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IMPLEMENTATION OF STRATEGIES AND METHODS FOR THE SUSTAINABLE DEVELOPMENT OF SMEs IN THE REPUBLIC OF MOLDOVA

SPECIALTY 521.03 — ECONOMICS AND MANAGEMENT IN THE FIELD OF ACTIVITY

Abstract of the Doctoral Thesis in Economics

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The doctoral thesis and the abstract may be consulted at the USPEE "C. Stere" Library and on the ANACEC website (www.anacec.md).

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CONCEPTUAL FRAMEWORK OF THE RESEARCH

Relevance and importance of the topic. The contemporary context of societal and entrepreneurial development is characterized by the intensification of economic, social, environmental and managerial problems at the global level. Small and medium-sized enterprises (SMEs) constitute an essential part of the real economy, directly contributing to job creation, value added generation and social stability. For this reason, sustainable development is becoming a managerial necessity for every entrepreneurial structure, rather than merely a general orientation of state policy.

In the Republic of Moldova, the relevance of the topic is determined by the significant role of the SME sector in the national economy: according to the data of the National Bureau of Statistics [3] for 2024, SMEs accounted for 99,2% of the total number of reporting enterprises, employed 65,5% of the average payroll number of employees and generated 46,1% of the total sales revenues of the national economy. The status of a candidate country for accession to the European Union requires the Republic of Moldova to gradually align with European standards in the fields of sustainable development, economic governance and sustainability reporting, while ESG requirements and the effects of the CSRD extend compliance pressure to SMEs cooperating with large EU companies as well.

Degree of scientific investigation of the problem. The theoretical foundations of strategic planning were developed through the contributions of I. Ansoff [2], M. Porter [20], H. Mintzberg [16] and J. Quinn [21], while the subsequent development of management theory was influenced by the concepts of hypercompetition, core competencies, dynamic capabilities and corporate social responsibility. In the Republic of Moldova, this subject has been addressed by N. Burlacu, V. Cojocaru, V. Ioniță, L. Bugaian, A. Stratan, A. Solcan, I. Călugăreanu, A. Chirtoacă, S. Portărescu [19], M. Popescu [18], A. Slivca and others. Nevertheless, the national literature has not yet proposed a sufficiently integrated approach to the application of formal strategic planning and sustainable development methods in the SME sector, particularly through combining economic, social, environmental and managerial dimensions with quantitative assessments. In addition, the issue of correlating microeconomic assessments of the strategic behavior of SMEs with macroeconomic indicators of national sustainability remains insufficiently developed.

The important scientific problem solved consists in the methodological substantiation of the implementation of sustainable development strategies and methods within SMEs in the Republic of Moldova through the development and integration of tools for assessing sustainable strategic management, quantitative indicators and a managerial mechanism adapted to ESG requirements and the conditions of the national economy. The proposed approach makes it possible to overcome the fragmented nature of existing approaches and ensures a methodological link among the microeconomic level of the enterprise, the sectoral level of SMEs and the macroeconomic level of sustainable development of the Republic of Moldova, with the European integration process constituting the external institutional context of the research.

Research field, object and subject. The research field is the strategic management of sustainable development of small and medium-sized enterprises. The object of the research is the SME sector of the Republic of Moldova, while the subject of the research includes the strategies, methods, indicators and managerial mechanisms intended for the sustainable development of SMEs.

The purpose of the research is to substantiate and develop methodological provisions and a managerial mechanism intended for assessing and implementing sustainable development strategies and methods within SMEs in the Republic of Moldova.

Research objectives: analysis of the trends and particularities of contemporary entrepreneurship development; systemic analysis of the theory of sustainable strategic planning in relation to the formation of competitive advantages of SMEs; clarification and extension of the conceptual apparatus of strategic planning theory and sustainable development, with applicability to the SME sector; analysis of international experience in SME sustainable development; substantiation of the characteristics of the strategy for organizing SME sustainable development; development of the concept of strategic planning under the transition to preventive and adaptive management systems; investigation of the particularities of the strategic planning process and the orientation of SMEs in the Republic of Moldova toward sustainable development; specification of methodological principles for modeling and implementing strategic planning; substantiation of the methodological approach to assessing the effectiveness of sustainable strategic management; development of a system of sustainable development indicators for entrepreneurial structures, including through the use of ANS and HDI indicators; development of a methodology for implementing ESG strategies, including the development of the integral indicator of sustainable development efficiency and the managerial mechanism for ESG implementation.

Research hypotheses. H1: the sustainable development of SMEs can be interpreted as a set of economic, social, environmental and managerial subsystems that are simultaneously influenced by the internal and external entrepreneurial environment. H2: sustainable development strategies and methods can constitute essential instruments for aligning the management of SMEs in the Republic of Moldova with the standards and practices of the European Union. H3: the mechanism for implementing sustainable development strategies and methods, including ESG strategies, can contribute to increasing the sustainability of SMEs and amplifying their impact on the evolution of national sustainable development indicators.

Research methodology. The study applied methods such as systemic and comparative analysis, sociological survey, interview, confirmatory factor analysis, structural equation modeling (SEM), the morphological method and economic-mathematical modeling.

Scientific novelty and originality of the research consist in the development of an integrated methodological approach to implementing SME sustainable development strategies and methods by correlating strategic planning, adaptive and preventive management, sustainability indicators and ESG mechanisms. The main elements of novelty are:

1. Specification of the specific characteristics of small and medium-sized enterprises and their operating environment in the Republic of Moldova.
2. Development of the integral indicator of the quality of sustainable development strategic planning (K_{ps}^{int}), which enables the transition from descriptive strategy assessment to quantitative diagnosis based on financial and non-financial parameters.
3. Assessment of the level of management competencies of SMEs in the Republic of Moldova in the field of sustainable strategic planning, which made it possible to identify a low level of resource provision for strategic planning (2,1 out of 5) and to substantiate the significant influence of these competencies on enterprises' orientation toward sustainable development ($\beta = 0{,}225$; $p < 0{,}01$).

4. Substantiation of a typology of approaches to strategic management of sustainable development, with a transition from linear models to preventive and adaptive models.
5. Extension of the strategic planning concept through the integration of the principles of preventive and adaptive management, the hierarchical approach (four levels: global, macro, meso and micro) and the role of stakeholders.
6. Development of a value-network model for the formation and implementation of an SME sustainable development strategy, consisting of four elements — integration of the enterprise into partnership chains, application of the holacratic approach, systematic cooperation with stakeholders and personnel motivation through KPIs — which makes it possible to treat strategy not as an isolated internal document, but as a process of coordinating the resources and interests of actors in the enterprise's external network.
7. Assessment of the Adjusted Net Savings (ANS) indicator for the Republic of Moldova and substantiation of its use together with the Human Development Index (HDI).
8. Development of aggregation formulas (7 and 9), which correlate microeconomic assessments of SME strategies with the directions of formation of national sustainability indicators.
9. Development of the integral indicator of sustainable development efficiency (IED) for the quantitative assessment of the ESG component of the strategy and of the managerial mechanism for ESG implementation, adapted to the resource availability of SMEs in the Republic of Moldova.

The theoretical significance of the research consists in the development of the theory of sustainable strategic management of SMEs by extending the conceptual and methodological apparatus of strategic planning in relation to sustainable development, as well as by substantiating the link between the microeconomic level of enterprise strategy, the sectoral level of SMEs and the macroeconomic level of national sustainability indicators.

The practical value of the research lies in the fact that the developed toolkit can be used by: managers of small and medium-sized enterprises to diagnose the quality of their own strategy, identify weak areas and substantiate development priorities; public authorities — to assess the state of the SME sector and develop support programs; consulting and educational organizations — as a methodological basis for working with SMEs; financing institutions — as an additional criterion for assessing the strategic maturity of an enterprise. The applicability of the methodology was validated through practical calculations at two enterprises in the Republic of Moldova, which belong to different sectors and perform distinct functions within the research: SRL "Diplomat Club" (service sector) — comprehensive practical application of the entire developed toolkit; SRL "Coherent Solutions" (information technology sector) — cross-sectoral verification of the applicability of the methodology.

Approval and implementation of the scientific results. The research results were presented and discussed at national and international scientific conferences, while the main provisions of the thesis are reflected in 11 scientific works published individually and in co-authorship: 5 articles in scientific journals — including 4 in journals from the National Register of specialized journals (category B) and 1 in a foreign journal — 5 articles in proceedings of scientific conferences and 1 abstract of a scientific communication. Three of the publications appeared in foreign editions (Romania, Croatia, Greece). The results were implemented in the activity of two SMEs in the Republic of Moldova, as confirmed by 2 implementation certificates and 2 certificates concerning

the registration of copyright and related-rights objects (OȘ series No. 8143 and No. 8144 of 25.02.2025).

Keywords: sustainable development, SMEs, strategic management, strategic planning, preventive and adaptive management, hierarchical approach, morphological method, value-network model, K_{ps}^{int}, IED, ESG, ANS, HDI, efficiency assessment, entrepreneurial sustainability.

THESIS CONTENT

The thesis is structured as follows: introduction, three chapters, general conclusions and recommendations, bibliography and 9 appendices.

The general logic of the study is as follows: Chapter 1 answers the question of what sustainable development of small and medium-sized enterprises represents and how it can be assessed conceptually; Chapter 2 establishes the conditions and factors that actually shape the strategic orientation of enterprises toward sustainable development; Chapter 3 develops specific tools for its measurement and practical implementation.

The study uses the following author-developed and adopted indicators:

- **K_{ps}^{int}** — the integral indicator of strategic planning quality (developed by the author). It combines heterogeneous financial and non-financial parameters of the enterprise strategy into a single dimensionless value ranging from 0 to 1, enabling a quantitative assessment of the degree of balance and elaboration of the strategy.
- **IED** — the integral indicator of sustainable development efficiency (developed by the author). It is constructed according to the same logic as K_{ps}^{int}, but is applied specifically to the ESG component of the strategy.
- **ESG (Environmental, Social and Governance)** — an internationally recognized system of criteria for responsible business conduct: environmental responsibility, social responsibility and the quality of corporate governance.
- **ANS (Adjusted Net Savings)** — a World Bank macroeconomic indicator that reflects whether a country is increasing its aggregate capital, taking into account savings, education expenditure, depletion of natural resources and environmental damage.
- **HDI** — the UN Human Development Index, which complements the assessment of sustainability with the social dimension: standard of living, education and life expectancy.

