

1. Human Resources Management Module

Human resource department in any organization is considered to be highly critical for the entire organization. Its many functions serve as a supportive background for the organization. In order to function optimally, the organization must have the right tools and resources in place. The Human Resource Management (HRM) module is one of the main modules in the ----- Automation System. The module encompasses a large number of activities. Hence, the module is divided in the following sub-modules:

- Recruitment/Appointment Management
- Personnel Management Information System / Employee Profile (PMIS)
- Training & Development Management
- ACR/ Annual Performance Agreement
- Promotion & Posting Management
- Attendance Management
- Leave Management
- Retirement and Termination Management
- Discipline and Investigation Management
- Award & Publication Management
- Information Management for Payroll and Fund Management (Loan, PF)
- Vesting of Magisterial Power

1.1 Expected Benefits from the Module

- Providing one-stop solution to all HR related queries
- Minimizing duplication of data entry. Entering data once, such as a salary slab or a new policy, and applying in multiple places.
- Helping inconsistency by automatically updating any changes
- Maintaining data integrity by using same updated information
- Reduction of paper and related materials and storage - often yields cost savings
- Helping to improve productivity of an organization by managing its human resources efficiently
- Facilitating an easier way to compare and analyze data in order to generate timely reports for every employee
- Facilitating to make more informed decisions in real time by using analytics and integration of organizational data
- Decreasing compliance woes aided by alerts and automatic reporting options
- Reducing the workload of the human resource department

- Providing a single place, where one can organize and record all the HR related activities

1.2 Sub-module: Personnel Management Information System / Employee Profile (PMIS)

Every organization needs a centralized store of employee information, termed personal information management system (PIMS), for containing profiles of all employees. The profile of an employee may include personal information, job and salary history, banking and tax details, disciplinary history, performance feedback, or any other custom fields important for the organization. The objective of PIMS is to facilitate finding, keeping, organizing, and maintaining personal information of all employees. PIMS is also about managing privacy and the flow of personal information without any damage.

1.2.1 Expected Benefits

- Easy management of employee information
- Maintenance of all employee data in a central and consistent way
- Central source of employee data for all other modules of ----- Automation System and other sub-modules of HR

1.2.2 List of Features

- Managing personnel information
- Importing existing data from PMIS of Ministry of Health (MOHFP)
- Adding personal information of newly recruited personnel
- Modifying personal information (under scrutiny/approval if needed)
- Service Book Management
- Making facility for printing long and short Personal Data Sheet (PDS)
- Integration with Promotion and Posting Management sub-module to incorporate necessary changes, if any
- Providing data to other sub-modules such as Termination/Retirement management, Leave Management, Information Management for Payroll and Fund
- Importing/exporting data if an employee is transferred to another office

1.2.3 Master/System Data/Operational rule

- Data format for storing Personal Data Sheet (PDS)
- Organogram

1.2.4 Data to be stored

- Information for PDS
- Information for service book
- Information related to pension such as: information of heir.

1.2.5 Actors/stakeholders

- All Employee
- Corresponding Secretariat and Ministry

1.2.6 Process Description(s)

Data Entry of the New Employees:

1. If the employee has no previous accounts
 - i. The user is first asked to provide a username and a password
 - ii. After setting up the username and password, the employee is presented with a form
 - iii. The employee fills in all the information and submits it for admin approval
2. The admin receives a notification regarding the pending approval
3. The admin reviews the data.
 - i. If any change is needed, it is sent back to the employee (with comments if needed). The employee gets a notification. The employee according to the comment(s), does necessary changes and submits again for approval.
 - ii. If no change is needed, the admin approves the request. The employee is sent a notification about the approval

Updating data:

The information stored in the system are of two types.

- One type needs admin approval. If an employee is required to change information from this type, the modification will require admin approval.
- The second type requires no admin approval. Any change made by an employee will be instantly changed. Logs will be kept if necessary.

1.3 Sub-module: Training and Development Management

Training and development are the indispensable functions of human resource management. Its aim is to improve the current or future performance of an employee. Employers must provide giving extensive training on new subject matters and technologies.

