

DESIGN AND IMPLEMENTATION OF AN ONLINE FUND LEASING RECORD MANAGEMENT SYSTEM FOR ODOO ENTERPRISES

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ABSTRACT

This study presents the design and implementation of an online fund leasing record management system using Odoo, an open-source Enterprise Resource Planning (ERP) platform. The primary aim is to automate and optimize the management of loan applications, disbursements, and repayment processes in order to enhance operational efficiency, reduce manual errors, and improve overall customer experience in fund leasing operations. The research begins with a critical analysis of existing fund leasing systems, identifying key limitations such as inefficiency, lack of system integration, and poor data visibility. Based on these identified gaps, Odoo was selected due to its modular architecture, scalability, and ability to integrate multiple business processes within a unified platform. The system was developed through the configuration and customization of core Odoo modules, including Customer Relationship Management (CRM), Sales, Accounting, Invoicing, and Document Management, to support end-to-end loan lifecycle management. The proposed system incorporates automated workflows for loan approval, repayment scheduling, and real-time notifications, along with secure integration with online payment gateways. Implementation results demonstrate significant improvements in processing speed, accuracy of financial records, and real-time transaction monitoring. Furthermore, the system provides an intuitive user interface that enhances accessibility for both administrators and clients, enabling efficient interaction and transparent record management. Overall, this research highlights the effectiveness of Odoo as a cost-efficient, flexible, and scalable solution for fund leasing management. The findings offer practical insights for financial institutions seeking to modernize their operations, improve service delivery, and ensure compliance with financial regulations through ERP-based solutions.

Keywords: Enterprise, database management, fund, easing, online, payment gateway, Odoo.

1. INTRODUCTION

The financial sector plays a critical role in driving economic growth by facilitating access to capital for individuals and businesses. Among its core services, fund leasing particularly in the form of loans remains essential for supporting entrepreneurship, asset acquisition, and operational expansion. Through credit provision, financial institutions enable economic participation and stimulate development. However, the management of fund leasing operations, including loan application, approval, disbursement, repayment tracking, and reporting, is inherently complex and often constrained by inefficiencies in traditional systems (Ali and Nisar, 2020).

Conventional loan management approaches, typically based on manual processes or fragmented legacy systems, rely heavily on paper-based documentation and spreadsheet-driven recordkeeping. These methods are

time-consuming, error-prone, and lack integration, resulting in operational inefficiencies, delayed service delivery, and increased risk of financial inaccuracies. Such limitations not only affect institutional performance but also diminish customer satisfaction and trust. Moreover, inaccuracies in financial records may lead to compliance violations and reputational risks for financial institutions (James, 2020; Jeon and Park, 2019). In response to increasing customer expectations for faster, transparent, and digitally accessible services, as well as stricter regulatory requirements, financial institutions are undergoing rapid digital transformation (Dahiru et al., 2022). Modern financial ecosystems demand real-time processing, secure transactions, and accurate reporting mechanisms. Consequently, there is a growing need for scalable and integrated solutions that can automate and optimize fund leasing operations while ensuring compliance and data integrity (Ferreira et al., 2022).

Enterprise Resource Planning (ERP) systems have emerged as a viable solution to these challenges by providing a unified platform for managing diverse organizational processes. ERP systems integrate core functions such as accounting, customer relationship management, and financial reporting, enabling streamlined workflows, enhanced data visibility, and improved decision-making. Among these platforms, Odoo has gained significant recognition as a flexible and cost-effective open-source ERP solution. Its modular architecture allows organizations to customize and integrate functionalities according to specific operational requirements, making it particularly suitable for financial applications such as loan and fund leasing management (Almashari and Zari, 2020).

The adoption of Odoo in fund leasing operations offers several advantages, including process automation, real-time data access, reduced operational costs, and improved customer engagement. By integrating modules such as CRM, Accounting, Invoicing, and Document Management, Odoo enables end-to-end management of the loan lifecycle within a single platform. Additionally, its extensibility supports integration with external systems such as payment gateways and banking platforms, thereby enhancing transaction security and operational efficiency (Ali and Nisar, 2020).

Despite these advantages, the successful implementation of ERP-based solutions in financial environments requires careful consideration of system design, process alignment, scalability, and user adoption. Furthermore, the rapid evolution of financial technology (FinTech) introduces additional challenges related to cybersecurity, data privacy, and regulatory compliance. Therefore, there is a need for a structured and adaptable framework that leverages ERP capabilities while addressing the specific requirements of fund leasing operations (Borgman and Hollander, 2018).

This study addresses these challenges by designing and implementing an online fund leasing record management system using Odoo. The proposed system aims to integrate and automate key loan management processes, improve data accuracy and transparency, and enhance service delivery. By aligning with contemporary digital transformation trends, this research contributes to the development of efficient, scalable, and user-centric financial management solutions. The Key Contributions of the Study are;

- i. Critical evaluation of existing fund leasing systems, identifying key inefficiencies, integration gaps, and operational limitations.
- ii. Design and development of an integrated ERP-based fund leasing system using Odoo, enabling automation of loan lifecycle processes and improved data management.
- iii. Implementation and validation of a scalable digital framework, incorporating workflow automation and secure system integration to enhance efficiency, transparency, and compliance in financial operations.

2. RELATED WORKS

Recent studies have explored the application of Enterprise Resource Planning (ERP) systems, particularly open-source platforms, in improving business process automation and financial operations. A growing body of literature highlights the role of ERP systems in enhancing efficiency, integration, and decision-making across industries.

A study by Utami and Kharisma (2023) investigated the implementation of an ERP system for enterprise data management and reported significant improvements in coordination, communication, and decision-making efficiency within organizational workflows. Similarly, Mefid and Ahlunnazak (2023) conducted a systematic literature review demonstrating that Odoo-based ERP solutions can optimize operational performance, particularly in supply chain environments, by improving process integration and resource management.