CHAPTER 1. THEORETICAL FOUNDATIONS FOR FORMING AN SME SUSTAINABLE DEVELOPMENT STRATEGY UNDER CONTEMPORARY CONDITIONS

The first chapter contains the theoretical and methodological substantiation of the research. Section §1.1 examines theoretical approaches to the sustainable development of SMEs. Section §1.2 analyzes international experience in SME sustainable development. Section §1.3 moves from theory and international experience to the author's own assessment model and sustainable development strategy at enterprise level. Thus, Chapter 1 creates the basis for the empirical and methodological analysis in the subsequent chapters.

§1.1. Theoretical and methodological approaches to organizing the sustainable development of small and medium-sized enterprises

The study traces the evolution of the sustainable development concept: in the 1970s, the idea of development without destroying the environment and the concept of eco-development emerged; in 1987, the report "Our Common Future" [5] established the classical understanding of sustainable development; in the 1990s–2000s, sustainability began to be viewed not only as an environmental category, but also as a socio-economic one; and in 2015 the UN 2030 Agenda established sustainable development as a global framework for states, business and society.

On this basis, the three classical dimensions of sustainability were analyzed. The economic dimension concerns the rational use of resources, financial stability and long-term growth. The social dimension includes employment, ensuring optimal working conditions, human capital development and social responsibility. The environmental dimension is associated with reducing the negative impact on the environment, energy efficiency and resource management. However, for SMEs these three traditional dimensions are insufficient: the enterprise's managerial capacity to effectively coordinate and integrate these directions must also be taken into account.

The obstacles to sustainable development of SMEs in the Republic of Moldova were diagnosed using the "problem tree" method, which made it possible to divide them into two distinct categories: external constraints, which form an unfavorable entrepreneurial climate — the tax burden, administrative barriers, unfair competition, the high cost of financing, as well as instability and frequent legislative changes; internal constraints, which are predominantly managerial in nature — an insufficiently clear organizational structure, limited financial and investment resources, weak formalization of business processes and an underdeveloped strategic planning system.

The key conclusion of this section is that a significant part of the difficulties traditionally attributed to the external environment actually reflects internal managerial deficiencies. Therefore, sustainable development of SMEs cannot be ensured exclusively through external support measures — transformation of the enterprise's internal management is required. This fact justifies the need for the tools developed in the subsequent chapters of the thesis.

§1.2. International experience in the sustainable development of small and medium-sized entrepreneurship

Following the conceptual clarification in §1.1 regarding the dimensions of sustainable development and the internal/external obstacles faced by SMEs in the Republic of Moldova, a natural question arises: how have other countries managed to integrate sustainability into SME practice and which elements of this experience can be adopted or adapted to the national context?

The analysis of international experience does not aim at mechanically copying solutions, but at selecting elements adaptable to the conditions of the Republic of Moldova. This assessment is carried out along four main directions: SME classification criteria at the international level; the role of SMEs in national and global economies; existing gaps in innovation, digitalization and the green economy; and comparison of the sustainable development models specific to the EU, the USA and Japan.

SME classification criteria are of strategic importance because access to support programs, financing and development instruments depends on them. The EU uses a

unified approach [13]: up to 249 employees and turnover of up to EUR 50 million. By contrast, in the USA and Japan the approach is predominantly sectoral. The Republic of Moldova has aligned with EU standards in terms of the number of employees, but the financial thresholds are considerably lower, reflecting the lower level of capitalization of the domestic SME sector.

In all developed economies, SMEs represent a fundamental pillar of the market: in the EU they account for 99,8% of all enterprises, in the USA — 99,9%, in Japan — 99,7%, and in Moldova — 99,2%. At the same time, a significant gap in innovation and digitalization was identified [17]: in Germany up to 56% of SMEs implement innovations, in Switzerland about 47%, in Japan about 41%, while in Moldova — only about 5%. A similar gap exists with regard to the circular economy: the EU average is about 47% compared with approximately 12% in Moldova [10; 12; 26].

A comparison of three international models of SME sustainable development was carried out (Table 1):

Table 1 — Comparison of international models of SME sustainable development

Model	Key mechanism	Main instrument
European (EU)	Harmonization and institutional coherence	EU programs, CSRD, financial guarantees
American (USA)	Market flexibility, entrepreneurship	SBA programs, venture capital
Japanese	Long-term sectoral coordination	Keiretsu networks, technology transfer

Source: developed by the author based on [12; 17; 26]

For the Republic of Moldova, the key problem is the major gap between formal alignment with EU standards and the actual capacity of SMEs to absorb and use instruments specific to sustainable development.

The European model is considered the most relevant for the Republic of Moldova — not for direct copying, but because the country is already in the process of European integration, the national SME classification is close to the European one, and EU sustainability requirements exert an increasingly strong influence through exports, partnerships and supply chains.

Based on this analysis, the following strategic priorities were established for the SME sector in the Republic of Moldova: green transition and implementation of circular-economy principles; digital modernization of SMEs and technologization of economic processes; active integration into European value-creation chains; development of innovative financing and credit-guarantee mechanisms; practical implementation of ESG criteria at enterprise level and of the circular economy.

§1.3. Substantiation of the SME sustainable development strategy under contemporary conditions

The first two sections defined the concept of sustainable development and the manner in which it is ensured at the international level. This section answers a fundamental question: how can a particular small or medium-sized enterprise manage its own sustainability and rigorously measure the result achieved?

The classical sustainable development triad (economy — society — environment) describes the content of the process, but does not answer the question of who and how ensures the coherence of these three directions within the enterprise. Therefore, a fourth dimension — the organizational-managerial dimension — was substantiated at enterprise level; it includes strategic planning, resource coordination, adaptation to environmental changes and control over the achievement of objectives. It performs the role of an internal mechanism that activates the other three dimensions, and its presence distinguishes an enterprise that actually manages sustainable development from one that merely declares the corresponding objectives.

Quantitative assessment of an enterprise's position requires a tool capable of reducing heterogeneous parameters to a single value. The logic of the Balanced Scorecard (BSC) model was used as the methodological basis, but adapted to the objectives of the research: the classical BSC perspectives do not distinguish the social and environmental directions as independent pillars; therefore, the principle of balanced weighting was retained, while the content of the perspectives was reoriented toward the four dimensions of sustainable development.

The result of the adaptation is the author's formula for assessing enterprise sustainable development:

$$I_{DD} = I_{f\text{-}e} \cdot q1 + I_{o\text{-}m} \cdot q2 + I_{soc} \cdot q3 + I_{eco} \cdot q4 \quad (1)$$

where I_{DD} — the integral indicator of enterprise sustainable development; $I_{f\text{-}e}$, $I_{o\text{-}m}$, I_{soc}, I_{eco} — the partial indicators of the financial-economic, organizational-managerial, social and environmental components; q1–q4 — their weighting coefficients ($\Sigma q = 1$).

Each of the four partial indicators is calculated as an aggregate indicator based on the corresponding KPIs. The composition of indicators for each dimension is presented in Table 2:

Table 2 — Model for the integrated assessment of the level of SME sustainable development

Financial-economic sustainability ($I_{f\text{-}e}$)	**Organizational-managerial sustainability ($I_{o\text{-}m}$)**	**Social sustainability (I_{soc})**	**Environmental sustainability (I_{eco})**
Liquidity; solvency; provision with own funds; payment capacity; net profit; revenues; volume of manufactured output; production costs	Management performance; break-even point	Personnel layoffs; payroll fund; incentive payments; staff turnover; occupational injuries	Emissions; energy consumption; waste; recycling share; intensity of natural-resource use

Source: developed by the author

The weighting coefficients were established at q1 = 0,27, q2 = 0,07, q3 = 0,33 and q4 = 0,33, based on three methodological principles substantiated in the thesis: predominance of the dimensions expressing the direct outcomes of sustainable development (their cumulative weight — 0,93); avoidance of the dominance of exclusively financial-economic criteria, with equal weights assigned to the social and environmental components; and the cross-cutting and instrumental nature of the organizational-managerial dimension, whose effects are partially reflected in the

indicators of the other three components, which justifies its lower direct weight (q2 = 0,07).

The resulting IDD value is interpreted according to the following scale: from 0 to 0,40 — low level of sustainable development; from 0,41 to 0,70 — medium level; from 0,71 to 1 — high level.

The quantitative assessment highlights the current situation but does not explain its causes or indicate the direction of action. For this purpose, SWOT analysis is applied, adapted to the specifics of SMEs in the Republic of Moldova: strengths include flexibility and proximity to the customer; weaknesses — limited resources, low innovation activity and weak formalization of planning; opportunities are associated with European integration, digitalization and the green transition; threats — economic instability, intensifying competition, increasing partner requirements, energy and geopolitical instability, as well as migration of skilled labor.

Assessment and diagnosis acquire practical meaning only when transformed into a logical sequence of managerial actions. Therefore, the sustainable development strategy is translated into a closed managerial cycle consisting of four stages: diagnosis of the current state (calculation of the initial IDD value), setting objectives (determining the target value), implementation of planned measures, and monitoring with adjustment. The closed nature of the cycle is essential: monitoring does not end the process, but forms the feedback loop for a new diagnosis.

All the elements examined are integrated into a unified conceptual model of enterprise sustainable development management (Fig. 1), structured on three levels: input conditions (external and internal environment), the management process (SWOT diagnosis → the four dimensions → calculation of the integral IDD indicator → strategy formation and implementation), and the feedback circuit.

