CHAPTER 2

INFORMATION SUPPORT FOR MANAGING THE RESILIENCE OF SMALL AND MEDIUM-SIZED ENTERPRISES UNDER CONDITIONS OF ECONOMIC INSTABILITY

Kulyniak Ihor,

Doctor of Economics, Associate Professor,

Professor at the Department of Management of Organizations,

Lviv Polytechnic National University, Lviv

Small and medium-sized enterprises (SMEs) operate amidst high economic uncertainty, intensifying market instability, and the impact of external threats – such as crises, inflation, currency fluctuations, logistics disruptions, shifting demand, and limited financial resources. In Ukraine, these challenges are particularly acute due to war-related risks, infrastructure destruction, labor migration, and energy constraints. Under these conditions, traditional management approaches – relying primarily on retrospective analysis of financial indicators – do not always ensure that management decisions are timely or well-founded. Consequently, an information support system becomes crucial; it enables the prompt collection and analysis of data regarding both the enterprise's internal state and changes in the external environment, while facilitating risk identification, impact forecasting, and the maintenance of operational continuity.

At the same time, the limited financial, human, and technological resources of SMEs necessitate the use of accessible, scalable, and integrated tools for management information support. This underscores the need to further develop the theoretical and methodological foundations for the information support of economic resilience in SMEs, as well as to identify ways to enhance such support within an environment of economic instability. The issue of ensuring the organizational and

economic resilience of enterprises amidst instability has gained particular prominence in contemporary academic research. In this context, resilience is viewed not merely as the capacity to withstand crises, but as a multifaceted organizational capability – encompassing the ability to anticipate threats, adapt business processes, mobilize resources, and facilitate operational recovery. Researchers pay special attention to small and medium-sized enterprises (SMEs), which are notably sensitive to external economic shocks and often possess limited resources to overcome them.

Specifically, a study by M.-L. Verreynne, J. Ford, and J. Steen [1] systematizes the strategic drivers of organizational resilience in SMEs during economic crises. The authors identify seven key characteristics of resilience: crisis preparedness, the availability of resource reserves, problem-solving capacity, flexibility, established relationships, adaptability, and proactivity. The significance of this research lies in its development of a comprehensive approach to assessing enterprise resilience—one that encompasses not only financial metrics but also organizational and managerial capabilities.

Furthermore, the study *Building Organizational Resilience with Digital Transformation* [2] offers critical insights into the relationship between digital transformation and organizational resilience. Based on a survey of 474 employees from SMEs in the service sector – and utilizing structural equation modeling (SEM) – the authors examined the impact of digital maturity on organizational resilience. The research results confirm the importance of digital transformation as a factor in developing the adaptive capabilities of enterprises during periods of crisis-driven change. These findings are significant for substantiating the need to develop information support systems as a component of an enterprise's digital maturity.

The specific issue of building resilience in small and medium-sized enterprises (SMEs) through the use of digital technologies is addressed by I. Khurana, D. K. Dutta, and A. S. Ghura [3]. Based on an analysis of eight entrepreneurial case studies, the authors developed a multi-level model of resilience building that

encompasses the individual, organizational, and ecosystem levels. Particular attention is paid to the role of digital transformation in reshaping business models, adapting operational processes, and developing the capacity of enterprises to respond to crisis-related challenges. A significant finding of the study is the substantiation of the link between an enterprise's digital capabilities and its ability to detect changes, seize new opportunities, and transform existing resources.

The study by P. Roffia and M. Dabić [4] directly addresses the issue of information support for corporate resilience management. Based on a survey of 143 small and medium-sized enterprises in Italy, the authors analyzed the impact of management control tools, integrated ERP systems, information and communication technologies (ICT), and financial resources on organizational resilience. The results demonstrated a positive influence of budgeting, business continuity tools, and additional financial resources on enterprise resilience. Furthermore, a higher level of interest in utilizing ERP systems was observed among enterprises with higher resilience scores. This study is of particular value for substantiating the role of integrated information systems in coordinating management processes, forecasting, and supporting business continuity.