More recently, Dela Cruz et al. (2026) evaluated the feasibility of ERP adoption using the Technology–Organization–Environment (TOE) framework, revealing that ERP implementation significantly reduces inefficiencies associated with fragmented and manual processes, while improving return on investment and operational scalability. In a related study, Azam (2026) compared financial ERP systems, including SAP, and Oracle, and emphasized that integrated ERP platforms enhance regulatory compliance, financial transparency, and decision-making in modern financial systems. Beyond ERP-specific studies, research on loan management systems has also gained attention. Chilunjika (2025) developed a cloud-based loan management system that automates loan application, approval, and repayment tracking, demonstrating improved scalability, security, and real-time processing capabilities compared to traditional systems. This aligns with broader findings that automation and cloud integration are critical for modern financial services.

In addition, recent studies on ERP-enabled systems highlight the importance of modular architectures and workflow automation. Das et al. (2024) showed that ERP systems can effectively manage complex business processes such as sales, inventory, and customer relationships through integrated modules, thereby improving operational efficiency and reducing manual workload. Furthermore, emerging research on ERP-based system design demonstrates its flexibility in supporting workflow automation, role-based access control, and scalable integration across distributed systems, particularly in complex environments such as construction and enterprise coordination. From a broader perspective, Business Process Management Systems (BPMS) research indicates that process automation technologies play a critical role in connecting users, tasks, and data, thereby enhancing organizational productivity and process optimization (Martin-Navarro et al., 2023). These findings reinforce the importance of integrating workflow automation within ERP-based financial systems. Additionally, recent developments in loan management modules (2023–2024) show increasing industry interest in automating borrower management, loan workflows, and repayment tracking through ERP-based platforms, further validating the relevance of ERP-driven financial solutions.

Overall, the reviewed literature demonstrates that ERP systems offer significant benefits in terms of process integration, automation, and scalability. However, most existing studies focus on general business operations, supply chain management, or isolated system implementations rather than comprehensive financial leasing solutions. **The research Gap:** Most existing studies address general ERP applications or standalone loan management systems, with limited emphasis on integrated fund leasing operations that combine loan lifecycle management, financial reporting, and customer interaction within a single platform. In addition, current research often treats loan processing, accounting, and customer management as separate components rather than a unified, automated system within an ERP framework.

3. METHODOLOGY

This study adopts a mixed-methods research design, combining both qualitative and quantitative approaches to achieve a comprehensive understanding of the problem and solution domain. The mixed-methods approach is appropriate for this research because it enables both an in-depth exploration of user requirements and a quantitative evaluation of system performance and effectiveness. While the qualitative component captures user experiences, needs, and perceptions regarding the system, the quantitative component provides measurable insights into system usage, efficiency, and user satisfaction. The integration of both approaches ensures a more holistic and reliable assessment of the developed system within the context of community-based digital platforms.

3.1 Data Collection Methods

Data for this study were collected from both primary and secondary sources to ensure validity, reliability, and comprehensive analysis of the proposed system. Primary data were obtained through structured surveys, semi-structured interviews, focus group discussions, and system usage logs generated during system testing and deployment. These instruments provided direct and empirical insights into user requirements, interaction patterns, system usability, and engagement behavior within the developed platform. Surveys captured quantifiable user perceptions regarding system efficiency and usability, while interviews and focus groups provided deeper qualitative insights into user experiences, expectations, and challenges. In addition, system usage logs offered objective behavioral data on how users interacted with the platform in real-time scenarios. Secondary data were sourced from existing literature, relevant case studies, and comparative analysis of similar community-based digital platforms, which provided theoretical grounding and benchmarking for the study. The quantitative data collected were analyzed using descriptive and inferential statistical techniques to evaluate user satisfaction, engagement levels, and system performance metrics. In contrast, qualitative data were analyzed using thematic analysis to identify recurring patterns, user expectations, and improvement opportunities. The integration of both datasets enabled methodological triangulation, thereby enhancing the reliability, validity, and depth of the overall findings.

3.2 System Development Methodology

The development of the proposed system follows the System Development Life Cycle (SDLC) approach, a structured and systematic methodology that ensures proper planning, design, implementation, testing, and deployment of software systems. This approach is particularly suitable for the development of complex ERP-based systems as it provides a clear framework for managing requirements, reducing development risks, and ensuring alignment between user needs and system functionalities. The SDLC process adopted in this study is divided into four key phases: planning, system analysis, system design, and implementation, each of which contributes to the progressive refinement of the system from concept to deployment.

3.2.1 Planning Phase

The planning phase involves the initial definition of the project scope, objectives, and system requirements, ensuring alignment between stakeholders and developers regarding expectations and deliverables. During this phase, the project scope was clearly defined to establish the boundaries of the system, including features such as user engagement, recycling activity tracking, and community interaction modules. The objective formulation focused on achieving key goals such as enhancing environmental awareness, promoting participation in plastic recycling initiatives, and improving communication within the community network. Additionally, requirements elicitation was conducted through interviews, surveys, and stakeholder discussions involving community

members, environmental organizations, and technical experts. This ensured that both functional and non-functional requirements were accurately captured and aligned with user expectations and system feasibility.

3.2.2 System Analysis Phase

The system analysis phase focuses on transforming the collected requirements into a structured understanding of system functionality, constraints, and feasibility. This involves a detailed requirements analysis to identify both functional requirements, such as user registration, content sharing, and recycling tracking, and non-functional requirements, including performance, scalability, and security. A feasibility study was also conducted to evaluate the technical, operational, and economic viability of implementing the system using Odoo ERP, ensuring that the selected platform adequately supports the system objectives. Furthermore, a comprehensive system specification document was developed, outlining the system architecture, data flow models, user roles, and operational constraints. This phase ensures that all system requirements are clearly defined and validated before proceeding to design and development. Figure 1 presents the activity diagram of the ERP system.