1.3.1 Expected Benefits

- Easy management of training programs
- Facilitating easy accessibility of training history and well-presented statistical data on previous training programs
- Providing supplemental evaluation information on employee skill

1.3.2 List of Features

- Viewing training history
- Managing training criteria (if any)
- Viewing list of eligible candidates for a training

- Selecting candidate(s) for the training
- Notifying candidates for the training
- Updating training history
- Transferring responsibilities of the selected candidate(s) to other(s)
- Showing the training statistics

1.3.3 Actors/Stakeholders

- All employee
- Corresponding Secretariat/ Ministry

1.3.4 Process Description(s)

Creating a training program:

1. Create a new training program with title, description and other relevant information, e.g., trainer. Only the person assigned with proper authority will be able to create a training program.
2. Disseminate the training program's news to the selected/relevant employees.
3. **Employee selection:** The system will allow the authority to perform different kind of analysis to select the candidate employee:
 - a. Select the relevant skills from the options to filter employees
 - b. Do filtering and/or sorting on further statistics (e.g., number of training received, experience, etc.) and view detailed personal information if needed
 - c. Select the most appropriate set for the training
4. The selected trainees are sent notifications.
5. The selected trainees confirm the notifications. If the training is optional, the selected trainees can select not to avail the training show their interest; otherwise they must accept.
6. The initiator/creator prepares the final list and send them the relevant information about the training.

Managing a training program:

The system allows the creator to manage different settings of the training course during the training. Some of the features will be:

- Sending notifications to all the participants
- Update trainer/training information
- Manage participation information
- Update status of the training
- Upload training result(s)/statistics if applicable
- Create survey about training program, e.g., content, instructor

Finishing a training program:

After the training program has ended, the creator will update the status of the program. He/She will also have some other responsibilities

- Notify Accounts or, other sub-modules' stakeholders if necessary
- Provide some statistics/result on the training program, e.g., survey results regarding participation satisfaction on content, or instructor, participants' performance, etc. This will help to identify the training program's success and directions for improvement in future. This information will also help the management to identify qualified, appropriate, and competent employees for different tasks in future. Statistics from this module will also be available from the ACR/APA sub-module

1.4 Sub-module: Leave Management

The objective of this sub-module is to automate automates the process of managing and tracking multiple types of employee leaves. This sub-module allows creating, monitoring, and routing of the leave applications from the applicants to the acting supervisors in the department and to the administrator of the Human Resources Department.

The following leaves will be incorporated in the system:

2. Casual Leave (CL)
3. Earned Leave (EL)
4. Study Leave
5. Deputation
6. Maternity Leave
7. Recreation Leave
8. Leave on medical cause
9. Extraordinary Leave
10. Other - The leaves that do not fall in the above criteria falls under other

1.4.1 Expected Benefits

- Providing automatic leave management facility
- Maintaining all leave related information in a central and consistent way
- Facilitating easy decision making
- Providing easy access facility for seeing leave related information

1.4.2 List of Features

- Showing balance leave/checking leave eligibility
- Applying leave for particular reason(s)
- Proposing transfer of responsibility to other(s)
- Serving leave approval/rejection notification

- Cancellation/rescheduling of leave
- Updating leave amount
- Viewing leave history

1.4.3 Master/System Data/Operational rule

- Leave rules
- Previous leave related data

1.4.4 Actors/Stakeholders

- All employee
- Corresponding Secretariat/ Ministry

1.4.5 Process Description

- An employee applies for a leave, if applicable. He can see his previous history before applying to decide. The employee also selects a substitute, who will perform the duties in his absence, if applicable. The substitute employee receives a request about the leave. He can accept the request and forward it. He can also send the request back to the request issuer if he is unable to perform the request-issuer's duties. In that case, the request-issuer will select another substitute and so on.
- The request is sent to appropriate authority (after the substitute has agreed and forwarded the request). For example, casual leaves are approved by the immediate controlling authority. Earned leaves, duty leaves, extra ordinary leaves are approved by appointing authority. Maternity and Recreation leaves are approved by secretariats.
- The appropriate authority checks the previous leave records and other relevant information of the employee and takes decision.
- If approved the leave details are forwarded to the attendance management submodule. The notification of the leave is also sent to appropriate stakeholders.