The relationship between dynamic capabilities and organizational resilience in small and medium-sized enterprises (SMEs) was investigated by V. M. García-Valenzuela, C. A. Jacobo-Hernandez, and J. G. Flores-López [5]. Based on an empirical study of 216 SMEs in the Mexican commercial sector – using structural equation modelling – the authors established a positive and statistically significant impact of most dynamic capabilities on organizational resilience. Specifically, they identified the significance of capabilities related to detecting changes, absorbing external influences, coordination, and innovation. Innovation capability was found to have the greatest impact on enterprise resilience. The results of this study underscore the need to view information support as a tool for developing the adaptive and innovative capabilities of enterprises.

A distinct area of contemporary research focuses on the use of digital communication technologies to ensure enterprise resilience. For instance, F. Ashiru, F. Nakpodia, and J. J. You [6] examined the impact of digital communication technologies on the ability of SMEs to withstand crises. Based on a qualitative study of 42 entrepreneurs in Nigeria, the authors found that digital technologies foster resilience by enhancing interaction with employees, customers, and suppliers, promoting collaboration, diversifying business processes, and increasing supply chain flexibility. The findings indicate that information systems should be viewed not merely as an internal management mechanism, but also as a means of supporting the enterprise's communication with external stakeholders.

Important for the study of information support is also the scientific work of L. Broccardo, A. Tenucci, R. Agarwal and S. M. Alshibani [7]. Based on a survey of 132 Italian small and medium-sized enterprises, the authors investigated the impact of digitalization on the development of management control systems. The results proved that digitalization contributes to the improvement of the productivity of enterprises, the improvement of internal and external communication, as well as the development of the maturity of management control systems. Particular attention is paid to the factors that facilitate or hinder the digital development of management systems. This study is important for substantiating the relationship between the level of digitalization of information support and the quality of management processes at small and medium-sized enterprises.

The further development of this issue is reflected in the study *Enhancing SMEs Resilience Through Digital Innovation: A Stage-Based Analysis* [8], dedicated to determining the impact of digital innovations on the organizational resilience of small and medium-sized enterprises. The authors consider digital product, service, and process innovations as interrelated areas of organizational capacity formation that provide countermeasures against crisis phenomena. An important aspect of the work is the application of a step-by-step approach to the analysis of digital

transformation, which makes it possible to take into account various configurations of digital innovations in the process of forming the sustainability of enterprises.

Thus, the analysis of modern scientific researches [1-8] shows increased attention to the relationship of organizational sustainability, digital transformation, information systems and management control. At the same time, the issue of forming a comprehensive information support mechanism for managing the economic stability of enterprises, which would integrate financial and economic, market, production, personnel and risk-oriented information into a single system of support for management decisions, remains insufficiently developed. The development of appropriate approaches, taking into account the specifics of small and medium-sized businesses in Ukraine, the limitations of its resource capabilities and the need to function in conditions of prolonged economic instability, is of particular relevance.

Information support for enterprise management should be considered as an organized set of information resources, data sources, information collection, processing, storage and transmission technologies, analytical methods and procedures that ensure the preparation and implementation of management decisions.

In the traditional management system, information support was mainly focused on the display of the results of already performed business activities: financial reporting, production volumes, costs, income, profitability and other indicators. However, in conditions of economic instability, such a model is insufficient, since management decisions must be made not only on the basis of information about past results, but also taking into account current changes and projected scenarios.

Accordingly, there is a transformation of information support from an accounting and reporting model to an integrated information and analytical system of strategic management of enterprise sustainability.

Information support performs several interrelated functions [1-8]:

1. Diagnostic function – providing a comprehensive assessment of an enterprise's financial and economic status, its resource potential, and its vulnerability to external threats.

2. Monitoring function – continuously tracking changes in the internal and external environment, and identifying deviations from planned operational parameters.

3. Forecasting function – generating projections regarding changes in demand, costs, revenues, liquidity, resource availability, and other operational parameters.

4. Analytical function – identifying the root causes of problems, evaluating interrelationships between factors, and modeling alternative development scenarios.

5. Coordination function – ensuring alignment of actions among structural units, responsible personnel, and external partners.

