IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 7, May 2024

Two Factor Authentication and Synchronization of Financial Data Module between Bank and ODOO ERP Involving APIS

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Abstract: *In this project, we aim to bolster security and streamline functionality through two key features: two-factor authentication (2FA) using the 32-bit algorithm and financial data synchronization via API integration to Odoo ERP by implementing two key features: two-factor authentication (2FA) using the 32-bit algorithm and financial data synchronization via API integration to Odoo ERP. The implementation of 2FA introduces an additional layer of security to Odoo's login processes. By leveraging the 32-bit algorithm, users will generate one-time passwords (OTPs) throughout authentication processes, significantly reducing the risk of unauthorized access and enhancing overall system security. Simultaneously, we will integrate API endpoints for one-time passwords (OTPs) throughout authentication processes, significantly reducing the risk of unauthorized access and enhancing overall system security. Subsequently, we will integrate API endpoints for one-time passwords (OTPs) throughout authentication processes, significantly reducing the risk of unauthorized access and enhancing overall system security. This synchronization ensures the accuracy and consistency of financial information, enabling real-time decision-making and improving operational efficiency.*

Our methodology involves carefully selecting and implementing the 32-bit algorithm for OTP generation, ensuring robustness and efficiency in Odoo ERP's security framework. Additionally, we will develop user-friendly interfaces for financial data synchronization, facilitating seamless communication between Odoo ERP and external systems. This synchronization guarantees the accuracy and consistency of financial information, empowering stakeholders with timely insights and facilitating informed decision-making.

Keywords: Odoo ERP, two-factor authentication, 32base algorithm, API integration, real-time decision making.

I. INTRODUCTION

Introducing two-factor authentication (2FA) and financial data synchronization modules to an Odoo ERP system can significantly enhance security and streamline financial processes. Here's a brief overview:

Two-Factor Authentication (2FA):

In today's digital landscape, data security is paramount, especially when dealing with sensitive financial information. Two-factor authentication adds an extra layer of security by requiring users to provide two forms of identification before gaining access to the system. This typically involves something the user knows (like a password) and something they have (like a mobile device or authentication token).

By integrating 2FA into Odoo ERP, you fortify the login process, reducing the risk of unauthorized access due to stolen or compromised passwords. It's an effective deterrent against cyber threats such as phishing attacks and brute force password guessing.

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Financial Data Synchronization:

Efficient financial data management is essential for any business, and synchronization modules help streamline this process within an ERP system like Odoo. These modules enable seamless integration between different financial platforms, such as banking systems, accounting software, and payment gateways.

With financial data synchronization in Odoo ERP, you can automate the transfer of transactional data, including invoices, payments, and expense reports, between various systems. This eliminates the need for manual data entry, reduces errors, and ensures that financial information is always up to date across the organization.

II. LITEATIRE SURVEY

[1] Fadi Aloul; Syed Zahidi; Wassim El-Haj - 2009 IEEE/ACS International Conference on Computer Systems and Applications

This paper describes a method of implementing two factor authentication using mobile phones. The proposed method guarantees that authenticating to services, such as online banking or ATM machines, is done in a very secure manner. The proposed system involves using a mobile phone as a software token for one time password generation. The generated one-time password is valid for only a short user-defined period of time and is generated by factors that are unique to both, the user and the mobile device itself. Additionally, an SMS-based mechanism is implemented as both a backup mechanism for retrieving the password and as a possible mean of synchronization.

The proposed method has been implemented and tested. Initial results show the success of the proposed method.

[2] Data Aggregators: The Connective Tissue for Open Banking By Julian Alcazar and Fumiko Hayashi

In open banking, new-generation data aggregators that specialize in APIs, such as Finicity, MX, and Plaid, facilitate the API-based flow of data from consumers' financial institutions to TSPs. Figure 1 shows how a data aggregator connects a consumer-authorized TSP with the consumer's bank.1 After the consumer authorizes the TSP to access their financial data (step 1), the TSP communicates with the data aggregator through an API to request data from the consumer's bank (step 2). The data aggregator then communicates with and extracts the data from the consumer's bank through another API (step 3). The data aggregator forwards the data to the TSP through the same API used for step 2 (step 4). Based on the data extracted, the TSP provides a service to the consumer.