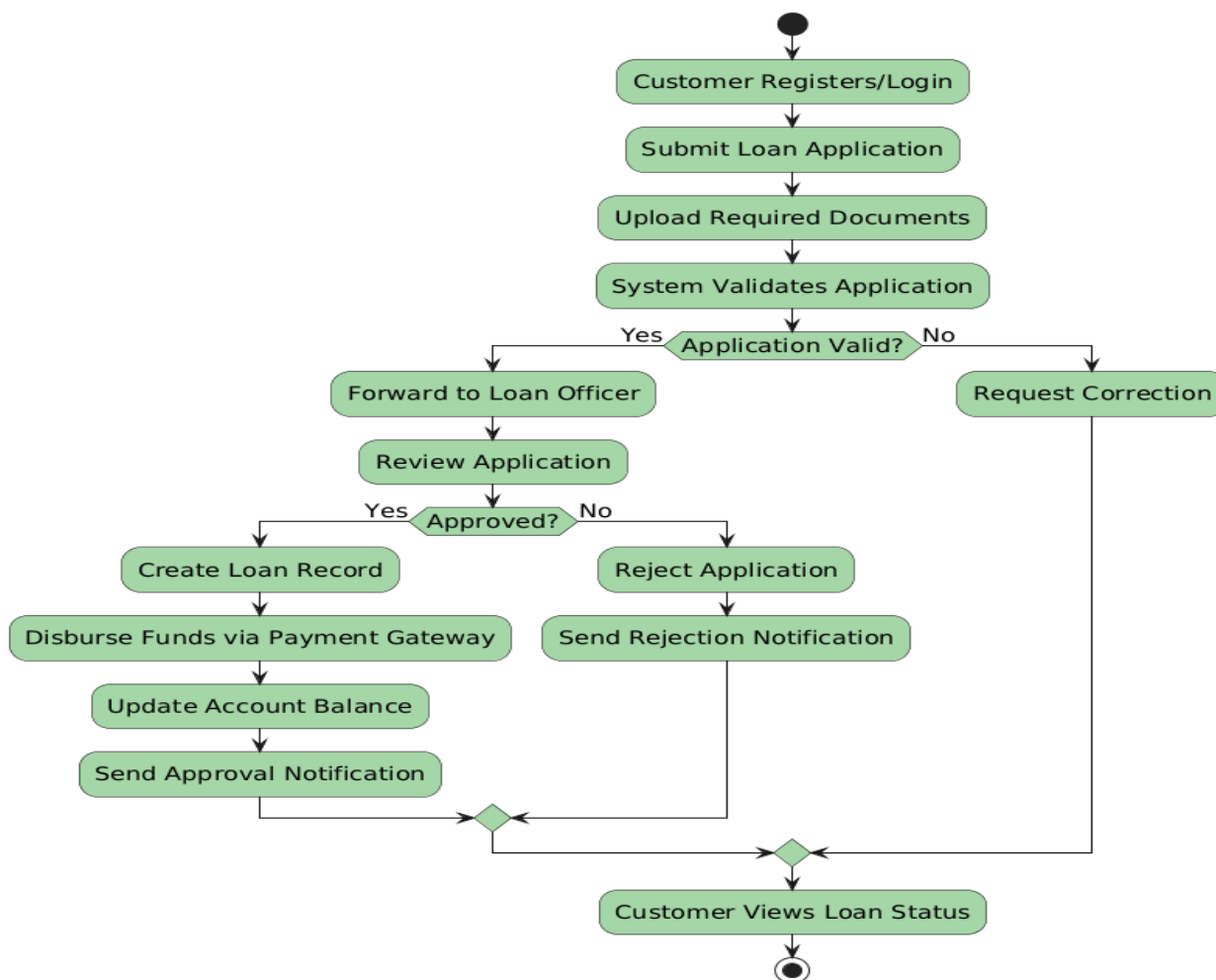


Figure 1: Activity diagram of the ERP system

The activity diagram in figure 1 represents the operational workflow of the loan management process from initiation to completion. It begins with user registration and loan application submission, followed by document validation and system verification. If the application is valid, it proceeds to loan officer review and approval; otherwise, it is returned for correction. Approved applications trigger loan disbursement, account updates, and notification delivery, while rejected applications generate rejection alerts to the customer. This diagram provides a clear visualization of decision points and process flow within the system.

3.2.3 System Design Phase

The system design phase translates the analyzed requirements into a structured and implementable system architecture. During this phase, the architectural design was developed to define the overall system structure, including core modules such as user management, community interaction, and recycling activity tracking, all integrated within the Odoo ERP framework. The database design focused on creating an efficient schema capable of managing user profiles, posts, recycling records, transactions, and community engagement data while ensuring data integrity and scalability. In addition, the user interface design was developed to ensure a simple, intuitive, and user-friendly experience that enhances accessibility for all categories of users, including non-technical stakeholders. Wireframes and interface prototypes were designed to support ease of navigation, improve usability, and ensure seamless interaction between users and system functionalities. Figure 2 presents the class diagram while figure 3 presents the entity relationship diagram.