6. Control and regulatory function – evaluating the effectiveness of management measures and making timely adjustments to the enterprise's operations.

An important characteristic of an effective information support system is not so much the volume of accumulated data, but rather its quality and suitability for making specific management decisions. Specifically, information must meet criteria such as reliability, timeliness, completeness, relevance, accessibility, comparability, and security.

For small and medium-sized enterprises, it is particularly important to strike a balance between having sufficient information and the costs associated with establishing and maintaining the relevant system. Excessive complexity in information infrastructure can impose an additional financial and organizational burden, while an insufficient level of information support limits the ability to respond to threats in a timely manner.

Therefore, it is advisable to adhere to the principle of functional sufficiency, whereby the composition and technological level of an information system are

determined by the scale of the enterprise's operations, the complexity of its business processes, the nature of its risks, and the information needs of its management.

Establishing an effective information support system entails integrating various information flows that reflect key aspects of the enterprise's operations. Furthermore, the information provided should not merely facilitate the isolated assessment of individual functional areas; rather, it should enable a comprehensive understanding of the interrelationships among financial, production, market, human resources, and management processes.

In light of this, it is proposed to identify six core components of the information support system for managing the economic stability of small and medium-sized enterprises (Table 1).

The proposed structure enables the creation of a comprehensive information framework for managing an enterprise's resilience.

The financial-economic component serves as the foundation, as it characterizes an enterprise's capacity to ensure its own viability, meet financial obligations, and build reserves. Information regarding cash flow is particularly critical, given that even enterprises with positive financial results may face liquidity shortages due to delayed incoming payments.

The market-competitive component provides insight into changes within the external environment – specifically shifts in consumer demand, competitor behavior, price trends, and opportunities to enter new market segments. Its importance is amplified during periods of instability, when traditional sales forecasting models may lose their accuracy.

The production-operational component focuses on ensuring the continuity of business processes. It entails gathering information on the availability of raw materials, supplies, equipment, transport resources, energy, and alternative supply channels.

Table 1

Structural components of information support for managing the stability of small and medium-sized enterprises

Component	Content of Information Support	Key Information Indicators
Financial-Economic	Representation of the enterprise's financial condition, operational results, and resource capabilities	Revenues, expenses, profit, profitability, liquidity, solvency, cash flows
Market-Competitive	Monitoring of market conditions, demand, the competitive environment, and consumer behavior	Demand volume, market share, price dynamics, number of clients, customer retention rate
Production-Operational	Information on the status of business processes, production capacities, inventories, and supply	Capacity utilization, productivity, production cost, inventory turnover, order fulfillment lead times
Human Resources	Assessment of human capital potential, staffing levels, and organizational competencies	Staff turnover, labor productivity, personnel shortages, qualifications, labor costs
Risk-Oriented	Identification, assessment, and monitoring of internal and external threats	Risk probability, potential losses, supplier concentration levels, currency and energy dependency
Strategic-Analytical	Integration of information for forecasting, scenario planning, and the evaluation of strategic alternatives	Cash flow forecasts, scenario-based metrics, early warning indicators, strategic goal achievement levels

Source: Developed by the author.

For construction enterprises, in particular, data regarding price dynamics for construction materials, delivery timelines, equipment utilization rates, and the fulfillment of contractual obligations are essential. The human resources component reflects an enterprise's ability to retain necessary human capital, ensure the continuity of competencies, and maintain labor productivity. In an unstable environment, a shortage of qualified personnel can become a decisive factor in diminishing resilience. The risk-oriented component ensures the systematic identification of threats, the assessment of their likelihood, and their potential impact on operational outcomes. It is crucial that the relevant information is not limited to recording risks that have already materialized, but rather serves as a foundation for proactive management.

The strategic-analytical component integrates data from other functional areas and transforms it into actionable management insights. It is at this level that the information base is established for scenario planning, the development of adaptive strategies, and the determination of development priorities.

Thus, the proposed structure entails a shift from the fragmented use of information to its systemic integration into the process of managing economic resilience.

