

DEVELOPMENT OF A SOFTWARE TOOL FOR RECORDING FINANCIAL TRANSACTIONS AND REPORTING FOR SMALL AND MEDIUM-SIZED ENTERPRISES

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Анотація. У роботі розглянуто розробку програмного засобу для автоматизації обліку фінансових операцій у малому та середньому бізнесі. Рішення забезпечує внесення даних про доходи й витрати, їх класифікацію за статтями та збереження у структурованому вигляді. На основі накопичених даних формуються базові фінансові звіти, зокрема спрощений баланс і звіт про рух коштів за вибраний період. Для підтримки управлінських рішень реалізовано розрахунок ключових показників та візуалізацію динаміки доходів, витрат і грошових потоків. Модульна організація системи спрощує супровід і подальше розширення функціональності.

Abstract. This paper describes a software tool that automates the recording of income and expense transactions for small and medium-sized enterprises. The solution provides structured categorisation and stores operations in a consistent data model suitable for managerial reporting. From the accumulated data, the system generates core statements, including a simplified balance sheet and a cash flow statement for a selected period. Decision support is strengthened through basic KPIs and visual dashboards that highlight trends and potential liquidity risks. The approach demonstrates how lightweight automation can improve the timeliness and reliability of financial information for SME owners.

1. Introduction.

Many SMEs keep financial records in spreadsheets, messaging apps or isolated tools, which makes it difficult to maintain consistent categorisation and to obtain up-to-date figures. In practice, the business owner needs quick answers to operational questions: how much cash is available, which expense items are growing, and whether

current income covers obligations. Automation of transaction recording and reporting therefore remains a practical task within applied computer technologies.

2. Objective and requirements.

The project goal is to develop a software tool that supports day-to-day bookkeeping of income and expenses and produces basic financial statements for managerial use. Key requirements include: fast input and correction of operations; configurable reference data (categories, accounts, counterparties, projects); automatic generation of a simplified balance sheet and a cash flow statement; drill-down from statement lines to underlying transactions; basic analytics (trends, ratios) for decision-making; and protection of sensitive data through access control and auditability.

3. Data model and processing rules.

The system uses a relational model where each financial operation is stored with date, amount, currency, counterparty, payment method and category, and is linked to one or more accounts. To enable balance reporting without the full complexity of enterprise accounting, a simplified chart of accounts is applied with top-level groups: assets, liabilities and equity. Operations are mapped to these groups through configurable rules and templates, and balances are computed by applying period postings to opening values, maintaining the equation $\text{Assets} = \text{Liabilities} + \text{Equity}$.

4. Report generation.

The reporting engine aggregates transactions by period and produces: (i) a simplified balance sheet with grouped totals and account details; and (ii) a cash flow statement classified into operating, investing and financing activities. Classification for the cash flow statement is implemented via activity tags assigned during input or derived from templates, which reduces manual work and improves consistency. Every report line supports traceability by allowing the user to filter and review the set of transactions that formed the total.

5. Automation and decision support.

Automation is provided through categorisation templates, automatic recalculation of statements after data changes, and export routines for sharing reports with stakeholders. Dashboards present KPIs such as liquidity (current ratio), profitability indicators, and

cash burn dynamics; alerts can be triggered when thresholds are exceeded (e.g., projected negative cash balance within the planning horizon). Role-based authorisation (owner, accountant, viewer) and an audit trail for edits to transactions and reference data are used to improve security and data quality.

6. Implementation and verification.

The prototype is implemented as a lightweight client-server application with a user-friendly interface for entering operations and managing reference data. Application services encapsulate business rules for validation, categorisation and report derivation, whilst the persistence layer provides reliable storage and querying of transactions. To reduce routine effort, the interface supports operation templates, quick filters, and bulk import from common tabular formats, after which the system automatically recalculates reports. The reporting component produces both on-screen views and exportable report forms, enabling managers to use the outputs in routine communication and planning. Verification is performed through functional test cases that cover CRUD operations for transactions, category mappings, period calculations, and reconciliation checks for the balance equation. Additional scenario tests (e.g., mixed payment methods, refunds, and transfers between accounts) confirm that reports remain consistent under typical SME workflows. Basic non-functional checks address usability and responsiveness, and data protection is supported by access roles, change logs, and backup procedures.

7. Conclusions.

The developed tool integrates transaction capture, structured storage, and automated report generation into a practical solution for SMEs. By reducing manual effort and improving transparency of aggregates through drill-down, it supports timely managerial decisions and basic financial discipline. Further development is planned to deepen automation of categorisation, integrate with external sources (bank statements and invoicing services), and extend analytics for scenario planning and budgeting.