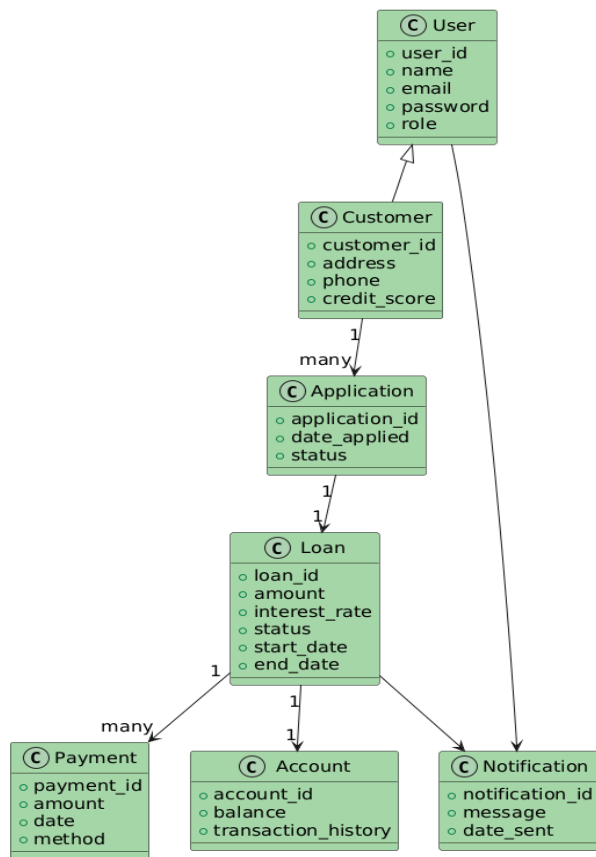


Figure 2: Class diagram of the ERP

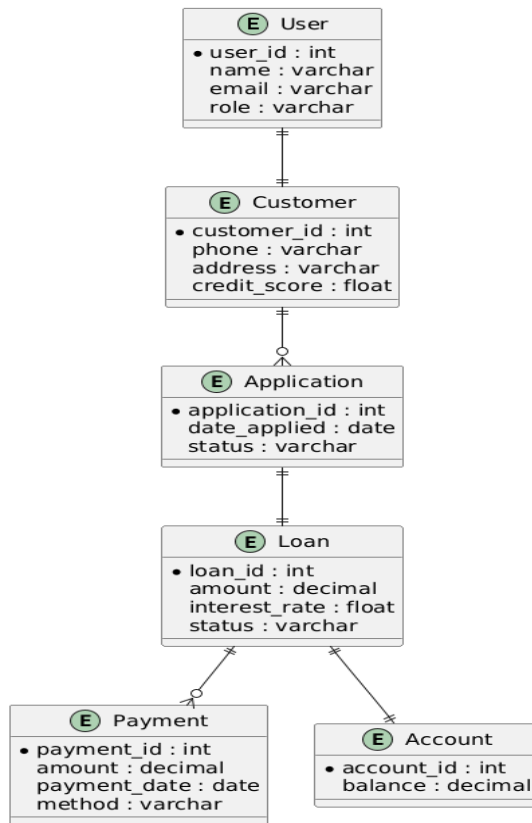


Figure 3: Entity relationship diagram of the ERP

The class diagram in figure 2 models the static structure of the system by defining key entities such as User, Customer, Loan, Application, Payment, Account, and Notification, along with their attributes and relationships. It shows how customers submit applications that generate loan records, which are then linked to payment and account classes for financial tracking. The diagram highlights object-oriented design principles, emphasizing inheritance, association, and data encapsulation. This structure supports modular development and aligns with Odoo's object-relational architecture. The ERD in figure 3 represents the database structure of the fund leasing system, illustrating how entities such as User, Customer, Loan, Application, Payment, and Account are related. It defines primary keys, foreign keys, and relationships such as one-to-many and one-to-one mappings between entities. For example, a single customer can have multiple loan applications, and each loan can generate multiple payment records. This diagram ensures data integrity, normalization, and efficient storage within the PostgreSQL database used by Odoo ERP. Figure 4 presents the sequence diagram.

