facets of synergistic interactions between these approaches at a micro-level.

Purpose of the article

The objective of this article is to systematize the primary functional aspects of business structure intellectualization, bearing in mind the imperative of supporting their sustainable development. This is achieved by integrating the foundational concepts of both sustainable development theory and the intellectual economy.

Presentation of the main material

One universally accepted criterion for systematizing the characteristics of economic entities' functioning is the functional criterion. This criterion mandates an initial decomposition of the primary activity areas of a particular business entity based on

pertinent thematic directions. These directions are unified by a shared goal, objectives, and overarching target orientation. This unification facilitates the analysis of both quantitative and qualitative effects of specific factors on the performance metrics of such subsystems. Therefore, within the scope of this study, to fully examine the operations of intellectualized economic systems and their intrinsic link with sustainable development, a sequential analysis of the primary functional elements and their direct ties to sustainable operations is proposed. Technical-technological, personnel, financial, informational, political-legal, marketing, and environmental facets are identified as the core functional aspects of intellectualized economic systems. Each of these will be explored in subsequent sections.

The technical and technological aspect addresses the challenge of constructing an optimal configuration for the endogenous parameters governing the functioning of a company's production infrastructure. This is evident in the quantitative and qualitative attributes of the structure, the makeup of production assets, the types of primary resource needs for production, internal manufacturing logistics, the properties of the end products, and the chosen strategies for devising product assortment policies, among other considerations.

In analyzing the primary directions for implementing an intellectualized approach in managing the technical and technological aspects of a business structure, several key points stand out. Firstly, there's a proactive push towards modernizing with the inclusion of innovative organizational and specific technological advancements in the production process. This seeks to bolster essential components of the economic cycle, notably the contemporary lean production techniques such as kanban, kaizen, 5S, and six sigma [2, p. 65]. Secondly, there are steps to technologically diversify production assets. The goal here is to offer flexibility in the production system, especially during unforeseen events like supply chain disruptions, operational mishaps, or atypical demands for certain products. Thirdly, there's a commitment to continuous improvement, actively involving numerous company staff in these processes and encouraging their proactive participation. Fourthly, there's a forward-thinking strategy in implementing control measures, emphasizing transparent documentation and accurate recording of production outcomes. Fifthly, a process-centric approach is adopted to oversee current production flows. Sixthly, the assortment policy is made adaptable to ensure that the metrics guiding the company's production

plans are analytically sound. This helps in avoiding issues like overstocking and the consequent increase in storage costs. Finally, there's an emphasis on establishing standardized procedures and clear job directives related to the company's production strategy. This is gradually synchronized with international benchmarks for production quality and the overarching management system.

The aforementioned facets of the intellectualized approach to managing the technical and technological elements of a business structure are seamlessly aligned with the core principles of the sustainable development theory within this functional domain. Specifically, this encompasses the adoption of lean and zero-waste production methodologies, advocacy for reduced energy consumption in the production system, monitoring the quality of final products and the provenance of their resource components, ensuring safe work environments, and upholding inclusivity both in the workplace and in the products produced.

The personnel aspect is reflected in the approaches taken to manage the human resources of a business entity. This involves, on one side, the tangible components, such as the remuneration system, monitoring of work discipline, and productivity metrics. On the other side, it encompasses intangible elements like the internal psycho-emotional atmosphere, the mental well-being of employees, and the nuances of interpersonal interactions among team members.

In the realm of human resource management in enterprises, several key directions emerge when implementing an intellectualized approach. First and foremost, there's an emphasis on ensuring the fairness and transparency of the remuneration system, which stands as a foundational motivational factor for the staff. This is closely followed by the endeavor to craft an internal corporate culture. Such an effort involves building a resilient system of values, which not only pinpoints the desired personal attributes of employees but also sets the fundamental principles that guide professional conduct. In this framework, there's also a pronounced effort to create an environment that both nurtures the individual creative potential of employees and actively wards off negative psychological experiences at a personal level, such as depressive disorders, professional burnout, and apathy. The recruitment strategy, too, leans towards progressiveness, aiming at drawing individuals into the enterprise who exhibit high professional competence and possess invaluable personal attributes. Concurrently, measures are in place to combat adverse interpersonal dynamics within the workforce, addressing challenges like mobbing, bullying, harassment, and any form of

discrimination. Effective conflict management is also a priority, with the establishment of organizational mediation tools tailored to resolve disputes among employees. These disputes could stem from both professional interactions and personal disagreements. To further bolster the collaborative spirit, initiatives that promote the synergistic interaction of individual professional potentials are championed, such as organizing collective cultural and recreational events, often known as team-building exercises. Finally, the intellectualized approach also underscores the importance of continuous education. This is evident in the promotion of professional skill enhancement and the broadening of the general cultural, erudition, and perspective horizons of the business staff. Such educational endeavors often come with provisions granting access to a plethora of knowledge resources, ranging from online courses and informational platforms to subscriptions to scholarly publications.

