

## Human Resource Management System–Administrative Financial Setting Management Using MongoDB, Express, React, Node (MERN)

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### ABSTRACT

The objective of this project is to develop an Integrated Human Resource Management System (HRMS) with enhanced and automated human resource and accounting functionalities. Every step of the money cycle, taxation, and payments is made with more awareness and less possibility of human error. To support scalability and use, it makes use of React.js on the frontend, Node.js on the backend, and MongoDB for safe data storage. The HRMS does away with inefficiency in manual recordkeeping as well as decision-making complexity by consolidating all concerned data. Above this, payroll as well as other tax-compliant financial schemes is streamlined. Technology enables firms to become more corporate in their effectiveness and do their financial and human affairs with more safety, sensibility, and accuracy-that is, if it continues to advance.

**Keywords:** Human Resource Management System; React; MongoDB; Node; Backend; Financial; Accuracy.

### 1. Introduction

A Human Resource Management System (HRMS) is suggested to mechanize the financial and human resource operations. It eases functions such as managing currency configurations, tax information, and payment schemes. Technologies such as React.js, Node.js, and MongoDB are employed across system implementation to ensure flexibility and speed. Safe payment add-ons and real-time reminders enhance usability and usage of the system. It enhances precision and efficiency in repetitive tasks at the cost of reduced human input. Against this backdrop, the HRMS allows companies to control their workforce and finances more effectively. The study looks at how employee performance in Bangladesh's garment sector is affected by electronic HRM techniques including e-recruitment and e-performance appraisal. The functional impact of digital technologies on both in-role and extra-role performance is presented. The report offers a more thorough examination of how digitization might improve HR functions [1]. Identifying the HRM procedure and its connection to employee performance, especially in the RMG sector. It demonstrates the main HRM techniques for improving productivity and job satisfaction at work. The findings offer helpful suggestions to HR professionals in related fields [2].

The study looks at how strategic engagement, HR system maturity, and HRM digitalization affect business performance. The setting in which digital HRM methods are most likely to yield the highest returns is depicted in detail. A model for integrating digital platforms into HR strategy is offered by the research [3]. The paper presents the possibilities and challenges involved in the use of digital HRM in the garment sector in Bangladesh. It highlights the importance of technological upgradation to become competitive at the international level. The research prescribes methods of overcoming challenges to adopt digital HRMS [4]. The case study looks at how employee performance in the clothing and textile industry is impacted by various HRM strategies. It highlights how important effective HR practices are to raising company productivity. HR managers in connected businesses can benefit from the study's practical insights [5]. The revolutionary impact of AI on HR functions-particularly the reduction of

administrative labor-is covered in the article. It emphasizes how AI frees up more time for HR specialists to focus on key projects and employee engagement. Examples of actual AI usage in HR-related tasks are provided in the article [6]. The usage of AI to automate employee onboarding procedures in various firms is identified in the paper. It alludes to increased productivity and improved onboarding experience.

The paper emphasizes how AI is increasingly being used to support HR operations [7]. From shifting economic conditions to evolving workplace realities, the study examines how HR practitioners' tasks evolve over time. It justifies redefining the function of human resources in businesses. According to the paper, implementing technology and using strategic thinking are essential for HR's [8]. The use of AI in employment procedures raises ethical questions and potential hazards, which are discussed in the article. In order to advance justice and openness, it offers standards for the moral use of AI. For businesses integrating AI into their employment process, the piece serves as a warning guide [9]. The new piece features a profile of an AI-powered HR startup that wants to use advanced analytics to revolutionize hiring. It describes the organization's expansion goals as well as the broader implications for HR software. The paper demonstrates how AI has the potential to revolutionize HR services [10].