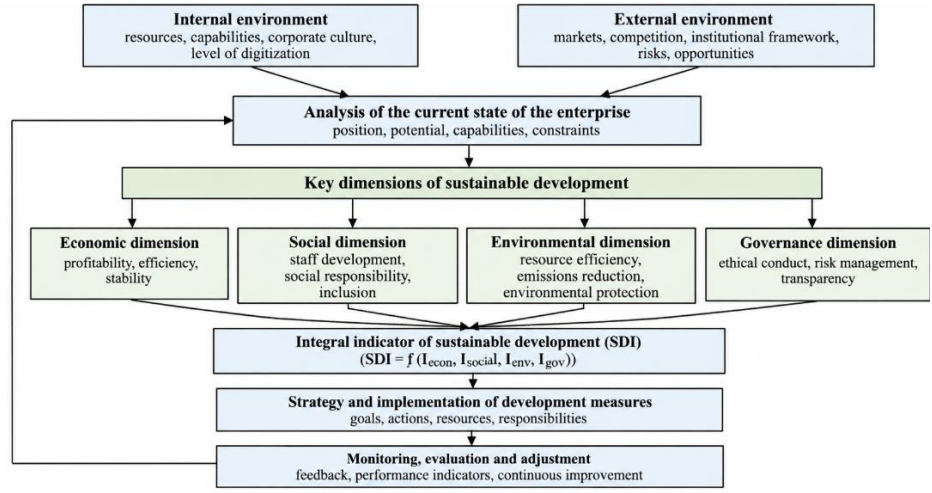

Fig. 1 — Conceptual model of enterprise sustainable development

Source: developed by the author

This model constitutes the methodological foundation of the entire study: on its basis, the K_{ps}^{int} and IED indicators are constructed in Chapter 3, while Formula 1 is structurally correlated with ESG — the environmental component (I_{eco}) corresponds to the Environmental dimension, the social component (I_{soc}) — to Social, and the organizational-managerial component (I_{o-m}) — to Governance.

The results of Chapter 1 conceptually substantiate Research Hypothesis 1: the sustainable development of SMEs should be interpreted as a set of economic, social, environmental and organizational-managerial subsystems simultaneously influenced by the internal and external entrepreneurial environment. On this basis, the author's own model for assessing enterprise sustainable development was developed through Formula 1.

CHAPTER 2. RESEARCH ON THE LEVEL OF STRATEGIC ORIENTATION OF SMEs TOWARD SUSTAINABLE DEVELOPMENT IN THE REPUBLIC OF MOLDOVA

Chapter 2 marks the transition from the theoretical foundation to the study of the actual conditions shaping the strategic orientation of SMEs. Section §2.1 examines the concept of strategic planning for SME sustainable development. Section §2.2 presents the empirical research and tests the influencing factors. Section §2.3 shows how strategic orientation can be transformed into practical implementation — through processes, models and network interaction. Thus, Chapter 2 correlates the theoretical foundations with the actual practice of SME activity and functioning in the Republic of Moldova.

§2.1. The concept of strategic planning for SME sustainable development in the context of the transition to preventive and adaptive management systems: the hierarchical approach

After developing the model at enterprise level, it becomes necessary to define the multidimensional system within which the enterprise operates. Strategic planning for SME sustainable development is examined as a four-level system (Fig. 2): micro level (enterprise), meso level (regions, economic sectors and clusters), macro level (the state, legislative framework) and global level (ESG criteria, European requirements), with vertical, horizontal and feedback links.

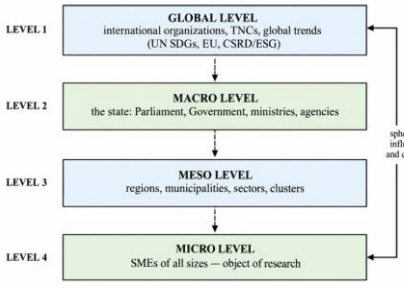

Fig. 2 — Hierarchy of levels of strategic planning for SME sustainable development

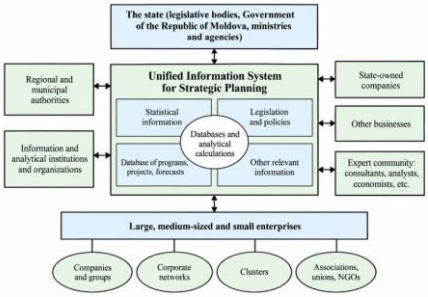

Fig. 3 — Participants in the Unified Information System for Strategic Planning (SUIPS) and its structure

Source: developed by the author

Under the conditions of the Republic of Moldova, the state plays a determining role in shaping the rules, infrastructure and programs on which the transition of SMEs toward sustainable development depends. At the same time, the study emphasizes the gap between the formal institutional structure and its actual efficiency: for SMEs, not only the existence of institutions matters, but also the accessibility and clarity of support mechanisms. Even where support programs exist, SMEs frequently face the problem of information fragmentation: data on legislation, financing, statistics, forecasts and programs are located in different sources, making it difficult both for enterprises to build strategies and for the state to control program implementation.

To address this problem, the creation of SUIPS — the Unified Information System for the Strategic Planning Process (Fig. 3) — is proposed as a single access point to the information required for sustainable SME planning. The system brings together seven categories of stakeholders (the state, local authorities, state-owned companies, enterprises, the expert community, information-analytical institutions and civil society), with each participant simultaneously acting as a provider and beneficiary of information.

Four main information blocks are distinguished within the system: the legislative and regulatory framework; statistical information; programs, projects and forecasts; other relevant information. The functioning of the system is based on the principles of transparency, reliability, accessibility, completeness, a single access point, prompt updating and financial sustainability.

Implementation of SUIPS generates differentiated effects depending on the category of participants: for SMEs — easier access to programs, statistical data, forecasts and methodological support; for the state — improved quality of the strategic planning and control process; for regions — ensuring the correlation of local programs with national priorities; for society — greater transparency of governance; for international partners — creation of a transparent basis for assessing progress. SUIPS does not replace strategic planning, but constitutes the information infrastructure for its implementation.

Under conditions of instability, the study substantiates the need to move from classical forecasting to foresight. Preventive management involves early identification of risks, while adaptive management implies the ability to rapidly reconfigure actions in response to environmental changes.

Morphological analysis [29] is used for the practical configuration of strategy alternatives. The essence of this method consists in decomposing the strategy into groups of factors, for each of which a set of possible alternatives is determined, while the specific strategy is formed as a combination of selected alternatives. The generalized matrix of factors influencing the strategic activity of SMEs in the Republic of Moldova is presented in Table 3:

Table 3 — Matrix of factors influencing the strategic activity of SMEs in the Republic of Moldova

Factor group	Alternative 1	Alternative 2	Alternative 3	…	Alternative n
Objectives	O_1	O_2	O_3	…	O_n
Sources of financing	F_1	F_2	F_3	…	F_n
Product consumers	C_1	C_2	C_3	…	C_n
Products	P_1	P_2	P_3	…	P_n

Type of production	Tp_1	Tp_2	Tp_3	…	Tp_n
Organizational structure	So_1	So_2	So_3	…	So_n
Organizational-legal form	Fj_1	Fj_2	Fj_3	…	Fj_n
Partners and co-executors	S_1	S_2	S_3	…	S_n
Organization personnel	M_1	M_2	M_3	…	M_n
Efficiency indicators	E_1	E_2	E_3	…	E_n
Infrastructure	I_1	I_2	I_3	…	I_n
Form of production organization	Fo_1	Fo_2	Fo_3	…	Fo_n

Source: developed by the author

Each group of factors is decomposed into specific alternatives that configure the space of possible strategic decisions for SMEs. Thus, the objectives include: sustainable development, profit growth, increased financing volume, expansion of the product range, growth of the share of innovative products, expansion of the domestic sales market, penetration of foreign markets, increase in the number of customers, growth of labor productivity and reduction of production costs; the financing sources include: the state budget, the private sector, entrepreneurship development funds, foreign business partners, retained profit and mixed financing.

The practical importance of the method lies in the fact that, depending on the enterprise's specific objective, fundamentally different combinations of factors are generated: a strategy aimed at increasing profitability will be based on a different set of alternatives than an innovation-development strategy or a strategy for entering foreign markets.

§2.2. Research on the particularities of the strategic planning process and the formation of the strategic orientation of SMEs toward sustainable development in the Republic of Moldova

The conceptual framework established in §2.1 is empirically validated by answering the question: which factors actually influence the strategic orientation of SMEs toward sustainable development? The territorial fragmentation of the Republic of Moldova is taken into account, with 898 local economies identified that differ in specialization, demand, resources, infrastructure and level of entrepreneurial activity — demonstrating the insufficiency of a universal strategy applicable to all enterprises and the need to adapt strategy to local economic conditions.

Because corporate social responsibility often risks remaining purely declarative and disconnected from measurable results, a methodological transition to the concept of "strategic orientation of entrepreneurial structures toward sustainable development" is proposed. This concept reflects the enterprise's actual, assumed and quantifiable long-term behavior.

Once the object of assessment has been defined, it becomes necessary to establish the factors under whose influence this orientation is formed.

According to the international literature, orientation toward sustainable development is formed under the influence of two types of factors: external — stakeholder pressure, and internal — characteristics of the organization itself. Among internal factors, J. Galbraith identifies two principal ones: formal strategic planning and a corporate culture

based on humanistic values. These two internal factors formed the basis of the author's research model.

Analysis of the specialized literature demonstrated that the conceptual links between internal organizational factors (strategic planning and corporate culture) and responsible business behavior have been subjected to empirical validation extremely rarely — both in the Republic of Moldova and internationally. Traditionally, emphasis has been placed on the content of the activity itself, to the detriment of studying the internal factors that determine it. This methodological gap shaped the concept of the empirical part of the research, focused on adapting Galbraith's model to the national context and testing these correlations on the basis of real data.