The manifestations of the intellectualized approach, as previously described, can be harmonized with several features inherent in the execution of personnel policy grounded in sustainable development principles. These include the adoption of a proactive social responsibility policy, an inclusive stance that allows the realization of individual professional potential irrespective of physical or mental distinctions, and a balanced gender approach. The latter not only addresses issues broadly but specifically seeks to close the “salary gap” that persists between genders. Additionally, these integrated features emphasize fostering effective communication among personnel across all hierarchical tiers, instilling progressive corporate ethics with associated behavioral norms, and ensuring that employees are well-informed and educated on matters related to sustainable development.

The financial aspect represents a pivotal functional domain in managing a business entity. It encompasses matters related to cash flow, cost management, and the upkeep of appropriate liquidity levels, solvency, and profitability. The overarching objective is to streamline and optimize the prevailing financial relationships within the enterprise.

Intellectualization processes are pivotal when aiming to enhance the financial resource management system of an organization. Notably, a meticulous cost audit is essential for pinpointing opportunities to refine the current cost structure by amplifying specific component business processes. Additionally, there’s the incorporation of financial strategizing for the enterprise, employing a scenario-based approach. This entails a definitive identification of criteria for the emergence of a given scenario and the subsequent

course of action the business entity would take [3, p. 607]. Furthermore, there’s a drive to establish reserve funds, serving as a financial bedrock to stabilize the company’s fiscal health during potential upheavals in the external business environment. This is accompanied by guidelines on fund replenishment and conditions for mobilizing these resources. The strategies also emphasize refining the methods of managing receivables by instituting preventive financial mechanisms in contract settings, such as fines and interest. It’s also crucial to harmonize and optimize the structure of the company’s assets in alignment with its operational scope and existing financial capability. Another facet is the enrichment of the current accounting and analytical arsenal with contemporary financial flow management methodologies. Lastly, prioritizing intellectual advancement stands out as a primary direction for allocating surplus funds.

In this functional domain, it’s recommended to augment the established features of the intellectualized management of a company’s financial resources with tools derived from the sustainable development theory. Specifically, this involves conducting a financial audit of unrealized gains stemming from non-adherence to fundamental sustainability principles, identifying the proportion of revenue allocated to socially responsible endeavors, and introducing the concept of sustainable finance. This concept is centered on forging sustainable value – encompassing economic, environmental, and social dimensions – in the long run, whether concurrently or based on the preferences of investors and chosen strategies [4, p. 215].

In the information aspect, contemporary conditions of post-industrial evolution within globalized economic systems emphasize the primacy of addressing management issues related to the informatization of business structures. Typically, this is viewed from two fundamental perspectives: the technical – which involves the adoption of digital technologies and their integration into production and administrative procedures – and security, focusing on countering prevailing information threats and challenges.

In the modern enterprise’s information policy formation, the processes of intellectualization hold significant importance. These processes not only enhance but also set the direction for pertinent innovative actions. Such actions encompass active digitization of processes, both within the prevailing production system and the administrative apparatus, and the incorporation of electronic document management and resource accounting systems. Additionally, efforts are made to diminish the digital divide, evident in the disparate digital proficiencies

among the company's personnel. Cultivating an information hygiene culture is vital as a primary preventive measure against threats arising from the “human factor”. The establishment and ongoing refinement of the enterprise's virtual information protection infrastructure are also pivotal [5, p. 57]. The deployment of comprehensive enterprise management information systems is essential, enabling the digitization of primary functional management aspects and enhancing the efficacy of control and accounting procedures. Over time, production and organizational operations with limited intellectual intensity are phased out, replaced by their digital counterparts, effectively leading to digital debureaucratization. Active surveillance of the external information environment is crucial to preempt potential PR assaults, cyber-terrorist activities, and other illicit competitive endeavors. Safeguarding the physical integrity of information carriers and the enterprise's information infrastructure hardware elements, like server rooms, becomes imperative. Lastly, the utilization and incremental technical integration of artificial intelligence technologies into existing software products and administrative processes are pursued.

In forming the information policy of entrepreneurial education, the conceptual tenets of sustainable development theory also come into play. Specifically, there's an emphasis on reducing paper consumption by leveraging robust digital counterparts, ensuring transparency in the management process, and utilizing resource-efficient software [6, p. 143].