III. METHODOLOGY SECTION

Implementing two-factor authentication (2FA) and financial data synchronization modules for Odoo ERP requires a structured methodology to ensure successful deployment. Here's a step-by-step approach:

1. Requirements Gathering:

- Identify the specific security and financial data synchronization needs of your organization.
- Determine which authentication methods will be used for 2FA (e.g., SMS codes, email verification, authenticator apps).
- Define the financial systems that need to be synchronized with Odoo ERP (e.g., bank accounts, accounting software).

2. Module Selection:

- Research and select suitable 2FA and financial data synchronization modules compatible with Odoo ERP.
- Consider factors such as ease of integration, reliability, security features, and scalability.

3. Development and Customization:

- If necessary, customize the selected modules to align with your organization's specific requirements.
- Develop any additional functionalities or integrations needed to ensure seamless operation within the Odoo ERP environment.

4. Testing:

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- Conduct comprehensive testing of the 2FA and financial data synchronization modules to ensure they function as intended.
- Test different scenarios, including user login attempts with 2FA enabled and synchronization of various financial transactions.

5. User Training:
- Provide training sessions for users on how to enable and use 2FA within the Odoo ERP system.
- Educate users on the process of synchronizing financial data and any new workflows associated with the modules.

6. Deployment:
- Roll out the 2FA and financial data synchronization modules to production environments.
- Monitor the deployment process closely to address any issues that may arise.

7. Security Configuration:
- Configure security settings for 2FA, including password policies and session management.
- Implement encryption protocols to safeguard financial data during synchronization and storage.

8. Monitoring and Maintenance:
- Establish monitoring mechanisms to track user authentication attempts and financial data synchronization processes.
- Regularly update and maintain the modules to address security vulnerabilities and compatibility issues.

9. Compliance Considerations:
- Ensure that the implemented solutions comply with relevant regulations and industry standards governing data security and financial transactions (e.g., GDPR, PCI DSS).

10. Continuous Improvement:
- Gather feedback from users and stakeholders to identify areas for improvement.
- Continuously evaluate the effectiveness of the 2FA and financial data synchronization modules and adjust as needed.

By following this methodology, you can effectively implement two-factor authentication and financial data synchronization modules for Odoo ERP, enhancing security and streamlining financial processes within your organization.

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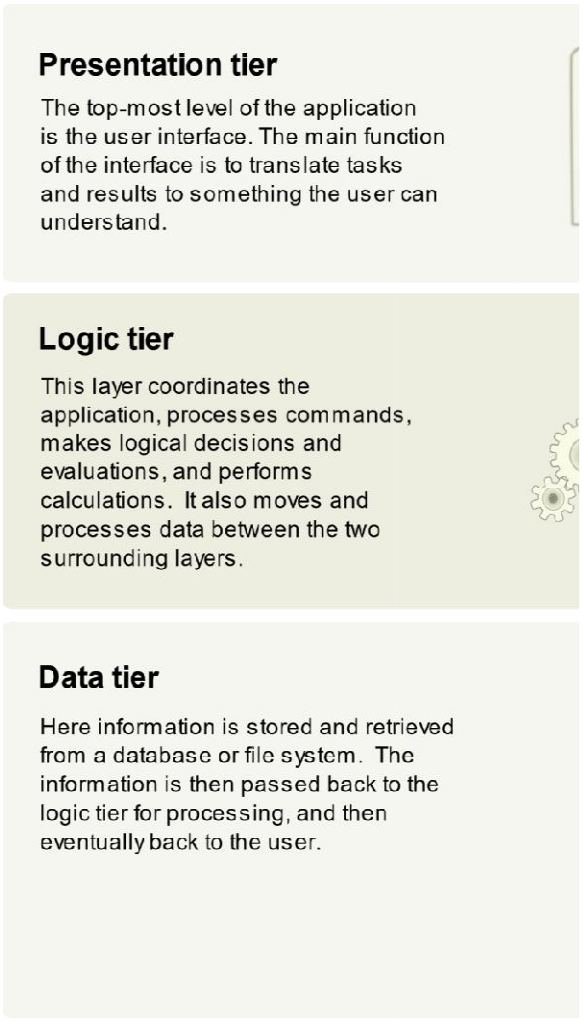

