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MODERNIZATION OF ALGORITHMS FOR ASSESSING THE EFFECTIVENESS OF SECURITY-ORIENTED MANAGEMENT IN COMMERCIAL BANKS

Abstract. Contemporary approaches to assessing the effectiveness of security-oriented management in commercial banks under tightening regulatory requirements, digitalization, and rising operational and cyber risks are examined; the findings of recent scholarly publications on the application of Data Envelopment Analysis, the analysis of efficiency determinants using panel data, risk-adjusted indicators, and the impact of technological innovations on banking activities are synthesized, and the key provisions of the Digital Operational Resilience Act and the updated Basel Committee Core Principles are taken into account. The expediency of shifting from viewing efficiency solely as productivity to an integrated, security-adjusted assessment is substantiated, and a conceptual structure of a modernized algorithm is proposed that combines operational-financial, risk-adjusted, and digital-resilience dimensions, along with procedures for normalization, aggregation, and sensitivity testing. The resulting conclusions provide a foundation for employing the integrated assessment in internal control, benchmarking, and managerial decision-making aimed at strengthening banks' resilience.

Keywords: security-oriented management, security-oriented governance, management of commercial banks, commercial banks, financial management, risk management, risk-based management.

In the contemporary banking sector, the assessment of managerial effectiveness increasingly goes beyond traditional profitability/cost indicators and incorporates risk-oriented and resilience-oriented components. Regulatory initiatives directly reinforce this trend; for example, the European Union's Digital Operational Resilience Act (DORA), applicable from 17 January 2025 [4], is aimed at strengthening the digital operational resilience of financial institutions and emphasizes requirements for ICT risk management, incident handling, resilience testing, and third-party risk management.

At the global level, supervisory approaches are also being updated in response to digitalization and climate-related risks: in 2024 the Basel Committee revised its Core Principles [5] for the first time since 2012, highlighting emerging risks (including digital and climate risks) and the responsibility of banks' governing bodies.

Within the scholarly domain, approaches are being developed specifically to assess the effectiveness of security-oriented management in commercial banks, including in the Ukrainian context, through conceptual frameworks and methodological instruments [1-3].

In applied studies of banking efficiency, Data Envelopment Analysis (DEA) is widely employed to evaluate the relative efficiency of banks based on combinations of inputs and outputs (costs, resources, performance outcomes, etc.); recent publications demonstrate the application of DEA to panels of banks for 2022–2023 [6]. Other contemporary studies examine the determinants of efficiency using cross-country samples (e.g., 2019–2023) [7]. A distinct research stream focuses on risk-adjusted efficiency and technological change: studies [8] analyze efficiency and innovation in banking over long time horizons and show that technological progress and diffusion are associated with the dynamics of operational efficiency. The DORA regulation explicitly concentrates on digital operational resilience and establishes

requirements for ICT risk management and resilience testing, including third-party risk management. In addition, supervisory and analytical materials (e.g., from the OCC) underscore the importance of operational resilience, cybersecurity, and third-party risk for banks, particularly in the context of extensive reliance on external technology providers.

A separate body of research explicitly articulates the need for an algorithm to assess the effectiveness of security-oriented management in commercial banks and proposes conceptual foundations and tools that are important for adapting such approaches to the Ukrainian banking sector.

In our view, the structure of a modernized algorithm should include the formation of a panel of indicators across three dimensions – operational and financial efficiency (DEA inputs/outputs); a risk-adjusted dimension; and a digital operational resilience/cyber and third-party risk dimension (aligned with DORA and supervisory emphases) – as well as procedures for indicator normalization to ensure comparability, efficiency assessment using DEA together with a separate security index, integral aggregation into a composite index of security-oriented management effectiveness, and sensitivity analysis to examine changes in rankings resulting from variations in weights or the exclusion of individual indicators.

This would enable a shift from viewing “efficiency as productivity” to an efficiency concept adjusted for security-related dimensions (digital operational resilience and third-party risk), which is consistent with contemporary regulatory requirements and would allow the integrated assessment to be employed for managerial decision-making, including internal control, the prioritization of investments in resilience, and benchmarking.

Thus, current research on banking efficiency actively applies DEA and panel-data analyses of efficiency determinants, while the scholarly debate increasingly incorporates risk-adjusted and technological dimensions linking innovation with operational performance. The regulatory context – most notably DORA as of 17 January 2025 and the 2024 revision of the Basel Core Principles – renders operational/digital resilience and governance accountability central elements of

“security orientation”. Consequently, in our view, the modernization of assessment algorithms should integrate efficiency measurement and security dimensions into a unified framework for evaluating the effectiveness of bank management.

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