## 2. Related Works

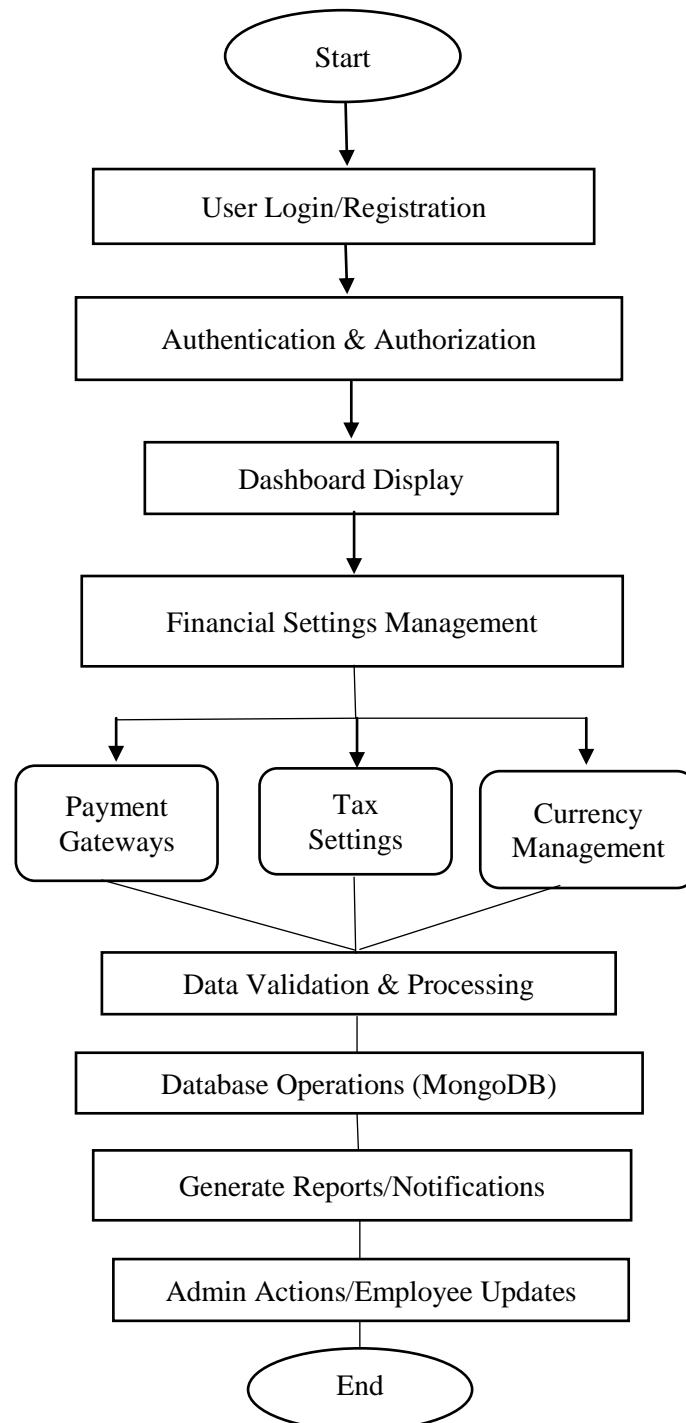
Many researchers and developers have recently investigated automating human resource management with web-based apps in an effort to increase corporate productivity. At first, HRMS systems were merely simple desktop applications made to handle payroll and retain records. Later, as technology advanced, more complete choices emerged that integrated payroll, personnel administration, finance transactions, and attendance into one package. According to research, integrating financial features like tax computation, currency management, and payment channels into HRMS significantly reduces human labor, mistakes, and processing time for wages.

Some cloud HRMS solutions, such as BambooHR, Gusto, and Zoho People, have incorporated these features to make things easier. According to studies, dynamic currency translation and timely tax data are essential, especially for multinational corporations conducting cross-border operations. Additionally, the HRMS's connectivity with secure payment methods like PayPal, Stripe, and Razorpay has sped up wage payments. Additionally, the majority of them feature self-service portals that let staff members check pay stubs, edit personal information, and request time off without contacting human services.