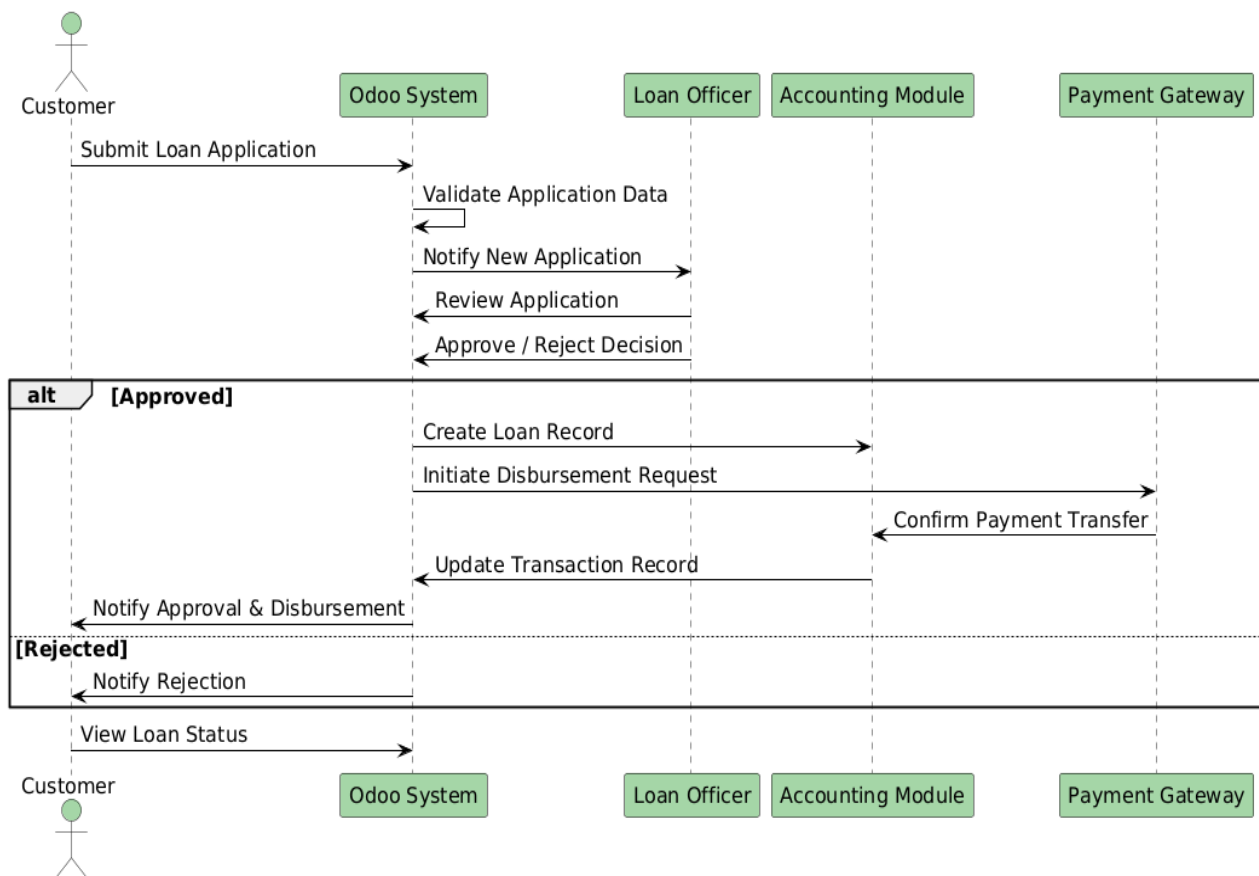


Figure 4: The sequence diagram of the ERP system

The sequence diagram in figure 4 illustrates the dynamic behavior of the system by showing the flow of interactions between the customer, system, loan officer, accounting module, and payment gateway during the loan processing lifecycle. It begins with a customer submitting a loan application, which is validated and forwarded to the loan officer for review. Upon approval, the system initiates loan disbursement through the payment gateway and updates the accounting records accordingly. Notifications are then sent to the customer regarding the loan status. This diagram highlights the step-by-step communication process and ensures clarity in system execution logic.

The use case diagram in figure 5 provides a high-level representation of the interactions between different actors and the fund leasing system. It identifies key stakeholders such as customers, loan officers, accountants, and administrators, and illustrates their respective roles within the system. Customers interact with the system by registering, applying for loans, uploading required documents, and tracking loan status, while loan officers handle loan approval and rejection processes. Accountants manage financial transactions and repayment records, and administrators oversee system management and reporting. This diagram effectively captures the functional requirements of the system and defines the scope of user interactions within the Odoo-based platform.

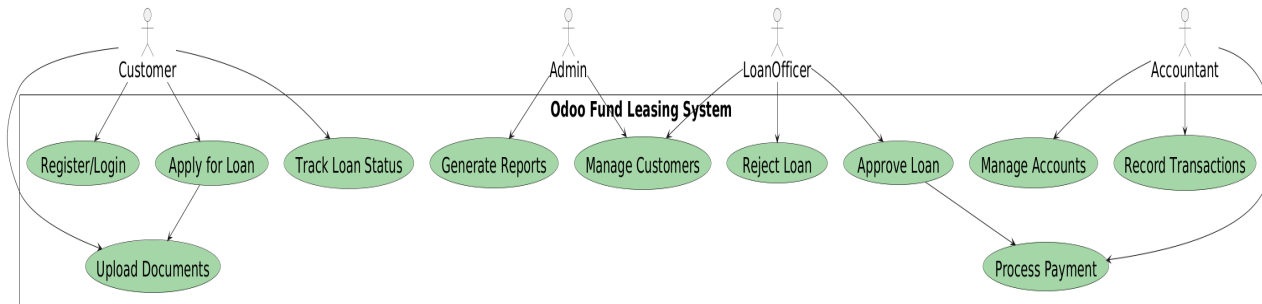


Figure 5: The use case diagram

4. IMPLEMENTATION AND RESULTS

The implementation of the proposed online fund leasing record system was carried out using Odoo 16 ERP, leveraging its modular architecture to integrate core financial and operational functionalities into a unified platform. The system was deployed by configuring and customizing essential modules such as Customer Relationship Management (CRM), Loan Management, Accounting, Invoicing, and Document Management. These modules were integrated to support the complete loan lifecycle, including application submission, approval processing, fund disbursement, repayment tracking, and reporting. The system was further enhanced with automated workflows that handle loan approvals, repayment scheduling, and real-time notifications, thereby reducing manual intervention and improving process efficiency. Integration with external payment gateways ensured secure and seamless financial transactions, while the underlying PostgreSQL database provided reliable data storage and retrieval capabilities.

4.1 Results and Discussion

During implementation, the system was tested using real operational scenarios to evaluate its functionality, reliability, and performance.

4.1.1 Result of the Homepage of the ERP System

The homepage of the developed ERP system serves as the central entry point for users, providing a unified dashboard that consolidates key system functionalities. Upon login, users are presented with an intuitive interface displaying navigation menus for loan management, accounting, CRM, and notifications. The homepage is designed to enhance usability by offering quick access to essential features such as loan application status, recent transactions, system alerts, and performance summaries. The implementation results show that the homepage significantly improves user experience by reducing navigation time and providing real-time visibility into system activities. Its

responsive design also ensures accessibility across different devices, thereby supporting both desktop and mobile users. Figure 6 presents the homepage of the dashboard.