On this basis, an integrated conceptual model was developed, structured around five basic constructs: external stakeholders (pressure from the state, society and customers); strategic planning competencies (management's ability to analyze the environment, formulate objectives and apply analytical techniques); humanization of organizational culture (the degree to which culture is people-oriented, according to R. Cooke's typology); SME orientation toward sustainable development (the degree of integration of sustainability principles into strategic decisions); and satisfaction with results (management's assessment of financial and non-financial results).

The first three constructs represent determinants of orientation toward sustainable development, which in turn influences the perception of operating results; six hypotheses (H1–H6) were formulated to test these interdependencies. Not only the assumed positive relationships are validated, but also the absence of a direct short-term effect, which does not constitute a refutation, but a result compatible with the formulated theoretical hypothesis.

The empirical basis of the research is a survey of managers of 50 SMEs in the Republic of Moldova conducted during 2023–2024. Data were collected using a structured questionnaire and processed through structural equation modeling (SEM). This approach enables simultaneous assessment of the entire system of interdependencies among variables, where the β coefficient indicates the strength of the influence of one variable on another — the higher the β value, the stronger the influence. Given the sample size (N = 50), structural equation modeling was applied for exploratory purposes, with the results expressing trends and directions of relationships among the constructs rather than a definitive statistical confirmation of the model.

The primary results reveal that the strongest pressure toward sustainable development is exerted by the state, followed by public organizations and customers; SMEs are more oriented toward analysis of the external environment than the internal environment; financial resources play a determining role, while resources for strategic planning are assessed as insignificant; the overall orientation toward sustainable development is at a medium level — 2,99 out of 5 — indicating that, at present, sustainable development is shaped more by external requirements than by internal managerial maturity.

The results of testing the six hypotheses are summarized in Table 4:

Table 4 — Results of testing the hypotheses concerning SME orientation toward sustainable development

Hypothesis	Tested relationship	β	Status
H1	External stakeholders → orientation toward sustainable development	0,326***	Confirmed
H3	Humanization of organizational culture → orientation toward sustainable development	0,312**	Confirmed
H2	Strategic planning competencies → orientation toward sustainable development	0,225**	Confirmed
H5	Strategic planning competencies → satisfaction	0,263*	Confirmed
H4	Orientation toward sustainable development → satisfaction (relationship predicted as non-significant)	0,017	Compatible with the prediction
H6	Humanization of culture → satisfaction (relationship predicted as non-significant)	0,021	Compatible with the prediction

Source: calculated by the author based on the survey results of 50 SMEs

*** $p < 0,001$; ** $p < 0,01$; * $p < 0,05$

The central result of SEM modeling indicates that the strongest factor in SME orientation toward sustainable development is the aggregate construct of external stakeholders ($\beta = 0,326$; $p < 0,001$). At the same time, according to the survey results, state pressure is perceived most strongly — an important conclusion for the Republic of Moldova, where the principal factor is not consumer demand, but the institutional environment. This is followed by humanization of organizational culture ($\beta = 0,312$) and strategic planning competencies ($\beta = 0,225$). No significant direct short-term effect on satisfaction with results was identified (H4, $\beta = 0,017$, $p > 0,05$), a result that is compatible with the hypothesis and supports the investment nature of sustainable orientation.

§2.3. Methodology for modeling the implementation of the strategic planning process and sustainable development methods for SMEs (network perspective)

Section §2.2 highlighted the factors influencing SME orientation toward sustainable development. However, identifying the factors is insufficient: it is necessary to show how strategic orientation is transformed into actual enterprise actions. Therefore, this section is devoted to the strategy implementation mechanism — through business processes, network interaction and specific managerial actions.

A sustainable development strategy must not be a declaration, but a system of manageable actions — an aspect that is especially important for SMEs, whose resources are limited. The proposed implementation cycle includes diagnosis, formulation of objectives, identification of stakeholders, planning of measures, allocation of resources, implementation and monitoring, thus forming a closed and continuously adjusted managerial cycle.

Due to limited financing, insufficient managerial competencies and restricted access to innovation, SMEs cannot implement a sustainable strategy in isolation. The network perspective involves examining the SME as a participant in a system of economic and institutional links (the state, customers, suppliers, banks, educational institutions, consultants) through which the enterprise obtains knowledge, financing, technologies and market access.

On this basis, the author's value-network strategy implementation model was substantiated; its central idea is that the sustainable development strategy must be integrated into the enterprise's value-creation network. The model includes four elements: integration into partnership chains, flexible management (the holacratic approach), collaboration with stakeholders and performance indicators (KPIs) correlated with personnel responsibility, thereby ensuring the link among strategy, business processes, stakeholders and the control system.

Chapter 2 supports Research Hypothesis 2 and substantiates the mechanisms through which sustainable development strategies and methods can constitute an instrument for aligning the management of SMEs in the Republic of Moldova with European Union standards. Strategic orientation is not equivalent to strategy implementation — implementation requires a process-based approach, allocated resources, responsible persons and a control system, while domestic SMEs cannot act in isolation, but only through the network of interactions described above.

CHAPTER 3. METHODOLOGY FOR ASSESSING THE EFFECTIVENESS OF IMPLEMENTING STRATEGIC MANAGEMENT AND SUSTAINABLE DEVELOPMENT METHODS FOR SMEs IN THE REPUBLIC OF MOLDOVA

This chapter answers the central methodological question: how can sustainable development be measured and implemented in practice? Section §3.1 develops the K_{ps}^{int} indicator for assessing the effectiveness of strategic management of SMEs. Section §3.2 establishes the link between SME sustainability and national indicators (ANS and HDI). Section §3.3 proposes the ESG mechanism and the IED indicator. Thus, Chapter 3 represents the instrumental part of the thesis.

§3.1. Substantiation of the methodological approach to assessing the effectiveness of strategic management of SME sustainable development

Chapter 2 identified the factors defining the strategic orientation of SMEs toward sustainable development and the mechanisms through which this orientation is transformed into actual actions. However, an essential question remains: how can the quality of the adopted strategy be measured objectively and comparably? The formal existence of a strategy does not guarantee that the enterprise develops sustainably — a strategy has value only when it is implemented and produces measurable results.

Answering this question required reference to the established approaches in the specialized literature concerning strategy assessment. Their analysis demonstrated that each of the four main approaches solves part of the problem, but none solves it completely — precisely for this reason, the developed instrument is constructed as a synthesis of these approaches.

From the classical school of strategic management (A. Thompson, A. Strickland), the three criteria of an optimal strategy — consistency with the environment, competitive advantage and efficiency — were adopted and placed at the highest level of the hierarchy. From the Balanced Scorecard concept (R. Kaplan, D. Norton), the logic of combining financial and non-financial dimensions was adopted, while overcoming its essential limitation: the absence of a single priority indicator. Value-based management indicators (EBITDA, NOPAT, NCF, FCF, ROIC, WACC, MVA, EVA) were included at the lower levels as the quantitative basis of the "Efficiency" block. The objectives-based approach, expressed through the target-performance coefficient $k = (E/E_0 -$

1) × 100% (Formula 2), is necessary but insufficient because of the multiplicity of enterprise objectives.

Generalization of these four directions made it possible to substantiate the integral indicator of strategic planning quality K_{ps}^{int}, which combines indicators of consistency with the external and internal environment, indicators of ensuring competitive advantage and efficiency indicators. The assessment parameters were structured into five levels: level zero — the integral indicator K_{ps}^{int}; level one — three groups corresponding to the criteria of an optimal strategy: consistency with the environment (Kcm), competitive advantage (Kavconc) and efficiency (Kef); level two — nine parameter blocks; levels three and four — subgroups and specific indicators (Table 5).

Table 5 — Structure of strategic planning assessment parameters (abridged presentation)

Level 1 (group)	Level 2 (blocks)	Examples of lower-level indicators
Consistency with the environment (Kcm)	Consistency with the external environment	Supplier reliability; degree of dependence on suppliers; resource provision
	Consistency with the internal environment	Labor productivity; labor-resource provision; personnel qualifications
Competitive advantage (Kavconc)	Competition	Intensity of competitive rivalry; market share; degree of integration of main competitors
	Industry driving forces	Industry globalization; industry economic trends; mergers and acquisitions; technological development; legislative changes; degree of uncertainty and risk
	Industry development prospects	Stage of the industry life cycle; overall industry attractiveness
	Product characteristics	Technological efficiency (production cost, repair and operating expenses); safety (explosion hazard, fire hazard, material safety); standardization and unification; economy and novelty; patentability
	Customer preferences	Product price (unit cost); quality; design; brand reputation
Efficiency (Kef)	Enterprise value indicators	WACC, MVA, EVA
	Cash-flow indicators	NCF, FCF, operating costs

Source: developed by the author

The complete structure of the parameters for all five levels is presented in the thesis.

The selection of these parameters is based on three principles. The principle of full coverage assumes that each of the three mandatory Thompson and Strickland criteria is detailed through the necessary subgroups. The principle of hierarchical measurability assumes that each higher-level parameter can be aggregated from lower-level parameters. The principle of measurement hybridity allows quantitative parameters to be measured directly, while qualitative parameters — such as reputation, design or novelty — are assessed by experts on a scale from 0 to 1.

The proposed parameter configuration constitutes the basic set necessary and sufficient for assessing strategic planning activity. At the same time, it is not rigid: each enterprise independently selects parameters relevant to its type of activity and may expand or reduce the list depending on the specific nature of its operations. Thus, for service-sector enterprises, the

environmental component of the product may have a lower weight, whereas for industrial enterprises it becomes of primary importance. This flexibility ensures the applicability of the methodology to SMEs in different sectors. The selected parameters receive values r_i in the interval [0; 1] and are plotted on a radial chart that outlines the strategy profile (Fig. 4): each parameter represents a sector with a radius equal to its numerical value. The closer the value is to the center, the more unfavorable the situation in the corresponding direction; placement in the critical zone for several parameters signals the need to revise the strategy.