AUTHORIZED USER:

Here Authorized Users are the employees the same Organization who can handle.

All the confidential data and make conversation on the daily basis and not every user can be able to gain the gateway access to use the data. Even if the user knows the ID and secret key yet they have to wait for admin approval to access the account and after the approval only they may able to proceed further for other process.

IV. EXPERIMENTAL RESULTS

In this section, we provide a comprehensive experimental study of our approaches. A. Experimental Settings Competitors. Conduct experiments in a controlled environment to assess the effectiveness and performance of the implemented modules. Measure metrics such as login success rates, time taken to complete transactions, error rates, and system performance before and after implementing 2FA and synchronization modules. Gather feedback from users regarding the usability and impact of the new features on their daily workflows. Monitor security logs to identify any attempted unauthorized access and assess the effectiveness of 2FA in thwarting such attempts.

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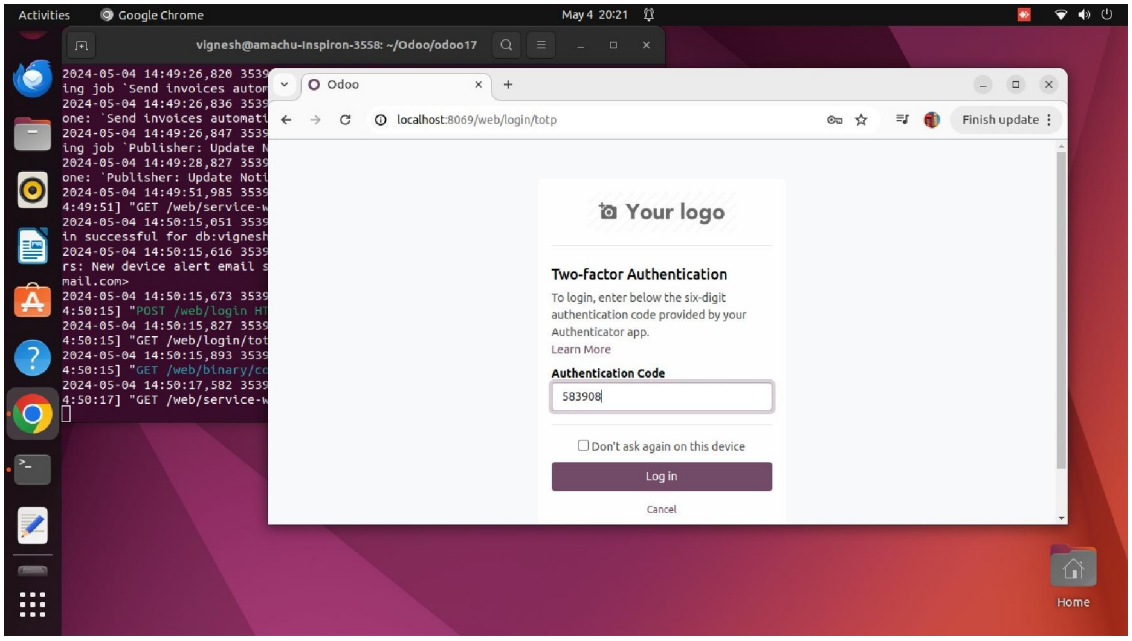
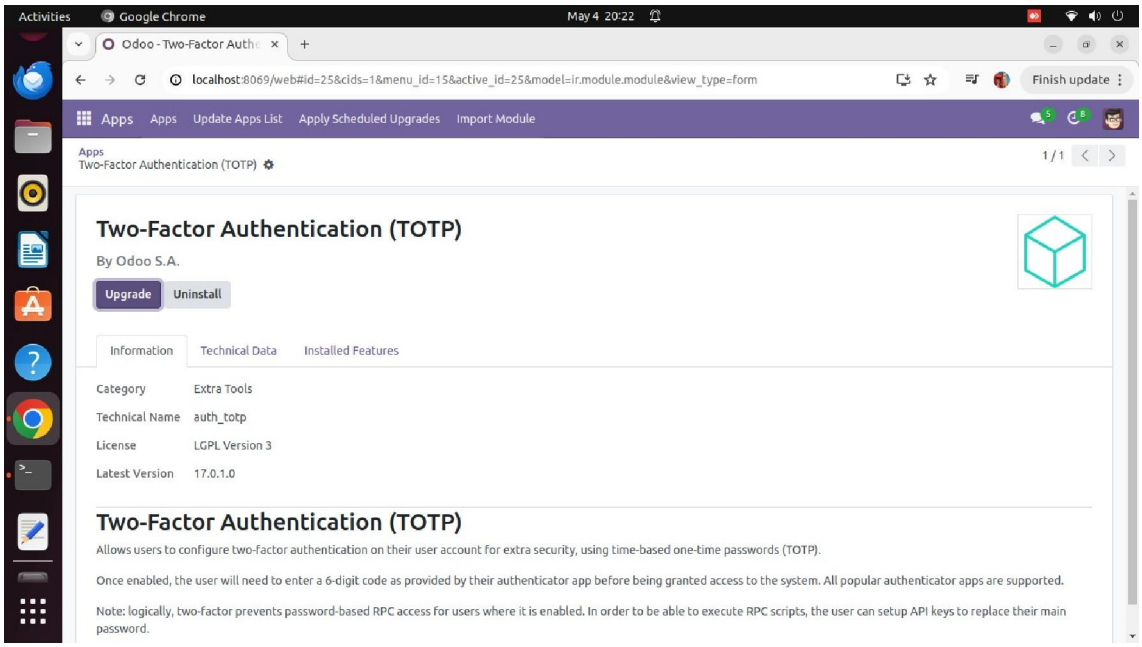
OUTPUT SCREENS:





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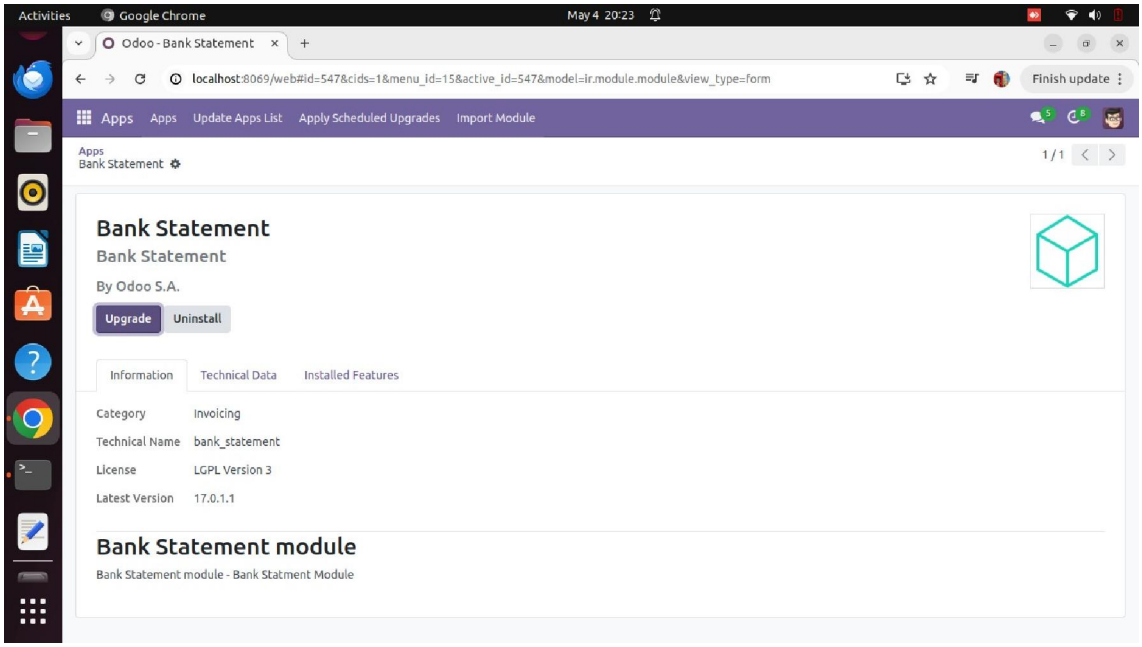