Emerging web technologies such as Node.js and React.js have proven to be more scalable, responsive, and efficient when it comes to HRMS development. In addition, research has revealed that approval procedures and audit trails enhance the transparency of the administration of financial systems. Second, in order to comply with labor standards and data protection legislations such as the GDPR, programmers have had to design more secure and less prone to failures systems. Lastly, research demonstrates that incorporating reporting and analytics into HRMS systems will enhance financial projections accuracy as well as people planning. Machine learning incorporation into predictive HR analytics is an emerging research domain. As compared to earlier systems, modern-day HRMS solutions are more user-friendly, modular, and scalable. Hence, the development of a financial settings module within HRMS reflects the overall pattern of end-to-end, intelligent HR automation solutions scripting the organizational future.

### 3. Proposed System

The innovative method completely integrates a Financial Settings panel into the HRMS, avoiding the need for separate spreadsheets and payroll packages. Administrators can select backup sources, give encryption keys, and enroll various sources of compensation from a single, role-protected location so salary transfer will not be disturbed if one source is inaccessible.



**Figure 1.** Block Diagram

Payroll sets can use country-based slabs, surcharges, and exclusions with effective-date versioning through the use of a rule-based tax engine. This will make it possible to modify the law for later runs without affecting earlier ones.

Currency controls avoid human conversions by retrieving real-time foreign exchange values, allocating default tenders to all legal entities, and automatically revaluing cross-border allowances. In order to preserve ledger alignment and compliance, all parameter changes go through customizable approvals, write to an immutable audit trail, and start real-time notifications to finance systems. Built-in validation greatly reduces errors and rework by blocking conflicting settings and displaying notifications before payroll processing. The technology reduces payroll close cycles, improves data accuracy, and frees HR staff from routine financial maintenance to carry out strategic workforce initiatives by automating gateway selection, tax computation, and currency management. The MERN stack, which consists of Express.js, React.js, Node.js, and MongoDB, was used to create the HRMS software. The technology mix that was selected provided a strong, scalable, and quick platform for managing HR and finance tasks. MERN enabled a responsive UI, faster development, and seamless frontend-backend integration.

The HRMS flow chart provides a concise summary of how the system handles important tasks including payroll, tax computations, currency setup, and employee data updates. Users must authenticate themselves using role-based authentication before they can log in and utilize the system. After logging on, the HR staff or administrator can change or amend an employee's name, title, and pay details. Payroll is automatically calculated using three variables: absence, deduction, and attendance. When the right tax deduction is taken into account, it is simple to compute and apply to many employees. When choosing payment terms and currency options, the demands of the company may also be taken into consideration.

Officials and employees must securely authenticate themselves to make sure they are permitted to use the HRMS system. After successfully completing the login process, users are taken to a dashboard that offers a variety of admin settings, including currency, tax, and payments. Users are able to construct, modify, or adapt various modules in accordance with business needs by controlling financial elements. MongoDB processes all information operations-including retrieval, editing, and storage-quickly. System administrators can update and change employee financial data on a regular basis, and the system provides real-time information and notifications.

#### 4. Modules

Modules are discrete parts or components of a software system that carry out specific tasks. Modules make it easier to work with, expand, and update an application by organizing the coding. Modules guarantee reusability while improving the overall efficiency and structure of the system.

##### a. Administrative Management

Within an HRMS, administrative administration supports all other HR modules. It acts as the command center for creating, adjusting, and enforcing fundamental organizational policies. HR employees use administrative administration to set up departments, employment levels, permission levels, vacations, security responsibilities, and other firm-level configurations that affect platform behavior and data flow. The administrative space prevents duplicate data entry, enforces required requirements, and keeps track of the most recent policy revisions by centralizing all of these controls in one place. By managing important financial components including payroll cycles, tax levels, benefit plans, and multi-currency capabilities without requiring human participation, it also automatically complies with regulatory standards.