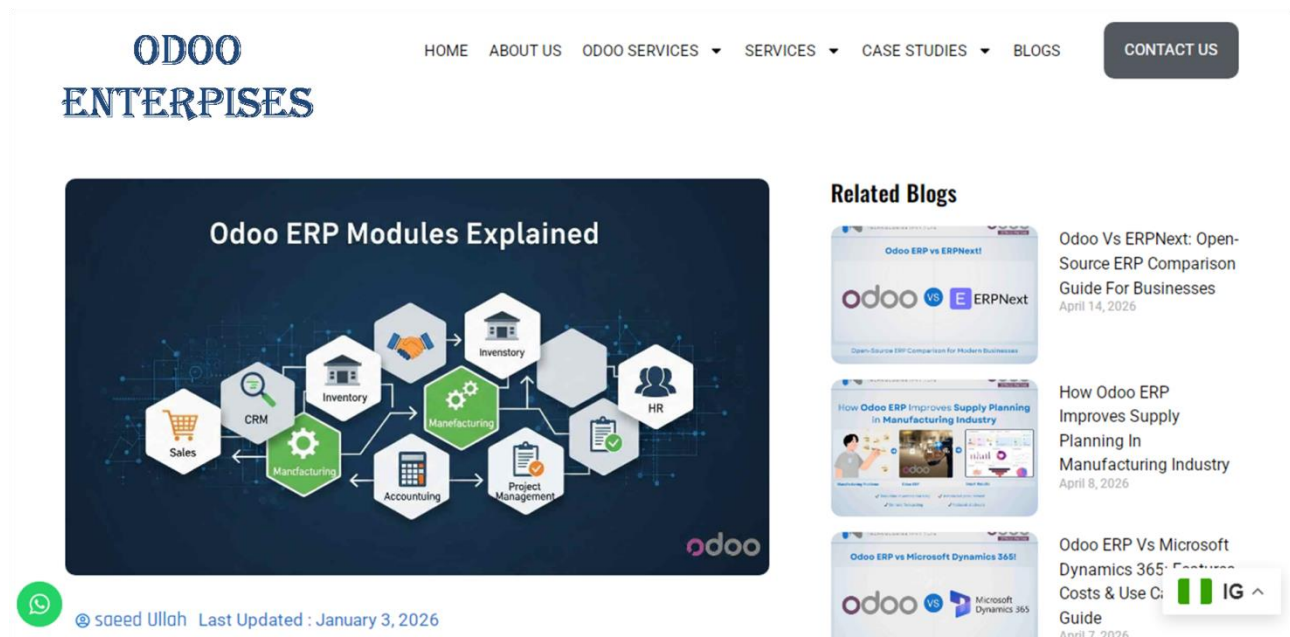


Figure 6: Result of the homepage of the loan management system

4.1.2 Result of the Social Media Component of the Dashboard

The social media component of the dashboard was implemented to support community engagement and interaction within the system environment. This module allows users to share updates, post announcements, and engage in discussions related to financial activities and community development. The results indicate that this feature enhances user interaction and fosters a sense of community among system users. It also supports information dissemination, particularly for updates related to loan policies, repayment reminders, and system notifications. The integration of this component within the ERP system demonstrates improved user engagement and communication efficiency, bridging the gap between financial operations and community participation.