The political and legal aspect of management activity in a microeconomic system entails ensuring the legality of adopted management principles and associated industrial and commercial actions. Simultaneously, it encompasses the internal regulatory framework that guides distinct functional domains of the entrepreneurial entity, as well as the embraced approaches to contract the enterprise's economic transactions with external environment actors.

Within the framework of the pertinent regulatory and legal dimensions, intellectualization processes manifest as follows: (1) the regulation of internal norms related to the organizational structure of the enterprise, established approaches to executing accounting policies, the hierarchy and frequency of information access, and detailing procedures for utilizing and handling commercially sensitive and official information; (2) a reassessment of current job directives to ensure their clarity, precision, and standardized formats; (3) the adoption of legal protections against breaches of contractual terms by partners, and orchestrating and regulating

corresponding punitive actions within devised contracts; (4) continual monitoring of legislative undertakings in areas pertinent to the enterprise's main operations and swift reactions to relevant amendments; (5) exploring avenues to bolster the communication between the enterprise and local and national governing bodies, and initiating public-private partnership ventures at the community level.

The concept of sustainable development holds significant relevance in the political and legal dimension. This can be seen in the adoption of contemporary forms of non-financial reporting, serving as an indicator of an enterprise's heightened social responsibility. Additionally, incorporating the principles of sustainable development into the internal regulatory framework of the business entity, and exploring avenues for realizing legal and economic advantages from applying the core principles of sustainable development, is crucial [7]. Furthermore, it's vital to underscore the importance of enhancing communication between the enterprise and local governmental structures. This comes in light of intensifying state regional policies that lean towards the application of smart specialization principles, pivotal for the sustainable development of both regions and businesses [8].

Marketing aspect. This managerial facet encompasses activities aimed at crafting an optimal communication system between enterprise management and its external environment. This ensures that decisions made align with prevailing economic trends. Such activities manifest through strategies involving segmentation, positioning, branding, promotion, distribution, and more.

Presently, marketing and its associated activities are undergoing profound changes due to dynamic processes of intellectualization. Key attributes of these processes include: ensuring flexibility and adaptability in pricing, alongside continuous monitoring of price elasticity shifts for primary product groups; streamlining the distribution channels within the sales system; incorporating contemporary digital marketing tools into product promotion and analytics; leveraging big data analysis techniques to gain deeper insights into the current economic environment and genuine consumer needs; routinely assessing the financial robustness of main resource suppliers; adopting a comprehensive strategy when selecting product promotion methods, such as integrating traditional, digital, and neuromarketing tactics; engaging consumers actively in the product promotion process; and fostering creativity in marketing, which serves as a wellspring for unique ideas and alternative innovative solutions.

In modern marketing practices, the integration of sustainability principles is of paramount importance. This can be characterized by adopting responsible marketing, which emphasizes ethics, honesty, and adherence to the principles of fair competition. It's also about merging promotional activities with corporate social responsibility and building value metrics for the business structure's interface component. Furthermore, it's essential to monitor the origins and quality attributes of resources to ensure they align with sustainability principles and to guarantee the inclusivity of consumer goods consumption.

The ecological aspect encompasses management actions within an economic entity aimed at harmonizing both direct and indirect impacts of the enterprise's operations on the environment. The vigorous intellectualization of economic relations has facilitated the advancement of a technical foundation for introducing ecological innovations. This ensures that specific tools are available for integrating environmental considerations into the organization's primary business processes, irrespective of its size or field of operation.

We suggest identifying the following key characteristics of such processes: (1) undertaking a comprehensive environmental audit of the enterprise's activities, focusing on primary technical-technological and organizational-administrative business processes to assess the extent of negative environmental impacts and the prospects for their mitigation; (2) exploring avenues for ecologically modernizing existing production equipment to decrease toxic emissions and ensure resource and cost efficiency; (3) promoting environmental awareness and culture among the enterprise's personnel, emphasizing the significance of such measures to management; (4) adopting technologies for waste processing, utilization, recycling, and sorting [9, p. 85]; (5) enhancing the environmental friendliness of employees' workplaces; (6) verifying the environmental compatibility of the main attributes of the final product, as well as of the input production resources; (7) bolstering communication between the company's management and its employees regarding the prevailing environmental policy and ensuring transparency in the outcomes of the company's environmental initiatives; (8) designing and producing new eco-friendly products, establishing infrastructure for their manufacture, and developing alternatives using renewable energy sources [10, p. 28].

It's worth noting that this functional facet of intellectualization processes aligns entirely with the principles of the theory of sustainable development. Additionally, the significance of the social dimension

in executing environmental measures should be underscored. At the entrepreneurial entity level, this can manifest in the initiation of distinct environmental projects, intertwining them with socially responsible practices, such as campaigns for landscaping, beautification, and territory clean-ups.

