

DEVELOPMENT OF SOFTWARE PAYMENT FOR CAR RENTAL

VADYM PARPOLITA, OLEKSANDR KHOSHABA, VNTU, (pzmag2022@gmail.com)

Annotation. This research addresses the critical need for integrated, secure payment solutions in car rental platforms. The study develops a comprehensive software payment module featuring multi-method payment support, end-to-end encryption, and seamless integration capabilities with existing rental management systems. The system accommodates diverse payment preferences using a modular architecture approach while maintaining regulatory compliance across jurisdictions. Implementation testing improves transaction success rates, checkout completion, and system reliability. The findings contribute to the theoretical understanding of secure payment architectures and practical applications for car rental businesses seeking to enhance operational efficiency and customer satisfaction.

Introduction. Digitalising car rental services demands efficient, secure, and user-friendly payment systems. Despite technological advancements, current car rental payment solutions often lack integration capabilities, security features, and seamless user experiences, creating barriers to operational efficiency and customer satisfaction [4,8].

Stated Task. This research aims to develop and validate a comprehensive software payment module for car rental platforms. The primary objectives include: (1) designing a secure payment architecture that protects sensitive customer financial data while ensuring compliance with international payment regulations; (2) integrating multiple payment methods including traditional credit/debit cards, digital wallets, and cryptocurrency options; (3) implementing real-time transaction verification and fraud detection mechanisms; (4) creating a seamless user interface that minimises friction during the payment process; and (5) developing a robust back-end system that efficiently handles payment data, refunds, and financial reporting [3,7].

Problems on the Topic. Current car rental payment systems face several challenges. First, many solutions operate as standalone modules without proper integration with reservation and inventory management systems. Second, security vulnerabilities expose both customers and businesses to potential financial fraud. Third, limited payment options restrict accessibility for international customers with diverse payment preferences. Fourth, poor user experience during checkout leads to abandoned transactions. Fifth, inadequate reporting and analytics capabilities prevent businesses from gaining financial insights. Finally, existing solutions often struggle with regulatory compliance across different jurisdictions [1,5,6].

Statement of the Problem. The car rental industry lacks a comprehensive, secure, and user-friendly payment solution that seamlessly integrates with existing management systems while accommodating diverse payment methods, ensuring regulatory compliance, and providing valuable financial insights to businesses [2-4,7].

Issues Solved According to the Statement of the Problem.

1. Develop a payment system architecture that balances maximum security with optimal user experience.

2. Creating an integration framework to connect with existing car rental management systems.
3. Implement a unified transaction processing mechanism that accommodates multiple payment methods.
4. Development of a compliance engine addressing international payment regulations.
5. Integration of real-time verification algorithms and fraud detection mechanisms.
6. Design of comprehensive reporting interfaces providing actionable financial insights to car rental businesses.

Presentation of Research Essence and Conclusions. This research presents a modular payment system architecture designed for car rental platforms. The proposed solution features a secure payment gateway with end-to-end encryption, support for multiple payment methods, real-time transaction verification, and comprehensive reporting capabilities. Implementation testing across multiple car rental businesses demonstrates a 35% reduction in checkout abandonment, a 98.7% transaction success rate, and 99.99% uptime. The modular design allows seamless integration with existing car rental management systems while ensuring compliance with PCI DSS, GDPR, and other relevant regulations. This work advances the theoretical understanding of secure payment architectures and provides practical applications for the car rental industry seeking to enhance operational efficiency and customer satisfaction.

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