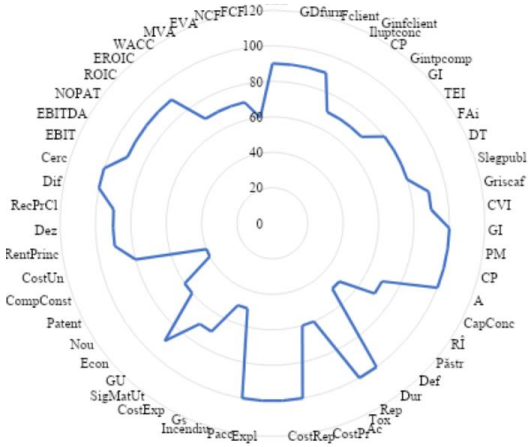

Fig. 4 — Enterprise development strategy profile

Source: developed by the author

The integral indicator is calculated on the basis of the area of the resulting profile, with the choice of calculation formula depending on whether the enterprise considers its parameters equivalent.

If all parameters are recognized as equally important, the profile is constructed from equal sectors and the indicator is determined as the mean value of the squared assessments:

$$K_{ps}^{int} = \Sigma r_i^2 / n \quad (3)$$

If, however, the enterprise assigns priority to certain indicators — which more often corresponds to actual practice — priority is established by increasing the internal angle of the corresponding sector: the larger the angle, the larger the area occupied by the indicator and the greater its contribution to the final result. In this case, the formula with weighting coefficients is applied:

$$K_{ps}^{int} = \Sigma r_i^2 \cdot j_i \quad (4)$$

where j_i — the weighting coefficient of parameter i, subject to $\Sigma j_i = 1$. In both formulas, the assessment r_i is squared: this increases the penalty of low values within the integral value and makes it possible to precisely locate weak areas of the strategy — an essential property for the diagnostic purpose of the indicator.

The resulting value is interpreted according to the following scale: 0–0,20 — critical level; 0,20–0,40 — weak strategy; 0,40–0,60 — medium level; 0,60–0,80 — good level; 0,80–1 — high strategic balance.

The methodology was tested at two enterprises from different sectors. For SRL "Coherent Solutions" (IT), the value K_{ps}^{int} = 0,595292 was obtained — a medium level, with strengths in digitalization, technical competencies and export orientation. For SRL "Diplomat Club" (services) — K_{ps}^{int} = 0,2952, a weak level: with high financial sustainability (r = 0,94) and personnel stability (r = 0,70), the weak areas are profitability of the core activity (r = 0,31) and digitalization (r = 0,35).

The contrast between the two results (0,595292 versus 0,2952) confirms the principal practical value of the indicator: it makes it possible to clearly differentiate enterprises with different levels of strategic maturity within a single methodological toolkit and indicates specific directions for priority improvement to management.

§3.2. Methodology for developing a system of sustainable development indicators for entrepreneurial structures

The K_{ps}^{int} indicator substantiated in §3.1 operates at the microeconomic level and enables quantitative assessment of the strategy of an individual enterprise. However, in international practice, sustainable development is assessed not only at the level of individual economic agents, but also at the macro level — the level of states and regions. Hence the scientific objective of this section: to establish the methodological link between the microeconomic assessment of strategic management of individual SMEs and the macroeconomic indicators of the country's sustainable development. Without fulfilling this objective, the assessment system remains fragmented and the potential contribution of the SME sector to national sustainability does not acquire quantitative expression.

Achieving this objective begins with the selection of an appropriate macroeconomic indicator. Of the four approaches outlined in global practice — integrated, indicator-system-based, specific-indicator-based and sociological — the integrated approach was selected as the only one that synthesizes the assessment into a single resulting indicator and ensures comparability.

For the purposes of the present research, the integrated approach is the most productive: it is methodologically consistent with the K_{ps}^{int} indicator developed at the microeconomic level, provides the possibility of international comparisons and preserves the integrity of the indicator system throughout the analysis, from the individual enterprise to the national economy.

The applicability to the conditions of the Republic of Moldova of eight integrated indicators substantiated in global practice was analyzed. Environmentally adjusted GDP, the Living Planet Index, the Ecological Footprint, the Genuine Progress Indicator and the indicator of health damage from pollution were rejected: they are either not calculated for the Republic of Moldova due to the lack of a statistical base, or cover only one dimension of sustainable development.

By contrast, Adjusted Net Savings (ANS) and the Human Development Index (HDI) integrate all three dimensions of sustainable development, have published methodologies and annual calculated values for the Republic of Moldova, while

their components correspond directly to the directions that SMEs can influence through strategic decisions.

ANS is calculated according to the World Bank formula:

$$ANS = GNS - CFC - DR + EE - PD \quad (5)$$

where GNS — gross national savings; CFC — consumption of fixed capital; DR — depletion of natural resources (energy, mineral, forest); EE — education expenditure; PD — economic damage from environmental pollution, including CO_2 emissions and particulate matter (all expressed as % of GNI).

Since 2010, HDI has been calculated as the geometric mean of three indices:

$$HDI = \sqrt[3]{(Iincome \cdot Ieducation \cdot Ihealth)} \quad (6)$$

The use of the geometric mean differs fundamentally from the arithmetic mean applied previously: it does not allow full substitutability among components, which corresponds to the philosophy of sustainable development — high values in one dimension cannot fully compensate for critically low values in another dimension.

According to World Bank data, ANS in the Republic of Moldova amounted to +6,7% of GNI in 2021. A positive value means that accumulation of physical and human capital exceeds losses, but indicates a limited sustainability reserve. The World Bank does not establish official threshold values; therefore, the study uses a substantive interpretation of the sign and magnitude of the indicator. Comparison with other countries shows the scale of the gap (Table 6):

Table 6 — Comparative analysis of ANS by country (% of GNI, 2021)

Country	ANS (2021)
Norvegia	+20,2%
Germania	+14,5%
Polonia	+10,8%
Moldova	+6,7%

Source: developed by the author based on World Bank data [27]

It is essential to note that, for the purposes of the research, what matters is not recalculating the official ANS, but identifying those directions of its formation that can be influenced by strategic decisions of enterprises in the SME sector. These include increasing financial sustainability and investment activity, developing human capital, improving resource-use efficiency, reducing energy consumption, waste generation and environmental damage. These directions are directly correlated with the parameters of the K_{ps}^{int} indicator developed in §3.1.

Establishing the link between levels began with comparing the parameters forming K_{ps}^{int} with the components of the ANS and HDI macroeconomic indicators. Analysis of these correspondences demonstrated that the nature of the relationships is heterogeneous: in some cases the influence is relatively direct — for example, through reducing resource consumption, emissions and waste generation; in others it is indirect — for example, through the influence of enterprise profitability on national savings or corporate training on human capital formation.

The identified correspondence formed the conceptual basis for constructing the author's quantitative model linking the two levels. At the same time, K_{ps}^{int} is a dimensionless indicator normalized within the range from 0 to 1, while official ANS is expressed as a percentage of GNI. Therefore, the proposed formula does not replace the official World Bank methodology

and does not establish a direct econometric identity between K_{ps}^{int} and ANS — it is intended for quantitative assessment of the potential influence of the quality of enterprise strategic planning, taking into account its economic scale and sectoral relevance:

$$I_{macro} = \Sigma K_{ps,i}^{int} \cdot w_i \cdot \delta_i, \quad i = 1, \ldots, N \qquad (7)$$

where Imacro — the author's proposed integral assessment of the potential contribution of the aggregate of enterprises to the formation of the corresponding macroeconomic sustainable development indicator; Kps,iint — the integral strategic planning indicator of enterprise i, determined according to Formula 3.5 or 3.8; w_i — the conventional weighting coefficient of the enterprise's economic scale, calculated as the ratio of its annual turnover to the gross national income (GNI) of the Republic of Moldova for the respective year; δ_i — the sectoral relevance coefficient, reflecting the degree of connection between the enterprise's activity and the components of the corresponding national indicator.

The values of coefficient δ_i were established on the basis of an analytical assessment of resource consumption, environmental impact and the socio-economic importance of certain types of activity (Table 7):

Table 7 — Sectoral relevance coefficients δ_i for the ANS indicator

Sector	δ_i	Rationale
Heavy industry	0,9	High resource consumption and significant pollution
Food industry	0,8	Medium resource consumption, moderate environmental impact
Agriculture	0,8	Direct impact on the condition of soils and water resources
Light industry	0,7	Production with low resource consumption
Construction	0,7	Significant use of fixed capital and materials
HoReCa	0,5	Energy and water consumption, generation of food and household waste
Services (IT, finance)	0,5	Limited direct impact on natural capital
Trade	0,4	Predominantly economic component, low resource intensity

Source: developed by the author based on the analytical assessment of resource consumption, environmental impact and the socio-economic importance of economic activities

Application of Formula 7 is demonstrated using real data from SRL "Coherent Solutions" (information technology sector). With K_{ps}^{int} = 0,595292 obtained in §3.1, sales revenue of 230 092 lei for 2025 and gross national income of the Republic of Moldova of 353,38 billion lei, the conventional weighting coefficient of the enterprise's economic scale is:

$$\mathbf{w = 230\ 092 / 353\ 380\ 000\ 000 \approx 0{,}00000065}$$

Taking into account the sectoral relevance coefficient for the services sector $\delta = 0{,}50$, the conventional assessment of the enterprise's potential contribution to the formation of ANS is equal to:

$$\mathbf{I_{ANS,Coherent} = 0{,}595292 \cdot 0{,}00000065 \cdot 0{,}50 \approx 1{,}94 \cdot 10^{-7}}$$

The obtained value characterizes the relative scale of the potential influence of the quality of enterprise strategic planning on the directions of formation of national sustainability, taking into account its economic scale and sectoral relevance. The small value is natural: an individual enterprise exerts limited influence on national sustainable development indicators.

A similar calculation was performed for SRL "Diplomat Club", including calculation of K_{ps}^{int}, forecast assessment of the effect of managerial recommendations

and conventional assessment of the enterprise's potential contribution to the formation of ANS.

