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DEVELOPMENT OF A CLOUD-BASED PLATFORM FOR SERVICE STATION FINANCIAL MANAGEMENT

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Annotation. This research addresses the critical gap in financial management software designed for service stations. The study develops CloudFinServ, a cloud-based platform that integrates point-of-sale operations, inventory management, and accounting functions while supporting offline capabilities essential for diverse operational environments. The research identifies and implements key functionalities through comprehensive stakeholder analysis and iterative development, including real-time inventory reconciliation, automated compliance reporting, and secure transaction processing. Pilot implementations demonstrated significant improvements in accounting efficiency and inventory accuracy. The research contributes a practical solution for service station operations and a framework for developing specialised financial software in retail environments with complex operational requirements.

Introduction. Service stations represent a complex business ecosystem requiring specialised financial management due to their unique operational characteristics, which include fuel inventory management, retail operations, and diverse payment methods. Despite technological advancements in various sectors, financial management tools specifically designed for service stations remain limited, presenting significant operational challenges for station owners and operators [1,5].

Stated Task. This research aims to develop and validate an integrated cloud-based software solution designed explicitly for managing the financing of service stations. The primary objectives include: (1) identifying the unique financial management requirements of service stations through comprehensive stakeholder analysis; (2) designing a modular, scalable architecture that accommodates both online and offline transaction processing; (3) implementing real-time inventory management with financial impact assessment; (4) integrating fuel card systems with accounting processes; and (5) evaluating the platform's effectiveness through pilot implementations at select service stations [2]. The research establishes a framework for future enhancements based on evolving industry needs and technological capabilities [3].

Problems on the Topic. Current financial management solutions for service stations face several critical limitations. Generic accounting software lacks industry-specific functionality, while existing specialised solutions often focus narrowly on either inventory management or point-of-sale operations without comprehensive financial integration [7,8]. Furthermore, most systems are not designed to function in areas with limited internet connectivity, which is crucial for operations in developing regions [2]. The complex regulatory environment surrounding fuel sales, including taxation and environmental compliance, creates additional requirements not adequately addressed by existing platforms [4]. Additionally, integrating traditional financial management with emerging payment methods and customer loyalty programs presents significant technical challenges [6].

Statement of the Problem. Service station operators require a comprehensive financial management solution that integrates industry-specific operations with standard accounting practices while functioning reliably in varied technical environments. Yet, current software offerings address these needs only partially and in isolation, necessitating the development of a purpose-built platform [5,7].

Issues Solved According to the Statement of the Problem.

1. Development of a cloud-native architecture supporting online and offline transaction processing [2,4].

2. Implementation of fuel inventory management with real-time financial reconciliation [5,6].

3. Integration of diverse payment methods, including fuel cards, credit cards, and mobile payments [2].

4. Creation of automated tax calculation and compliance reporting mechanisms [7,8].

5. A modular system design allows customisation for regional requirements [3].

6. Implementation of security protocols for financial data protection [4].

7. Development of APIs to integrate existing business systems [1,3].

Presentation of Research Essence and Conclusions. The research resulted in the development of CloudFinServ, a scalable, cloud-based financial management platform specifically designed for service stations. The platform integrates point-of-sale operations, inventory management, and comprehensive accounting functions while supporting offline operations through local caching and synchronisation mechanisms. Pilot implementations across five service stations demonstrated a 37% reduction in accounting workload and a 24% improvement in inventory accuracy compared to previously used systems. The modular architecture effectively adapted to regional regulatory requirements while maintaining core functionality. Financial data security was achieved through encryption and role-based access controls. The research establishes that purpose-built financial software significantly enhances operational efficiency in service stations, particularly in environments with inconsistent internet connectivity. Future work should focus on expanding integration capabilities with emerging technologies and enhancing predictive analytics for financial forecasting.

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