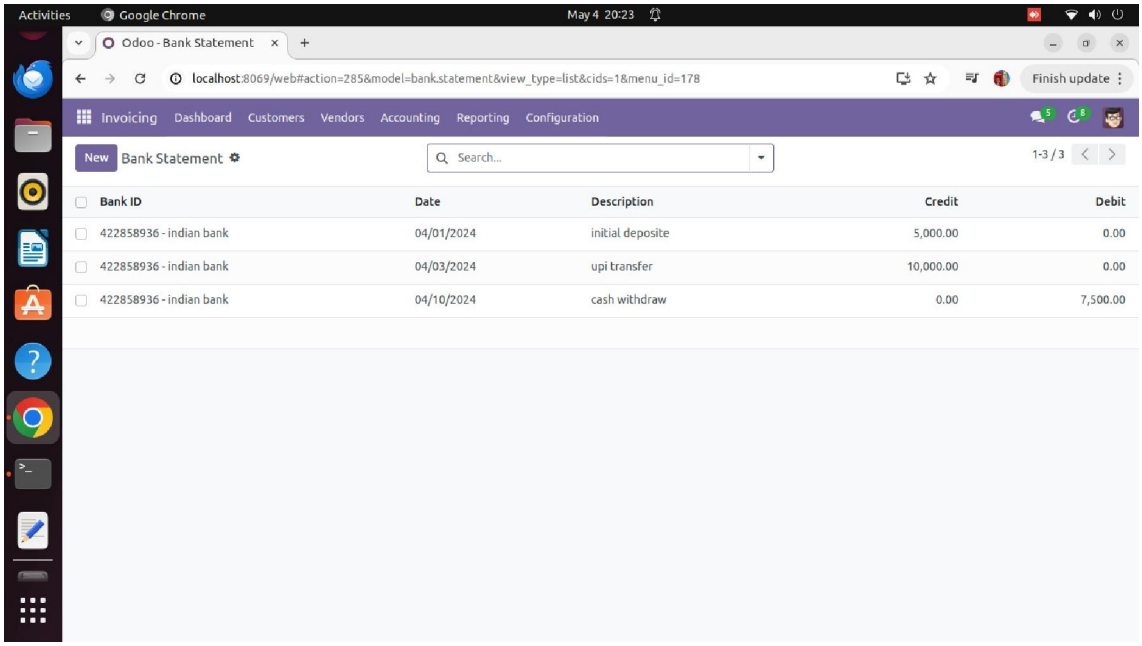

V. CONCLUSION

In conclusion, implementing two-factor authentication (2FA) and financial data synchronization in Odoo ERP can significantly bolster security and streamline financial operations within your organization. While Odoo does not natively support 2FA, integrating third-party solutions like Google Authenticator or Authy can provide an extra layer of security for user logins.

For financial data synchronization, Odoo's existing accounting and invoicing modules serve as a solid foundation. Integrating Odoo with your bank accounts, payment gateways, and other financial systems through APIs enables seamless data flow and real-time updates, improving accuracy and efficiency in financial management processes.

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