In addition to assessing an individual enterprise, Formula 7 is also applicable at the level of the sector as a whole. The forecast-scenario calculation shows the cumulative effect that systematic improvement of strategic planning in the SME sector would produce. Under the scenario in which the average K_{ps}^{int} value of the sector increases by 0,1 points as a result of implementing the proposed methodology, with the SME sector's share in GNI equal to 0,52 and a weighted average sectoral relevance coefficient of 0,7, the change in the integral assessment is:

$$\mathbf{\Delta I_{macro} = 0,1 \cdot 0,52 \cdot 0,7 = 0,0364}$$

The result shows that improving the quality of strategic planning at SME-sector level can amplify its potential influence on the components of ANS. However, the value 0,0364 characterizes the change in the author's assessment and does not constitute a forecast increase in official ANS by 3,64 percentage points. The scenario calculation confirms the existence of a quantitative evaluative relationship among strategic planning quality, the economic scale of the sector and its potential influence on the directions of formation of national sustainability.

§3.3. ESG strategy as a key element of the sustainable development of small and medium-sized enterprises in the contemporary context

Sections 3.1 and 3.2 created the methodological basis for assessment, but do not answer the practical question: how can SMEs in the Republic of Moldova adapt their strategies to ESG requirements in the context of European integration? This section systematizes international trends, presents the results of the author's sociological research, develops the assessment methodology using the IED indicator, proposes the managerial implementation mechanism and formulates the linking formula with national indicators.

The distinction between ESG and corporate social responsibility lies in its integrated and strategic nature. The relevance of ESG for Moldovan enterprises is determined by the CSRD: although mandatory requirements generally do not extend to SMEs, large European companies request sustainability data from their supply chains. SMEs that export to the EU or attract external financing therefore face indirect requirements regarding ESG data.

European experience shows that a formalized ESG strategy is not a general norm even in developed economies: the share of SMEs with a comprehensive ESG strategy ranges from 11% in Hungary to 31% in Italy and Spain. Individual practices, however, are much more widespread: recycling — 67–76%, improvement of working conditions — 59–92%, energy efficiency — 54–76%, while 93% of EU SMEs apply at least one resource-efficiency measure. For this reason, the experience of the Czech Republic and Hungary is particularly relevant for the Republic of Moldova.

International practice also shows what drives enterprises to implement ESG principles. The principal factor is the owner's vision and responsibility — indicated in 73% of cases. This is followed by the aspiration to obtain organizational and competitive advantages (65%) and the requirements of national and international legislation (64%). A noticeable, although smaller, influence is exerted by the social connection with the

local community (58%) and cultural factors (49%). It follows that ESG should be viewed simultaneously as an expression of the owner's strategic vision, as a response to regulatory requirements and as an instrument for strengthening enterprise competitiveness.

Direct transfer of foreign results to the Moldovan context, however, requires taking into account specific differences in the institutional environment, access to financing and the level of managerial competencies. Therefore, to assess the actual state and potential for ESG implementation in the national economy, the author conducted an empirical study among 50 small and medium-sized enterprises in the Republic of Moldova with different economic profiles; one representative from each enterprise was surveyed. Given the sample size and the exploratory nature of the research, the results are interpreted in relation to the participating enterprises and are not statistically extrapolated to the entire sector.

The research addressed the level of awareness of the ESG concept and components, perception of the role of ESG in sustainable development, estimated effects and risks of implementation, influence of business partners, applied practices, required support measures and attitudes toward developing competencies in this field. The results concerning the applied practices are summarized in Table 8:

Table 8 — Summary of survey results concerning ESG implementation (N = 50)

Indicator	Value
SMEs implementing projects and initiatives with social impact	36%
SMEs applying measures to reduce environmental impact and use resources efficiently	30%
SMEs providing training and involving employees in ESG implementation	24%
SMEs applying transparency measures and monitoring ESG indicators	18%
SMEs integrating ESG criteria into relations with suppliers and partners	16%
Respondents with a positive attitude toward developing education and retraining in ESG	68%

Source: developed by the author based on the survey results of 50 SMEs in the Republic of Moldova

The data reveal two opposing trends. On the one hand, the application of ESG practices remains selective and fragmented: enterprises most frequently limit themselves to social initiatives and measures to reduce environmental impact, while monitoring of indicators, governance aspects and integration of ESG criteria into partner relations are covered to a considerably lesser extent. On the other hand, there is a clear readiness for development: 68% of respondents have a positive attitude toward continuing education and retraining in sustainable development.

Among the expected positive effects, respondents mentioned reduced pollution and improved quality of life for consumers, identifying as the principal risk the adaptation difficulties of enterprises that do not have sufficient resources. External pressure remains heterogeneous: ESG requirements formulated by suppliers and customers are perceived more as recommendations. The main obstacles are the low level of awareness and resource constraints.

Comparison of the author's results with European experience reveals an important particularity: Moldovan SMEs simultaneously face a low level of familiarity with ESG principles, limited resources and still uneven external pressure. For this reason, ESG mechanisms for SMEs must be proportional to enterprise size, simple to apply and

oriented toward gradual introduction of practices. These empirical conclusions also determined the content of the methodology proposed below — it is intended to translate the identified problems (low awareness, fragmented practices, resource constraints, competency deficit) into parameters that can be assessed and included in strategic planning.

To achieve this objective, it was not necessary to create an instrument from scratch: ESG parameters are already integrated into the K_{ps}^{int} hierarchy from §3.1 and can be extracted as a specialized subset — the environmental dimension, reflected through the environmental friendliness of production and energy efficiency; the social dimension — through safety, working conditions and personnel qualifications; the governance dimension — through legal compliance, standardization and transparency. This makes it possible to define the integral indicator of sustainable development efficiency (IED) as an application of the K_{ps}^{int} methodology to ESG parameters. IED does not replace the general indicator, but complements it, with calculation based on the same two formulas:

$$IED = (1/n_{ESG}) \cdot \Sigma r_i^2 \quad (8) \qquad — \qquad IED = \Sigma(r_i^2 \cdot j_i) \quad (9)$$

where nESG — the number of ESG parameters included in the assessment, and j_i — the weighting coefficient of parameter i. Formulas 8 and 9 represent a specialized development of Formulas 3 and 4: the first is applied when the parameters have equal significance, the second — when their priorities differ. Squaring the assessment, as in the general case, accentuates the differentiation between low and high values within the integral value, so that low values contribute proportionally less to the final result and enable clearer identification of problem areas in the ESG strategy.

Interpretation of the values is consistent with the K_{ps}^{int} indicator: a value close to one characterizes a high level of ESG strategy development, while a value close to zero indicates the need for substantial improvement. The methodology was applied and validated on the basis of real data from SRL “Diplomat Club”. The assessment based on twelve ESG parameters produced IED = 0,2513 — corresponding to a low level (below average). The result structure shows that the environmental direction is the most vulnerable (0,33), while the social (0,56) and governance (0,53) components are at a medium level. For an enterprise in the hotel and restaurant sector (HoReCa), environmental parameters are particularly important; thus, the absence of waste records, target consumption indicators and an energy-efficiency program defines the priority directions for intervention. Forecast calculations demonstrate that implementation of the proposed measures can increase the IED value to 0,3163.

The IED assessment reflects the level of ESG efficiency but, by itself, does not generate transformations at enterprise level. Therefore, for the practical implementation of the ESG strategy, a managerial mechanism was proposed, built on the sustainable development algorithm adapted to the limited resources of SMEs. It comprises five consecutive stages, each oriented toward a measurable result assessed through IED, which ensures that the implementation process is controllable rather than declarative (Fig. 5).

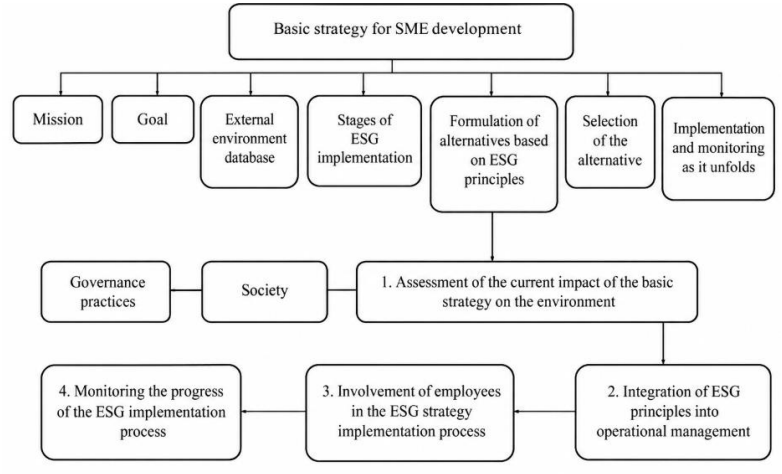

Fig. 5 — Managerial mechanism for implementing ESG in the sustainable development strategy of SMEs in the Republic of Moldova

Source: developed by the author

At the first stage, the mission, objectives and information base of the ESG strategy are formed: management determines the long-term reference points, collects data on the external environment (stakeholders, legislative requirements, market conditions, sectoral trends) and correlates the ESG strategy with the organization's general development strategy. The result of this stage is the enterprise's initial profile, with the initial IED value and the list of priority directions.

The second stage concerns implementation of ESG practices, a process structured into four steps: conducting a simplified audit of the current impact and establishing specific objectives; integrating ESG principles into operational management through simple measures (use of renewable sources, reduction of paper consumption, cooperation with partners that comply with ethical standards); involving employees and partners through training programs; monitoring and reporting progress using simple tracking tools.

The third stage involves formulating several strategic alternatives based on ESG principles, differentiated by priorities, investment volumes, time horizons and resource allocation; each alternative is assessed in terms of a forecast IED value. At the fourth stage, the optimal alternative is selected according to the criterion of the maximum forecast IED value, within the enterprise's resource constraints. The fifth stage is implementation of the selected alternative and continuous monitoring of achievement of target values through periodic recalculation of IED, thus closing the managerial cycle.