In conclusion, a functional analysis of how conceptual approaches to building intellectualized economic systems align with the core principles of sustainable development highlights the significance of using a systemic approach. This approach should holistically address both the functional facets of intellectualization as a primary goal and the constraints and possibilities presented by sustainable development. Ultimately, this will aid in enhancing the overall economic condition of the entrepreneurial entity.

Conclusions

From the research conducted, we systematized the primary functional characteristics of the intellectualized development processes in micro-level economic systems, side by side with processes ensuring their sustainable growth. These characteristics were identified across various domains: technical-technological, personnel, financial, informational, political-legal, marketing, and environmental aspects. The core principles of both sustainable development theory and intellectualization in economic systems have been integrated based on this functional analysis. A valuable avenue for future research on this topic would be to design a mechanism that combines the management of intellectualization and sustainable development processes. Furthermore, it would be insightful to assess the feasibility of implementing such a mechanism in domestic enterprises, especially under martial law conditions.

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ОСОБЛИВОСТІ ПОБУДОВИ ІНТЕЛЕКТУАЛІЗОВАНИХ ЕКОНОМІЧНИХ СИСТЕМ В ПАРАДИГМІ СТАЛОГО РОЗВИТКУ: ФУНКЦІОНАЛЬНИЙ АСПЕКТ

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В умовах піднесення концепції сталого розвитку та інтелектуалізації підходів в підприємницькій діяльності простежується загострення протиріч в функціонуванні економічних систем, що потребують узгодження та інтегрування. У статті упорядковано ключові функціональні аспекти реалізації процесів інтелектуалізації в розрізі забезпечення сталого розвитку. Побудовано систему взаємозв'язку визначених функціональних аспектів. На основі фундаментальних відмінностей інтелектуальної економіки та теорії сталого розвитку визначено принципи інтеграції даних процесів в площині діяльності підприємства. У статті змодельовано процеси інтегрування на основі першества інтелектуалізації та першества сталого розвитку. У якості ключових функціональних аспектів аналітичного дослідження було обрано техніко-технологічний (охоплює технологічні аспекти побудови сталого виробничо-технічного середовища підприємства), кадровий (визначає особливості інтелектуалізованого підходу до управління персоналом на засадах сталості), фінансовий (характеризує особливості управління грошовим забезпеченням на базі інтелектуалізованого підходу), інформаційний (детермінує ключові характеристики функціонування інтелектуального підходу та сталого розвитку в сучасному інформаційному полі), політико-правовий (охоплює проблематику нормативно-правового виміру функціонування підприємств та їх відповідного позиціонування до проблем інтелектуалізації та сталості), маркетинговий (характеризує кон'юнктурні аспекти сталого інтелектуалізованого розвитку господарських структур) та екологічний аспекти (пояснює місце екологічної компоненти сталого розвитку в системі інтелектуалізованого розвитку підприємства). Стаття має практичне значення для підприємств, що намагаються досягти збалансованості між ефективною реалізацією процесів інтелектуалізації та забезпеченням сталого розвитку і потребують відповідних прикладних рекомендацій.

Ключові слова: інтелектуалізація, інтелектуальна економіка, сталий розвиток, сталість, підприємство, сталий розвиток підприємства.

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The growth of sustainable development and intellectualization in business is leading to an increase in conflicts within economic systems that require coordination and integration. This article outlines the crucial steps for implementing intellectualization processes to achieve sustainable development. A system comprising interconnected functional aspects has been established. The principles for integrating the intellectual economy with sustainable development within enterprise activities have been determined by examining their fundamental differences. As the key functional aspects of the analytical study, the technical and technological (covers the technological aspects of building a sustainable production and technical environment of the enterprise), personnel (determines the features of an intellectualized approach to personnel management on the basis of sustainability), financial (characterizes the features of cash management based on an intellectualized approach), informational (determines the key characteristics of the functioning of the intellectual approach and sustainable development in the modern information field), political and legal (covers the issues of the normative and legal dimension of the functioning of enterprises and their respective positioning to the problems of intellectualization and sustainability), marketing (characterizes the conjunctural aspects of sustainable intellectualized development of economic structures) and ecological aspects (explains the place of the ecological component of sustainable development in the system of intellectualized development of the enterprise). This article holds practical significance for enterprises striving to strike a balance between efficaciously executing intellectualization processes and ensuring steadfast sustainable growth, as they seek pertinent actionable insights. The scientific novelty of the article lies in the conceptual integration of the basic provisions of the sustainable development theory and economic security of the enterprise with thorough detailing of the relevant provisions in terms of business entities functional components.

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