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MANAGERIAL APPROACHES TO MEASURING ECONOMIC BENEFITS OF BLOCKCHAIN IN SUPPLY CHAINS

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The rapid digitalization of global trade has significantly increased the dependence of supply chains on the quality, speed, and reliability of information exchange. As inter-organizational networks expand, coordination becomes more complex, and the cost of maintaining trust between partners grows. In this environment, blockchain technology is increasingly viewed as an instrument capable of transforming traditional management mechanisms by ensuring data integrity, synchronization, and shared access to verified records.

Existing literature widely discusses the technological potential of distributed ledgers, emphasizing traceability, immutability, and automation of transactions [1]. However, managers responsible for investment decisions require not only technical arguments but also clear methods for evaluating the economic consequences of implementation. Without an understandable measurement framework, even promising innovations may face resistance from stakeholders.

From a managerial perspective, the economic value of blockchain emerges primarily through improvements in coordination efficiency. Reduced information asymmetry leads to fewer disputes, faster approvals, and lower monitoring intensity. As a result, organizations may redirect resources from control activities toward value-creating operations. Nevertheless, many companies encounter difficulties in quantifying these improvements because benefits are often indirect, long-term, and distributed unevenly across participants.

Research in supply chain management demonstrates that digital transparency strengthens collaborative relationships and contributes to performance stability [2]. At the same time, scholars underline that technology adoption must be accompanied by

changes in governance models, responsibility allocation, and incentive systems [3]. Therefore, measurement approaches should capture not only operational indicators but also institutional transformations.

Several key managerial dimensions can be used to evaluate economic outcomes of blockchain integration. First, cost-related indicators include reductions in reconciliation efforts, paperwork, dispute resolution, and auditing. Second, time-based metrics reflect acceleration of information processing and decision-making cycles. Third, risk-related parameters involve lower probability of fraud, data manipulation, or contractual non-compliance. Finally, strategic effects may appear in the form of enhanced reputation, improved partner selection, and higher adaptability of the network.

International organizations emphasize that insufficient interoperability and lack of common standards remain major obstacles to realizing the full economic potential of digital trade technologies [4]. Consequently, benefit measurement should also consider the maturity of cooperation between actors and their readiness to share responsibility within a common infrastructure.

The scientific novelty of this thesis lies in the systematization of managerial perspectives on blockchain evaluation through the integration of economic, organizational, and institutional criteria. Unlike approaches focused exclusively on technological efficiency, the proposed view interprets blockchain as a governance mechanism that restructures relationships between firms. This allows decision-makers to link investment justification with expected reductions in coordination burdens and improvements in collaborative behavior.

The findings indicate that effective measurement requires a shift from isolated firm-level calculations toward network-oriented assessment models. Blockchain does not create value automatically; it enables new forms of interaction whose success depends on managerial design. Future studies should therefore concentrate on developing industry-specific benchmarks and empirical tools for monitoring performance dynamics after implementation.

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