### **b. Financial settings in Administrative Management**

All of the financial policies that have an immediate impact on employees are stored on the Financial Settings page of the admin panel of an HRMS. Human-resource or payroll administrators program cycles of remuneration, tax rates, statutory deductions, default currencies, and payment systems for numerous businesses across many nations. The setting has a noticeable effect on the provident-fund contribution, benefits premiums, and net-pay computations at the start of a payroll run by preventing re-keying and error. Investigate a few options online, including audit trails to document any modifications, bonus accrual dates, overtime multipliers, and expenditure reimbursement regulations. API bridges preserve ledger balance and adherence to stringent regional labor laws by sending completed quantities to financial systems.

### **c. HRMS Features**

The advantages that come with having an up-to-date HRMS transform the work of the HR professional from one of completing multiple forms to one of strategically influencing others. It eliminates duplicate files and version-control issues by compiling all employee data-personal, employment history, pay, attendance, and performance information-into a single, secure database that is nonetheless easily accessible. Labor expenditures and costly errors are greatly reduced by computerized onboarding systems, pay computations, tax withholdings, leave requests, and compliance checks. Role-based self-service portals help employees stay informed and relieve some of the burden on HR managers by enabling them to manage their own profiles, plan vacation time, and see paystubs. Managers will be able to plan and make choices with the use of real-time dashboards that display the most recent data on personnel, turnover, and compliance dates. Because of role-based access, improved encryption that protects sensitive data, and simplicity of use with learning management, ERP, and accounting systems, the entire architecture can collect accurate data. Last but not least, leadership may influence staffing needs, ensure that compensation design is suitable, and improve overall performance by integrating analytics to convert raw human capital information into actionable knowledge.

### **d. Automation in HRMS**

Using a Human Resource Management System (HRMS) simplifies and streamlines the majority of an organization's HR operations. This system's primary use is to store personnel records in a centralized database that is simple to access and change. The computer manages payroll by efficiently processing payments, calculating salaries, and making deductions. HRMS maintains accurate records of employee work hours, leave requests, and attendance. By enabling HR staff to publish a job opportunity, screen candidates, and finish onboarding, the recruitment process is automated. Employees can request, examine, and modify leave, pay stubs, and personal information via a self-service facility without contacting human resources.

### **e. Tools and Environment**

By the implementation of the HRMS system, programs including Visual Studio Code, Postman, and MongoDB Compass were used to guarantee efficient productivity. Because it offered more debugging and was more customizable, Visual Studio Code was the best code editor. Postman was used for testing and validation in order to

achieve a successful end-to-end front-end and back-end integration. MongoDB Compass was used to simulate the updated database. They helped to reduce database management overall, increase development productivity, and produce accurate testing.

## 5. Result and Discussion

Among the key components of a well-designed, extremely successful HRMS system were automated accounting and administrative procedures. It reduced human error and expedited financial transactions by combining taxation, currency recognition, and payment alternatives. The system's effectiveness and user-friendliness improved cash handling for all employees. Administrators and employees were more open and self-assured due to prompt notice and secure payment. MongoDB gave customers immediate access to up-to-date data and made managing massive volumes of data easier.

### a. Dashboard page

The HRMS system dashboard page offers a concise, organized summary of the key metrics and features. A number of easily accessible modules, including Setup, CRM, Recruitment, Employee, Holidays, Promotion, Training, and Administration, are located on the left sidebar. Key financial data, including sales, revenue, and customers, are displayed in the Dashboard area along with the corresponding numbers and percentage rate of change. At regular intervals, reminders also help to monitor the business's operations. Users may arrange their accounts in the profile section on the upper right-hand side, and the handy search bar at the top makes navigating the website simple. All users may observe and monitor HR-related actions on a single platform because of its simple design.