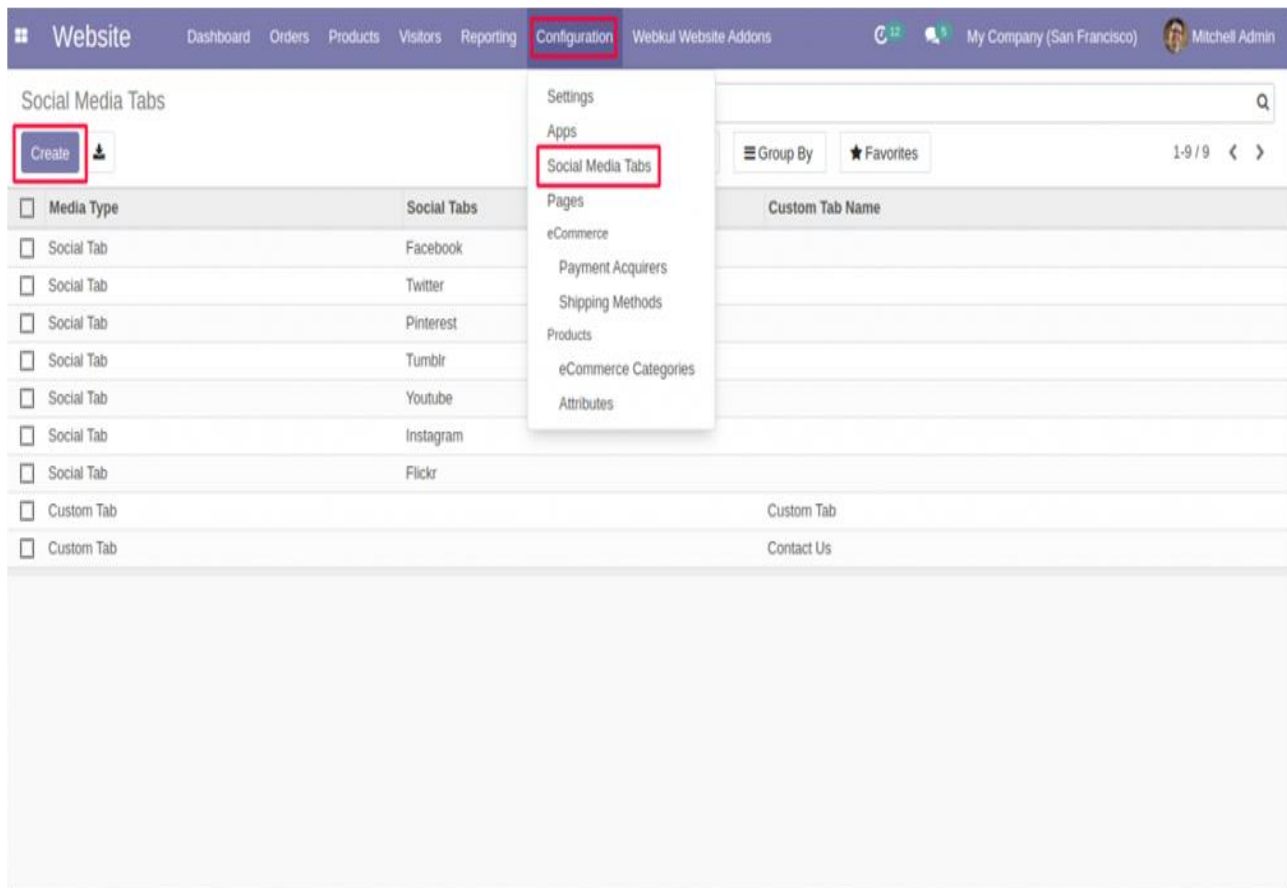


Figure 7: Result of the social media page management platform

4.3 Result of the Loan Management Page

The loan management page represents the core functional component of the system, where users can submit loan applications, track approval status, and monitor repayment schedules. The implementation results show that the system successfully automates the entire loan lifecycle, from application submission to disbursement and repayment tracking. Loan officers can review applications, approve or reject requests, and update loan records in real time, while customers can view their loan status and repayment history through a transparent interface. The system also generates automated notifications for approvals, due payments, and overdue reminders. Overall, this module significantly improves efficiency, reduces processing delays, and enhances accuracy in loan management operations. Figure 8 presents the load management dashboard.