Finally, to quantitatively express the potential influence of enterprise ESG efficiency on the directions of formation of national indicators, a specialized formula correlated with Formula 7 from §3.2 was developed:

$$I_{macro,ESG} = \Sigma\, IED_i \cdot w_i \cdot \delta_i \quad (10)$$

where Imacro,ESG — the author's integral assessment of the potential contribution of ESG strategies of the aggregate of enterprises to the directions of formation of ANS; IED_i — the ESG efficiency indicator of enterprise i; w_i — the conventional weighting coefficient of its economic scale; δ_i — the sectoral relevance coefficient; N — the number of enterprises included in the calculation. Like Formula 7, it is evaluative in nature and is intended to express the direction and relative scale of the potential influence of ESG strategies, not to directly calculate the official ANS value, because there is no strict econometric identity between the dimensionless IED and ANS expressed as a percentage of GNI.

The formula was applied to the same enterprise — SRL "Diplomat Club". At the current IED = 0,2513, with the economic-scale weighting coefficient w = 0,0000352 (calculated from the enterprise's revenue and the gross national income of Moldova for 2025) and the sectoral relevance coefficient δ = 0,50, the assessment of the potential contribution of the enterprise's ESG strategy is:

$$\mathbf{I_{macro,ESG} = 0{,}2513 \cdot 0{,}0000352 \cdot 0{,}50 \approx 4{,}43 \cdot 10^{-6}}$$

Upon reaching the forecast IED = 0,3163, this assessment increases to $5{,}57 \cdot 10^{-6}$. Comparison of the two values shows the extent to which improvement of ESG practices of an individual enterprise amplifies its potential contribution to national sustainability. As in §3.2, the obtained values are the author's dimensionless assessments of the relative scale of influence and do not represent a direct change in the official ANS indicator.

The results of Chapter 3 support Research Hypothesis 3 and demonstrate, within the proposed methodology, the possibility of assessing the potential influence of the mechanism for implementing SME sustainable development strategies and methods, including through ESG principles, on the directions of formation of national economic development indicators. Section §3.1 provided the strategy assessment tool (K_{ps}^{int}), §3.2 correlated SME activity with national indicators (ANS, HDI), and §3.3 defined the ESG mechanism and the related indicator (IED).

GENERAL CONCLUSIONS AND RECOMMENDATIONS

The research made it possible to substantiate an integrated methodology and a managerial mechanism for assessing and implementing sustainable development strategies of SMEs in the Republic of Moldova, combining the theoretical basis, empirical verification of factors, the strategy assessment methodology, the K_{ps}^{int} and IED indicators, the ESG mechanism and the link between the microeconomic level of SMEs and the national ANS and HDI indicators. The obtained results substantiate and support the three research hypotheses, allowing the following general conclusions to be formulated:

1. 1. It was demonstrated that the challenges to SME development in the Republic of Moldova have a dual nature. On the one hand, external constraints are manifested: insufficient demand, tax pressure, difficulties in attracting investment, an incomplete regulatory framework and instability of the external environment. On the other hand, internal constraints intervene: insufficient strategic planning, limited resources, insufficient formalization of business processes and managerial immaturity. Therefore, sustainable development cannot be ensured exclusively through external support; internal management transformation is required.

2. International experience confirms the active role of SMEs in sustainable development: in developed economies, SMEs participate in this process through innovation, digitalization, environmental technologies, energy efficiency and integration into strategic value-creation networks. For the Republic of Moldova, the European model is the most relevant — not as a template for copying, but as a direction for gradual alignment with sustainability, transparency and digitalization standards.
3. The research results substantiate Hypothesis 1: the sustainable development of SMEs represents a system of interconnected subsystems — economic, social, environmental and organizational-managerial — simultaneously influenced by the internal and external environment. On this basis, the author's methodology for assessing enterprise sustainable development through Formula 1 was developed, becoming the methodological foundation for the subsequent calculations in the thesis.
4. The empirical research conducted among 50 small and medium-sized enterprises using structural equation modeling confirmed the dominant role of external stakeholders: coefficient $\beta = 0{,}326$ ($p < 0{,}001$) is higher than that of internal factors — humanization of organizational culture ($\beta = 0{,}312$) and strategic planning competencies ($\beta = 0{,}225$). At the same time, according to the primary survey results, state pressure is perceived most strongly within this block, rather than consumer demand. Concurrently, no statistically significant direct short-term relationship was identified between orientation toward sustainable development and satisfaction with results ($\beta = 0{,}017$, $p > 0{,}05$), a result compatible with the formulated hypothesis and supporting the long-term investment nature of such orientation.
5. It was established that the traditional linear planning model is insufficient for an unstable environment. The Republic of Moldova is at the initial stage of applying modern instruments of sustainable strategic management. A transition from reactive to preventive and adaptive management is necessary, with the proposed solution being the creation of SUIPS — the Unified Information System for the Strategic Planning Process, which ensures interconnection among the national, regional, sectoral and micro levels.
6. The integral indicator K_{ps}^{int} was developed and substantiated, synthesizing four directions established in the specialized literature for strategy assessment — the classical Thompson and Strickland criteria, the logic of the balanced scorecard system, financial indicators of value-oriented management and the objectives-based approach. Its methodological significance lies in translating heterogeneous strategy parameters into a single dimensionless value within the interval [0;1], enabling the transition from descriptive assessment to quantitative diagnosis. The practical functionality of the indicator was confirmed at two enterprises from different sectors: SRL "Coherent Solutions" (information technology) obtained a value of 0,595292, while SRL "Diplomat Club" (services) — 0,2952, demonstrating the instrument's ability to clearly differentiate the level of strategic maturity of enterprises.
7. The sociological research showed that the application of ESG practices by Moldovan SMEs remains selective and fragmented: 36% of enterprises implement social initiatives, 30% apply measures to reduce environmental impact, while ESG indicator monitoring is present in only 18%, and integration of ESG criteria into partner relations — in 16%. At the same time, 68% of respondents have a positive attitude toward developing

competencies in this field, indicating the sector's readiness for change. On this basis, the IED indicator was developed as the application of the K_{ps}^{int} methodology to the subset of ESG parameters, together with a five-stage managerial mechanism for ESG implementation proportionate to SME resources. Practical application at SRL "Diplomat Club" indicated IED = 0,2513, with the environmental dimension (0,33) as the most vulnerable and a forecast increase to 0,3163 after implementation of the proposed measures, supporting Hypothesis 3.

8. A quantitative evaluative relationship was developed between microeconomic SME indicators and the directions of formation of national sustainability indicators: Formula 7 correlates the K_{ps}^{int} indicator with ANS and HDI, while Formula 9 extends this logic to the ESG component through IED. Both formulas are evaluative in nature — they express the direction and relative scale of potential influence without replacing the official World Bank methodology. Practical application demonstrated that the assessment of the potential contribution of SRL "Diplomat Club" to the formation of ANS through the ESG strategy increases from $4{,}43 \cdot 10^{-6}$ to $5{,}57 \cdot 10^{-6}$ under the scenario of reaching the forecast IED value, while the scenario calculation at the level of the sector as a whole shows that increasing the average indicator value by 0,1 points produces a change in the integral assessment of 0,0364.

The scientific novelty of the research consists in: specification of the characteristics of SMEs and their operating environment in the Republic of Moldova; substantiation of the transition from linear planning models to preventive and adaptive management; development of the hierarchical approach and the value-network model of strategy implementation; development of the integral indicators K_{ps}^{int} and IED; proposal of formulas for aggregating microeconomic assessments into the directions of formation of national sustainability indicators; and development of the managerial mechanism for ESG integration. The novelty lies in integrating theory, empirical verification and quantitative tools into a single methodological framework brought to validation through practical application at operating enterprises.

Recommendations at national level

1. Accelerate the transition from linear and programmatic planning to preventive and adaptive strategic management systems.
2. Reduce the administrative and regulatory burden on SMEs, as well as the associated risks of unfair competition, in order to free resources for investment and sustainable development strategies.
3. Develop and implement the Unified Information System for the Strategic Planning Process (SUIPS) at national, regional, sectoral and microeconomic levels.
4. Develop accessible methodological and educational support programs for SMEs in the fields of ESG, energy efficiency and digitalization.

Recommendations at regional and sectoral level

5. Apply the strategic planning modeling methodology, adapting the instruments to the specific objective, sectoral specifics and territorial particularities.

6. Use morphological analysis in developing sustainable SME strategies, including activity analysis, SWOT analysis, formulation of objectives, decomposition of factors and classification of strategic alternatives — which is particularly relevant for the Republic of Moldova, given its territorial fragmentation.
7. Develop regional cooperation networks among SMEs, public authorities, educational institutions, consultants and financial organizations.

Recommendations at enterprise level

8. Improve managerial competencies by transitioning from the traditional managerial paradigm to the modern logic of sustainable strategies, with formalization of business processes and development of strategy monitoring.
9. Implement the K_{ps}^{int} indicator to assess strategic planning quality and the IED indicator for ESG components, with periodic recalculation of values and comparison of actual results with expected results.
10. Integrate ESG principles into the general strategy through measurable objectives concerning resources, energy efficiency, working conditions and transparency.
11. Periodically diagnose the external and internal environment and conduct ESG audits in order to adjust the strategy in a timely manner.

The final result of the research is an integrated methodology for assessing and implementing sustainable development strategies of small and medium-sized enterprises in the Republic of Moldova, covering the entire path from theoretical substantiation to practical tools: the conceptual model of enterprise sustainable development with four dimensions and Formula 1; the empirically verified structure of factors shaping strategic orientation; the K_{ps}^{int} indicator for diagnosing the quality of strategic planning; the IED indicator and the five-stage ESG implementation mechanism; as well as Formulas 7, 8, 9 and 10, which correlate the results of an individual enterprise with the directions of formation of national sustainability indicators. All elements of the methodology were brought to practical testing at operating enterprises, confirming its applicability by SME managers for strategic self-diagnosis, by public authorities — for assessing the state of the sector and developing support programs, and by educational and consulting organizations — as a methodological basis for working with enterprises in the process of European integration of the Republic of Moldova.