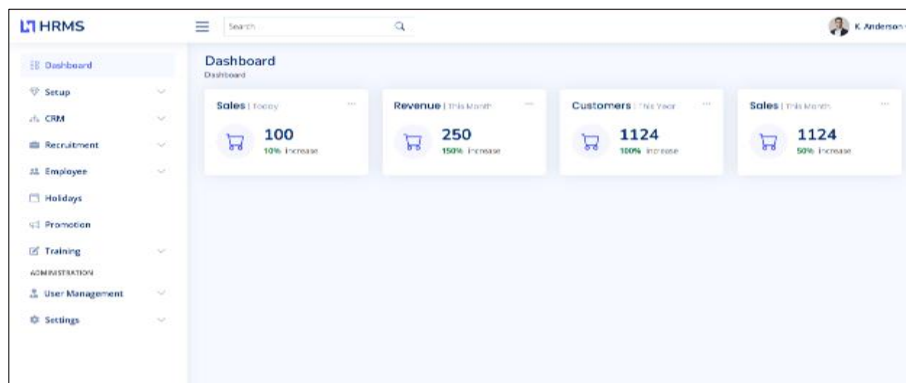


Figure 2. Dashboard page

### b. Financial Settings Components

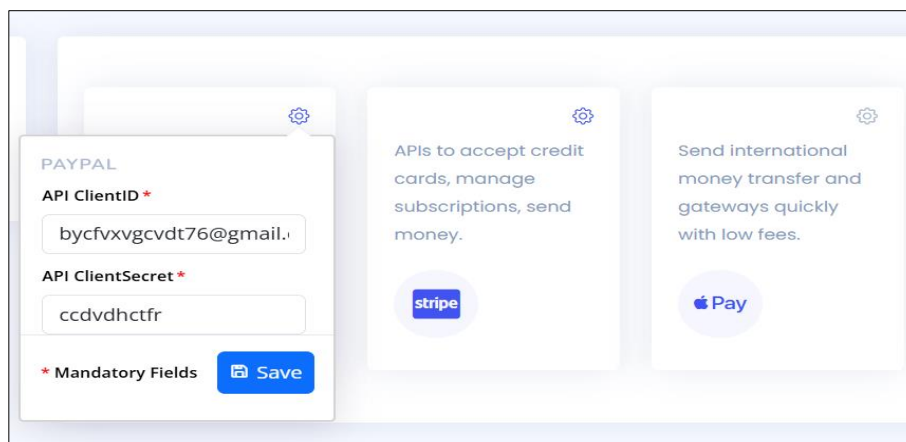


Figure 3. Settings categories

Three top-level categories appear on the new page that appears when you click on the Financial Settings sidebar link. Each of the three categories are currencies, tax rates, and payment gateways is a crucial sign of how the HRMS system handles money. Payment gateways are chosen to manage payment channels, currencies are chosen to provide alternative currency possibilities, and tax rates are chosen to calculate appropriate taxes. In addition to making financial settings easier to use, this separation guarantees that they are appropriately specified and manageable. Generally speaking, it offers the capability to appropriately adjust and track the company's financial settings in a single location.

### c. Payment Gateway Account Setup

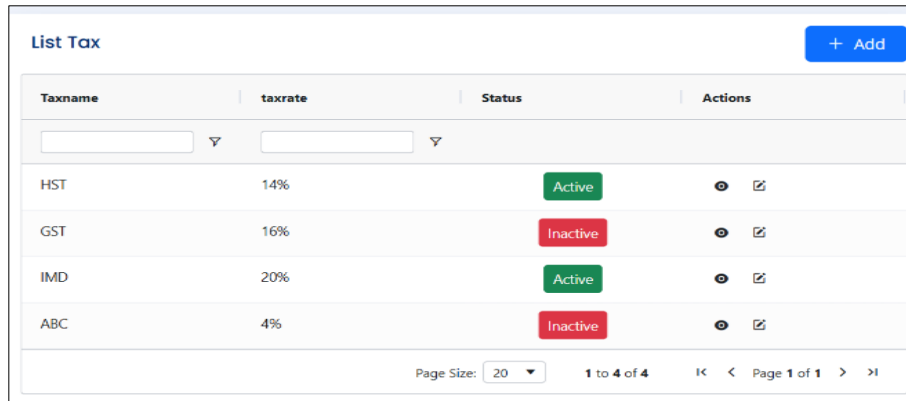
In payment gateways, the users can readily modify their email ID and secret client ID using a secure interface. These modifications are verified for accuracy before they are saved. After verification, the new details are saved in the MongoDB database, which is flexible in managing dynamic user data. Users can update their previously saved information anytime, keeping it current. MongoDB supports quick and easy data updating, with the process being seamless. The feature gives the user complete control of account details. Encryption and security measures are also used to shield sensitive data against unauthorized access during update. The system monitors updates to ensure an audit trail is maintained for accountability. This allows for any update made to be recorded properly and retrieved for examination.