1.5 Sub-module: Attendance Management

Traditional ways of attendance management have become obsolete. Attendance processing is effective only when it's real-time. Employees and managers need to fix issues as soon as possible and not at the end of the month/week. Attendance management is a key part of the modern HR system. This module is also linked with modules such as payroll and leave management.

1.5.1 Expected Benefits

- Improving time and attendance tracking abilities and accuracy
- Easy management of attendance

1.5.2 List of Features

- Daily Attendance Management
- Attendance Report
- Integration with Leave Management Module to incorporate leaves for attendance processing

- Statistics based on attendance [Dashboard]

1.5.3 Actors/Stakeholders

- All employee

1.6 Sub-module: Information Management for Payroll and Fund Management

The paycheck of an employee, sanctioned by the accounts, depends on information which resides in HR module, e.g., leave, post held, promotion information, etc. This submodule provides the needed information required to prepare a paycheck in an easy and organized way. The fund management, i.e., different loans, also depends on information from the HR module. This sub module also provides necessary information in an organized way.

1.6.1 Expected Benefits

- Faster processing by reducing paperwork
- Reducing errors in payroll and employee information database
- Zero latency in case of information updates. All updates are affected instantly.
- Facilitation on decision taking for loans by insightful historical information and statistics.

1.6.2 List of Features

- Provide information for Payroll and Fund Management
- Updating PF Preference
- Updating Payroll rules
- Updating Loan Rules
- Assigning Sanctioning Authority

1.6.3 Master/System Data/Operational rule

- PF rules
- Loan rules

1.6.4 Actors/Stakeholders

- All Employees
- Appropriate Authority
- Corresponding secretariat/ ministry
- Accounting Section

1.6.5 Process Description(s)

Requesting a Loan:

1. There are a number of categories for loans, e.g, House, Car, and Cycle. The requester first selects the intended category. Then he provides additional information and submits the request.
2. The request is received by the appropriate authority e.g., Appointing Authority, Secretary,

DG (Different loan is sanctioned by different authority)

3. The authority reviews the request. And forwards the file to Accounts for recommendation
4. After the recommendation has arrived. The authority pulls in relevant information (How much money is in GPF, The amount requested, Statement, and Loan history, etc) from accounts and decides about the request.
5. The appropriate authority can approve/ reject the request. The authority can also approve an advance withdrawal. If approved the request is forwarded to Accounts for Issue the check. A letter is also issued. And notification is sent to the requestee.

Approval of Loan/ PF:

- An employee can request
 - to change his PF preference according to the rules
 - a loan
- The request is received by the authority, verified, and approved/declined. For taking decision the system provides required information.
- The employee receives a follow up notification.

2 Budgeting Module

Budgeting has a number of activities performed in order to prepare a budget. The budget is a quantitative plan used as a tool for deciding which activities will be chosen for a future time period. In a government organization as well as in an autonomous organization, the budgeting will include the following:

- preparing estimates of future project expenses and incomes
- preparing estimates of future cash expenses and disbursements
- preparing estimates of the future day-to-day activities of the organization
- summarizing these estimates into a statement and balance sheet

2.1 Expected Benefits from the Module

- Ease of budget preparation and budget projection using previous year's budget data
- Automated calculation of budget variance
- Easier expenditure reconciliation
- Dissemination of budget related information quickly through web based system

2.2 List of Sub Modules

- Budget Projection
- Budget Preparation and Allocation
- Budget Distribution

- Budget Revision and Quarterly Expenditure Reconciliation

2.3 Sub Module: Budget Projection

Budget projection is an initial phase for budget preparation. Government organizations have to make budget for consecutive three years (current year and next two years). Here, current year's budget is the actual budget allocation. And the next two years budget is the projection (prediction). For preparing budget, there is a limit for increasing the amount of budget for a specific sector. The officers from accounts and budgeting department make this projection.