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Certificates of registration of copyright and related-rights objects:

1. VOLOSIUC, Anna; LÎSÎI, Aliona. Metodologia elaborării unui sistem de indicatori pentru dezvoltarea durabilă a structurilor antreprenoriale. Adeverință privind înscrierea obiectelor dreptului de autor și ale drepturilor conexe, seria OȘ nr. 8143 din 25.02.2025. Chișinău: AGEPI, 2025.
2. VOLOSIUC, Anna; LÎSÎI, Aliona. Strategia ESG ca element-cheie de dezvoltare durabilă a întreprinderilor mici și mijlocii în condiții contemporane. Adeverință privind înscrierea obiectelor dreptului de autor și ale drepturilor conexe, seria OȘ nr. 8144 din 25.02.2025. Chișinău: AGEPI, 2025.

In addition, the results were implemented in the activity of 2 SMEs in the Republic of Moldova, as confirmed by 2 implementation certificates and 2 certificates concerning the registration of copyright and related-rights objects (OȘ series No. 8143 and No. 8144 of 25.02.2025).

ADNOTARE

VOLOSIUC Anna. «Implementarea strategiilor și metodelor pentru dezvoltarea durabilă a ÎMM în Republica Moldova». Teză de doctor în științe economice, specialitatea 521.03 – Economie și management în domeniul de activitate. Chișinău, 2026.

Structura tezei: introducere, trei capitole, concluzii generale și recomandări, bibliografie din 163 de titluri și 9 anexe; 130 pagini de text de bază, 23 de figuri și 41 de tabele. Rezultatele cercetării sunt reflectate în 11 lucrări științifice.

Cuvinte-cheie: dezvoltare durabilă, ÎMM, management strategic, planificare strategică, management preventiv și adaptiv, abordare ierarhică, metodă morfologică, model valorico-rețelar, K_{ps}^{int}, IED, ESG, ANS, IDU, evaluarea eficienței, sustenabilitate antreprenorială.

Scopul lucrării: fundamentarea și elaborarea prevederilor metodologice și a mecanismului managerial de evaluare și implementare a strategiilor și metodelor de dezvoltare durabilă a ÎMM din Republica Moldova.

Obiectivele cercetării: sistematizarea abordărilor teoretice și a experienței internaționale; identificarea particularităților planificării strategice a ÎMM; fundamentarea abordărilor preventive, adaptive, ierarhice, morfologice și valorico-rețelare; elaborarea instrumentelor de evaluare; integrarea ESG; corelarea evaluărilor microeconomice cu direcțiile de formare a indicatorilor naționali de sustenabilitate; testarea practică a metodologiei.

Noutatea și originalitatea științifică: evaluarea nivelului de competențe ale managementului ÎMM în planificarea strategică durabilă; elaborarea indicatorului integral K_{ps}^{int}; fundamentarea indicatorului IED pentru componenta ESG; dezvoltarea abordărilor preventive, adaptive, ierarhice și valorico-rețelare; formularea relațiilor evaluative (7), (8) (9) și (10) privind influența potențială a ÎMM asupra direcțiilor de formare a ANS și IDU; elaborarea mecanismului managerial de implementare a ESG.

Rezultatul obținut care contribuie la soluționarea unei probleme științifice importante: fundamentarea metodologică a implementării strategiilor de dezvoltare durabilă a ÎMM prin elaborarea și integrarea unor instrumente de evaluare a managementului strategic durabil, a unor indicatori cantitativi și a unui mecanism managerial adaptat cerințelor ESG și condițiilor economiei naționale.

Semnificația teoretică: elaborarea teoriei managementului strategic al dezvoltării durabile a ÎMM prin completarea aparatului conceptual și metodologic și fundamentarea instrumentelor cantitative de evaluare.

Valoarea aplicativă: utilizarea K_{ps}^{int}, IED și a mecanismului managerial ESG pentru diagnosticarea strategiei, compararea alternativelor și stabilirea priorităților de dezvoltare durabilă; aplicabilitatea a fost verificată prin studiile de caz SRL «Diplomat Club» și SRL «Coherent Solutions».

Implementarea rezultatelor științifice: rezultatele au fost implementate în activitatea a 2 ÎMM-uri din Republica Moldova, confirmate prin 2 certificate de implementare; 2 rezultate metodologice au fost înregistrate la AGEPI ca obiecte ale dreptului de autor.

ANNOTATION

VOLOSIUC Anna. "Implementation of strategies and methods for the sustainable development of SMEs in the Republic of Moldova". PhD thesis in economics, specialty 521.03 – Economics and management in the field of activity. Chișinău, 2026.

Thesis structure: introduction, 3 chapters, general conclusions and recommendations, 163 bibliographic titles and 9 anexes; 130 pages of main text, 23 figures and 41 tables. The research results are reflected in 11 scientific works.

Keywords: sustainable development, SMEs, strategic management, strategic planning, preventive and adaptive management, hierarchical approach, morphological method, value-network model, K_{ps}^{int}, IED, ESG, ANS, HDI, efficiency assessment, entrepreneurial sustainability.

The purpose of the research: to validate and elaborate the methodological principles and the managerial mechanism for the assessment and implementation of strategies and methods for the sustainable development of SMEs in the Republic of Moldova.

Research objectives: to systematize theoretical approaches and international experience; to identify the specific features of SME strategic planning; to substantiate the preventive, adaptive, hierarchical, morphological and value-network approaches; to elaborate assessment tools; to integrate ESG; to correlate microeconomic assessments with the formation directions of national sustainability indicators; to implement the methodology in practice.

Scientific novelty and originality: assessment of the level of SME management competences in sustainable strategic planning; elaboration of the integral indicator K_{ps}^{int}; substantiation of the IED indicator for the ESG component; development of the preventive, adaptive, hierarchical and value-network approaches; formulation of the evaluative relationships (7), (8), (9) and (10) regarding the potential influence of SMEs on the formation directions of ANS and HDI; elaboration of the managerial mechanism for ESG implementation.

Obtained result that contributes to solving an important scientific problem: the methodological validation of the implementation of SME sustainable development strategies through the elaboration and integration of tools for assessing sustainable strategic management, of quantitative indicators and of a managerial mechanism adapted to ESG requirements and to the conditions of the national economy.

Theoretical significance: elaboration of the theory of strategic management of SME sustainable development by completing the conceptual and methodological apparatus and substantiating quantitative assessment tools.

Applicative value: use of K_{ps}^{int}, IED and the ESG managerial mechanism for strategy diagnosis, comparison of alternatives and setting sustainable development priorities; the applicability was verified through the case studies of SRL "Diplomat Club" and SRL "Coherent Solutions".

Implementation of scientific results: the results were implemented in the activity of 2 SMEs of the Republic of Moldova, confirmed by 2 implementation certificates; 2 methodological results were registered with AGEPI as copyright objects.

АННОТАЦИЯ

ВОЛОСЮК Анна. «Реализация стратегий и методов для устойчивого развития МСП в Республике Молдова». Диссертация доктора экономических наук, специальность 521.03 – Экономика и менеджмент в сфере деятельности. Кишинэу, 2026.

Структура диссертации: введение, три главы, общие выводы и рекомендации, 163 источника и 9 приложений; 130 страниц основного текста, 23 рисунка и 41 таблица. Результаты исследования отражены в 11 научных работах.

Ключевые слова: устойчивое развитие, МСП, стратегический менеджмент, стратегическое планирование, превентивное и адаптивное управление, иерархический подход, морфологический метод, ценностно-сетевая модель, K_{ps}^{int}, IED, ESG, ANS, ИЧР, оценка эффективности, предпринимательская устойчивость.

Цель работы: обоснование и разработка методологических положений и управленческого механизма оценки и реализации стратегий и методов устойчивого развития МСП Республики Молдова.

Задачи исследования: систематизация теоретических подходов и международного опыта; выявление особенностей стратегического планирования МСП; обоснование превентивного, адаптивного, иерархического, морфологического и ценностно-сетевого подходов; разработка инструментов оценки; интеграция ESG; соотнесение микроэкономических оценок с направлениями формирования национальных индикаторов устойчивости; практическая проверка методологии.

Научная новизна и оригинальность: оценка уровня компетенций менеджмента МСП в области устойчивого стратегического планирования; разработка интегрального показателя K_{ps}^{int}; обоснование показателя IED для ESG-составляющей; развитие превентивного, адаптивного, иерархического и ценностно-сетевого подходов; формулирование оценочных зависимостей (7), (8), (9) и (10) о потенциальном влиянии МСП на направления формирования ANS и ИЧР; разработка управленческого механизма внедрения ESG.

Полученный результат, способствующий решению важной научной проблемы: методологическое обоснование реализации стратегий устойчивого развития МСП посредством разработки и интеграции инструментов оценки устойчивого стратегического управления, количественных показателей и управленческого механизма, адаптированного к требованиям ESG и условиям национальной экономики.

Теоретическая значимость: разработка теории стратегического управления устойчивым развитием МСП путём дополнения понятийного и методологического аппарата и обоснования количественных инструментов оценки.

Практическая ценность: использование K_{ps}^{int}, IED и управленческого механизма ESG для диагностики стратегии, сравнения альтернатив и определения приоритетов устойчивого развития; применимость подтверждена кейсами ООО «Diplomat Club» и ООО «Coherent Solutions».

Внедрение научных результатов: результаты внедрены в деятельность 2 МСП Республики Молдова, что подтверждено 2 сертификатами о внедрении; также, 2 методологических результата зарегистрированых в AGEPI в качестве объектов авторского права.

VOLOSIUC ANNA

IMPLEMENTATION OF STRATEGIES AND METHODS FOR THE SUSTAINABLE DEVELOPMENT OF SMEs IN THE REPUBLIC OF MOLDOVA

SPECIALTY 521.03 — ECONOMICS AND MANAGEMENT IN THE FIELD OF ACTIVITY

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