**Figure 4.** Payment Gateways

### d. Tax Deductions and Exemptions

Users must fill out the tax details form with the necessary information in order to ensure that the tax is processed efficiently. Users input a defined tax identification number in the first one, called Tax ID. The tax kind or name, such as "Sales Tax" or "Income Tax," should then be entered by users in the Tax Name box. Users must enter the correct tax rate as a percentage in order for the Tax Rate field to compute the correct amount. These are used in tax compliance and computation. The technology automatically confirms the accuracy of the data before storing it in the database. This makes it feasible to easily have all tax records up to date and prepared for future processing or reporting. The form is easy to use with clear field names and instructions. The user's tax information is safely saved after completing the form and is prepared for any upcoming upgrades or audits. This is done to make tax management simple and effective for both individuals and businesses.

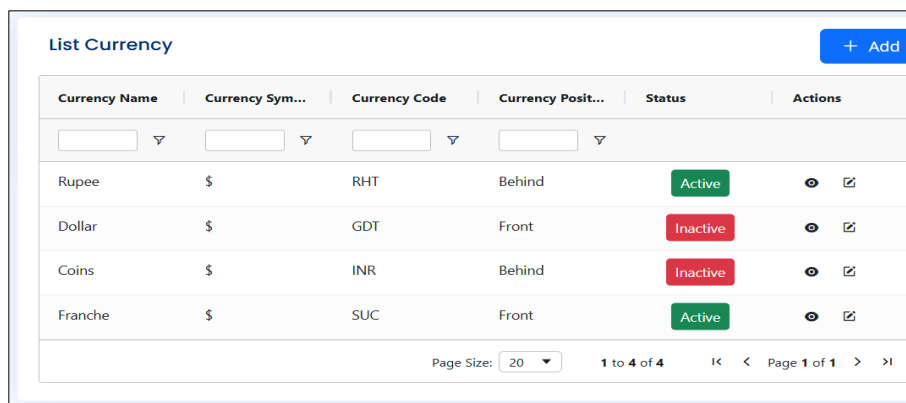


| Taxname | taxrate | Status   | Actions |
|---------|---------|----------|---------|
| HST     | 14%     | Active   |         |
| GST     | 16%     | Inactive |         |
| IMD     | 20%     | Active   |         |
| ABC     | 4%      | Inactive |         |

**Figure 5. Tax Listing**

**e. Currency Deductions and Exemption**

Name, code, type, and status are some of the important information the user enters in the currency box. The form makes use of the most recent currency data to guarantee that all necessary fields are accessible and easily filled out. Because of the method's flexibility and ease of use, customers can access, change, and update the money data at any time. The modifications are checked for accuracy and consistency before being saved. This feature ensures that the software currency list is up-to-date and accurate.



| Currency Name | Currency Sym... | Currency Code | Currency Posit... | Status   | Actions |
|---------------|-----------------|---------------|-------------------|----------|---------|
| Rupee         | \$              | RHT           | Behind            | Active   |         |
| Dollar        | \$              | GDT           | Front             | Inactive |         |
| Coins         | \$              | INR           | Behind            | Inactive |         |
| Franche       | \$              | SUC           | Front             | Active   |         |