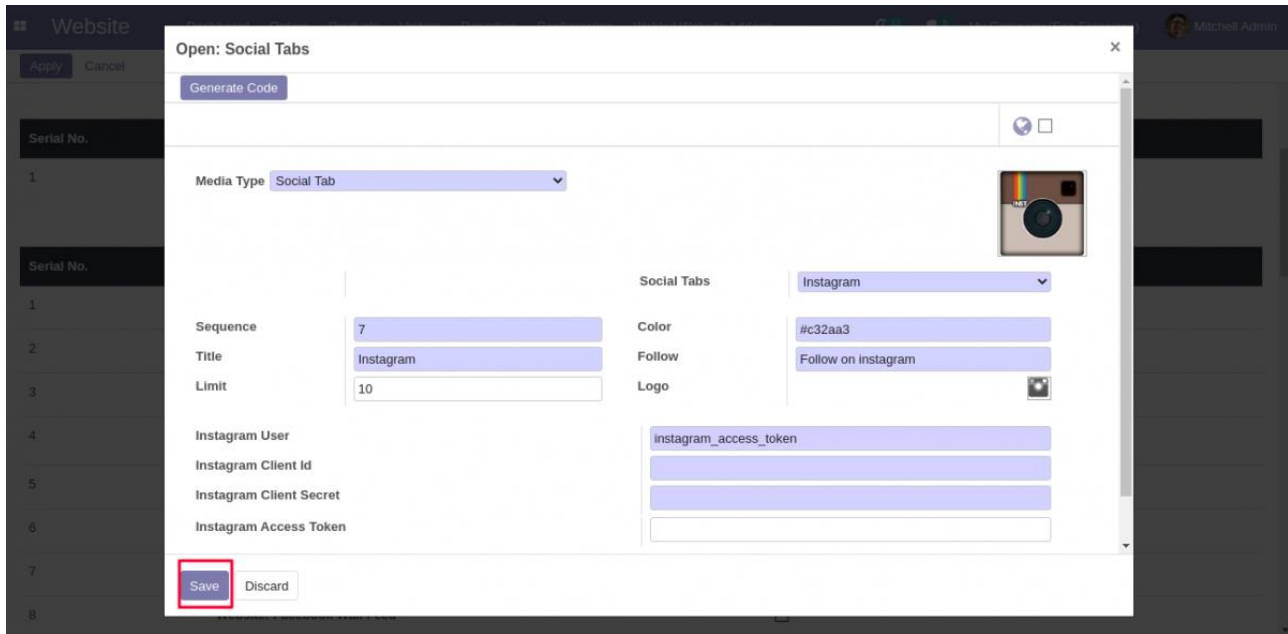


Figure 8: Result of page for loan management

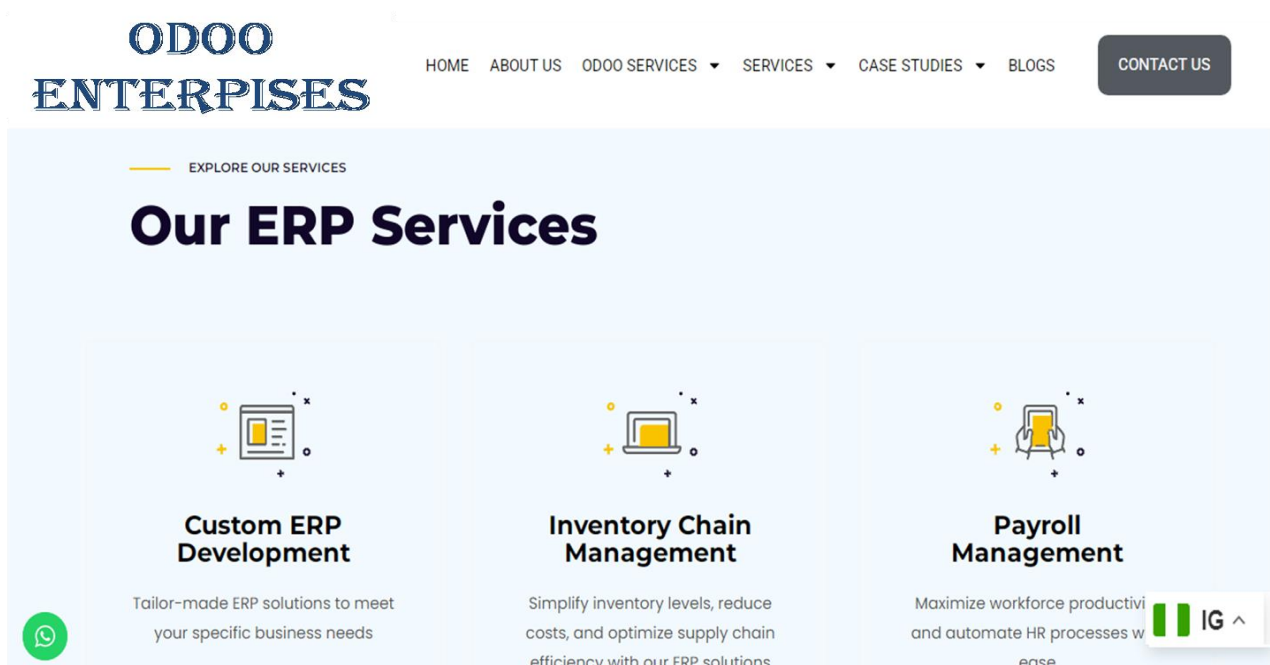


Figure 9: ERP service management page

5. CONCLUSION

This study has successfully designed and implemented an online fund leasing record management system using Odoo 16 ERP to address inefficiencies associated with traditional loan management processes. The developed system integrates key modules such as CRM, Accounting, Invoicing, and Loan Management into a unified platform, enabling seamless automation of the loan lifecycle, including application, approval, disbursement, and repayment tracking. The implementation results demonstrate that the system improves operational efficiency, reduces manual errors, enhances data accuracy, and provides real-time access to financial

information. Furthermore, the integration of workflow automation, notification services, and secure payment gateway connectivity significantly enhances transparency, user experience, and service delivery. Overall, the study confirms that an ERP-based approach using Odoo provides a scalable, flexible, and cost-effective solution for modern fund leasing operations.

5.1 Recommendations for Future Work

Although the developed system provides a functional and efficient solution, there are several areas that can be explored to further enhance its performance and applicability. Future research should focus on integrating advanced analytics and machine learning techniques to support credit scoring and loan risk prediction, thereby improving decision-making accuracy. Additionally, the incorporation of blockchain technology could enhance transparency, security, and traceability of financial transactions within the system. Future improvements may also include the development of a mobile application to increase accessibility and user engagement, especially for customers in remote areas. Furthermore, scalability testing under large-scale financial environments is recommended to ensure system robustness under high transaction loads. Finally, future studies should explore deployment in real-world financial institutions to validate performance in live operational environments and assess long-term sustainability.

6. REFERENCES

- Ali, M., and Nisar, Q. (2020). The adoption of ERP systems in SMEs: Challenges and opportunities. *Journal of Enterprise Information Management*, 33(5), 789804.
- AlMashari, M., and Zairi, M. (2020). ERP implementation: A comparative analysis of ERP and best practice implementation in SMEs. *Information Systems Management*, 37(4), 271283.
- Azam, M. (2026). Financial services in ERP: A comparative case study of Oracle Financials, SAP FICO, and Odoo accounting systems. *Journal of Financial Information Systems*, 18(2), 45–62.
- Borgman, R., and Hollander, S. (2018). Opensource ERP: Benefits, risks, and challenges. *International Journal of Information Management*, 46, 148158.
- Chilunjika, A. (2025). Design and development of a cloud-based loan management system. *International Journal of Computer Applications*, 185(7), 12–20.
- Dahiru, D., Galadanci, B., and Abubakar, A. (2022). Opensource ERP systems: A comprehensive review of opportunities and challenges. *Computers in Industry*, 143, 103117.
- Das, R., Sharma, P., and Kumar, S. (2024). Odoo-based ERP system for integrated business process automation. *International Journal of Novel Research and Development*, 9(3), 112–120.
<https://www.ijnrd.org/papers/IJNRD2403337.pdf>
- Dela Cruz, J. A., Santos, M. R., and Reyes, L. P. (2026). Evaluating ERP implementation feasibility: A case study of Odoo adoption using the TOE framework. *International Journal of Research and Innovation in Social Science*, 10(1), 55–68.
- Ferreira, R., De Almeida, F., and Cunha, P. (2022). Leveraging opensource ERP for financial management: A case study of Odoo in a credit institution. *Journal of Financial Innovation*, 12(3), 134149.

- Garcia, R., and Lopez, M. (2020). Project management tools and team productivity in software development. *Journal of Systems and Software Engineering*, 165, 110–119.
- James, A. (2020). Digital transformation in fund leasing: Opportunities and challenges. *Journal of Financial Services Research*, 47(2), 223238.
- Jeon, S., and Park, Y. (2019). Adopting opensource ERP
- Johnson, P., and White, S. (2018). The role of project management systems in engineering workflows. *Engineering Management Journal*, 30(4), 200–210.
- Lee, J., Kim, H., and Park, S. (2020). Trends in robotics systems and interdisciplinary integration. *Robotics and Autonomous Systems*, 134, 103–115.
- Mefid, A., and Ahlunnazak, A. (2023). Systematic literature review on Odoo ERP implementation in business operations. *Journal of Management and Small Business Innovation*, 5(2), 77–89. <https://jmassbi.fekon.unand.ac.id/index.php/mssb/article/view/92>
- Miller, D., and Green, T. (2019). Agile methodologies in robotics system development. *IEEE Transactions on Engineering Management*, 66(3), 350–362. <https://doi.org/10.xxxx/xxxxxx>
- Rodriguez, L., and Martinez, J. (2020). Version control systems and collaborative software engineering. *Software Engineering Review*, 28(2), 90–101.
- Smith, A., and Jones, B. (2018). Challenges in modern financial systems integration. *International Journal of Financial Engineering*, 12(1), 25–40.
- Utami, R., and Kharisma, V. (2023). Implementation of Odoo-based ERP system for enterprise data management. *ESJ East Asia Institute Journal*, 7(1), 33–45. <https://esj.eastasouth-institute.com/index.php/esiscs/article/view/161>
- Wang, Y., and Zhou, L. (2020). Concurrent engineering in complex system development. *Journal of Manufacturing Systems*, 55, 210–221.
- Zhang, Y., and Wang, X. (2019). Evolution of autonomous robotics systems and AI integration. *Artificial Intelligence Review*, 52(4), 233–250.