Based on the research conducted, a conceptual approach is proposed for establishing an information support system for managing the resilience of small and medium-sized enterprises (SMEs). This approach involves the sequential integration of information resources, digital technologies, analytical tools, and mechanisms for managerial decision-making.

A key feature of the proposed approach is its focus not merely on capturing the current state of the enterprise, but also on creating the prerequisites for the early detection of threats, the forecasting of changes, and the formulation of adaptive management measures.

Its logic comprises six sequential stages:

– The first stage involves defining the enterprise's information needs. This entails identifying key management tasks, critical business processes, and internal and external threats, as well as determining the information required to support managerial decision-making.

– The second stage involves establishing a system of information sources. This involves identifying internal sources of information (accounting and management records, financial statements, CRM, ERP, production and HR data) as well as external sources (market statistics, competitor information, macroeconomic indicators, regulatory changes, and data from suppliers and customers).

– The third stage involves the integration and digital processing of information. This entails using appropriate software solutions to collect, organize, store, verify, and process data. It is essential to establish uniform rules for generating information, ensure it remains up-to-date, and enable the comparison of metrics across different periods.

– The fourth stage involves an analytical assessment of economic resilience. This includes developing a system of indicators, identifying deviations, assessing risk levels, analyzing the enterprise's financial and operational capabilities, and conducting scenario-based forecasting.

– The fifth stage involves the formulation and implementation of management decisions. Based on the results of the analytical assessment, measures are developed to optimize costs, manage financial reserves, diversify supply chains, adjust market strategies, modernize business processes, and ensure business continuity.

– The sixth stage involves performance monitoring and feedback. This entails evaluating the actual outcomes of implemented management decisions, comparing them against planned targets, and adjusting the information system to reflect the enterprise's evolving operating environment. The interrelationship between the aforementioned stages is presented in Table 2.

Table 2

Stages in the formation of an information support system for managing the economic stability of enterprises

Stages	Core Content	Expected Management Outcome
1. Defining Information Needs	Identification of goals, objectives, risks, and information requirements	Establishment of priorities for information support
2. Developing Information Sources	Collection of internal and external data	Creation of a comprehensive information base
3. Integration and Digital Processing	Automation, systematization, and verification of data	Ensuring the accessibility and reliability of information
4. Analytical Assessment	Analysis of indicators, risks, and scenarios	Identification of threats and determination of the level of economic resilience
5. Management Decision-Making	Development of adaptation and stabilization measures	Maintenance of operational continuity and effectiveness
6. Monitoring and Feedback	Review of outcomes and updating of information	Continuous improvement of the resilience management system

Source: Developed by the author.

It is advisable to supplement the proposed approach with a system of indicators that would allow for the assessment not only of an enterprise's economic status but also of the effectiveness of its information support. This conceptual

approach integrates informational, analytical, and managerial components within a unified system designed to support the economic stability of an enterprise.

The study findings indicate that information support is a key determinant in establishing the economic stability of small and medium-sized enterprises (SMEs) amidst economic instability. Its significance lies not merely in meeting the information requirements of day-to-day management, but also in establishing an analytical foundation for forecasting threats, assessing risks, substantiating alternative management decisions, and ensuring the continuity of business operations. The structural components of information support for managing the economic stability of SMEs have been systematized; these include financial-economic, market-competitive, production-operational, human resources, risk-oriented, and strategic-analytical components. Their integration ensures a comprehensive informational representation of business processes and creates the prerequisites for a timely response to destabilizing factors. A conceptual approach is proposed for developing an information support system for managing the sustainability of small and medium-sized enterprises (SMEs). This approach encompasses the identification of information needs, the establishment of information sources, data integration and digital processing, the analytical assessment of economic sustainability, managerial decision-making, and the monitoring of decision outcomes. A key feature of this approach is the integration of informational, analytical, and managerial components within a unified cycle designed to ensure enterprise sustainability.

The practical significance of these findings lies in the potential to apply this approach to improve management systems within small and medium-sized enterprises across various economic sectors. Its implementation enhances the substantiation of managerial decisions, strengthens the adaptive capabilities of enterprises, facilitates the timely identification of potential threats, and establishes an information foundation for maintaining economic sustainability.

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