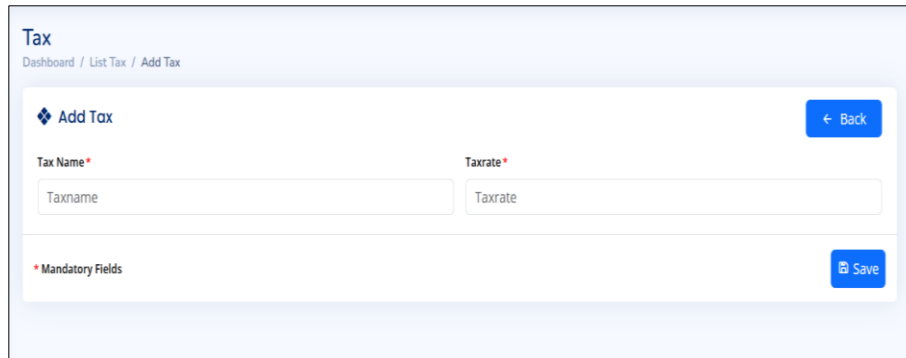
**Figure 6. Currency Listing**

**f. Add tax and currency details**

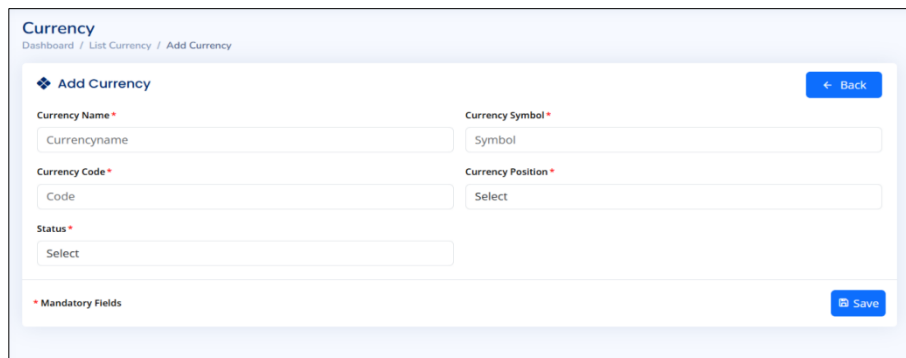
Users can enter important tax data into the system using the Add Tax form. Users must complete the Tax Name and Tax Rate forms, which have been marked as mandatory. This data guarantees that the HRMS system is set up correctly and calculates applicable taxes. Users only need to click the Save button to store the data in the database after entering it. Maintaining accurate tax records is made simple by the format's friendliness and simplicity of use.

The Add Currency form can be used to enter a variety of crucial currency data into the system. Currency Name, Currency Code, Currency Symbol, Currency Position, and Currency Status are required fields that users must complete. The data helps to keep the currencies in the HRMS system stable and supports the proper fiscal procedure. Only the correct forms must be filled out by users; information will be stored in the database upon clicking the "store" button. The form's organization, usefulness, and simplicity make it simple to maintain up-to-date records.





**Figure 7.** Tax form



**Figure 8.** Currency form

## 6. Conclusion

The HRMS system's capacity to handle currencies affects the reliability and value of the business financial data. The system enables the entry of code, currency name, symbol, position, and status in tightly knit groups to facilitate the automation of creating financial processes and producing output that is responsive to business requirements. The center manages foreign payrolls, invoicing, and foreign exchange expenditure payments to support the operations of firms operating abroad. Regardless of how user-friendly they are, data checks must be carried out to ensure accurate input data and missing data.

### Declarations

#### Source of Funding

This study did not receive any grant from funding agencies in the public, commercial, or not-for-profit sectors.

#### Competing Interests Statement

The authors declare no competing financial, professional, or personal interests.

#### Consent for publication

The authors declare that they consented to the publication of this study.

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