2.3.1 List of Features

- Creation of budget projection for current and next consecutive two years
- Modification of budget projection if needed
- Projection using Medium Term Budgetary Framework (MTBF)
- Preparation of budget projection document for Budget Management Committee (BMC)

2.3.2 Actors/Stakeholders

- Budget Working Group (BWG)

2.3.3 Master/System Data

- Budget of the previous years
- Budget amount increasing rate for budget projection

2.3.4 Process Description

The current budget projection process is a manual one. We are proposing following automated process for preparing budget projection.

As per MTBF only the receipt or expenditures of the previous years are not the consideration in the projecting the budget. The following must be considered in the automated projection system:

- The priorities of the programs and projects to achieve the strategic objective of the government
- Expected output from the projected allocation must be furnished
- Projection of GDP, inflation, government receipt and expenditure,
- Budget deficit, balance of payment position, money supply etc.
- Targets in the fiscal policy, monetary policy, public debt management and private sector development policy

Thus the newly developed automated system must have the facility to avail the above mentioned data through interface or manual input in the system.

2.4 Sub Module: Budget Preparation and Allocation

This sub module deals with budget modifications and corrections in different stages through several meetings.

2.4.1 List of Features

- Addition, deletion and modification of budget projection through automation system if needed
- Entering prepared and allocated budget to iBAS++ system
- Submitting prepared and allocated budget to Finance Ministry through e-Nothi
- Polling data from iBAS++ system for updated budget into automation system for synchronization if any changes done by Finance Ministry in the prepared and allocated budget

2.4.2 Actors/Stakeholders

- Budget Management Committee (BMC)
- Budget Working Group (BWG)
- Additional Secretary
- Finance Division
- Finance Ministry
- Parliament

2.4.3 Process Description

The current budget preparation and allocation process is done almost manually. However, we propose a partially automated process for budget preparation and allocation for our automation system. This process cannot be converted to a fully automated one because of the involvement of Parliament and Ministry of Finance.

2.5 Sub Module: Budget Distribution

Budget distribution process is being started upon the final budget is passed by the Parliament and the final budget book is ready on hand. Note that, in the approved budget there are allocations for higher level expenditure or income heads. All the departments distribute the budget with further break up based on the implementation plan of the organization. However, an autonomous organization does its own budget distribution. Further, the organization takes approval from its supervisory organization for their independent budget distribution.

2.5.1 List of Features

- Entering budget distributions of each sector with implementation plans into the automation system
- Updating the distributions in the iBAS++ system.
- Approval/Disapproval procedure for budget distributions for the Autonomous Organizations by their supervisory Government Organization

2.5.2 Actors/Stakeholders

- High level officers of all the departments of the organization
- Officers of Accounts Department
- Approval/Disapproval authority from the Organization

2.6 Sub Module: Budget Revision and Quarterly Expenditure Reconciliation

This sub module deals with necessary adjustment of budget based on the current situation of the income of expenditure at the middle of fiscal year.

2.6.1 List of Features

- Projection of final expenditure and income from the already done expenditures and incomes
- Preparation of proposed revised based on the projection
- Submitting the expenses of each sector's budget through GRP system to the Finance Ministry through the iBAS++
- Data polling into automation system from iBAS++ for synchronization if any changes are done by Finance Ministry in the budget revision phase

2.6.2 Actors/Stakeholders

- Budget Management Committee (BMC)
- Budget Working Group (BWG)
- Finance Division
- Finance Ministry

2.6.3 Process Description

In every quarter (4 times in a year) a meeting is held for budget reporting. In these meetings each organization has to report the expenses of the budget account heads for reconciliation. Based on the expenses, the budget of a specific account head could be adjusted/revised in the 3rd quarter meeting. This revision process of the budget is same as the actual budget preparation and allocation process, except this revision is not placed in the parliament. This revision is being further updated in iBAS++ system by the corresponding authority. Every Organization does a reconciliation of budget with the finance ministry in every month and updates the budget amount into the iBAS++ system accordingly.

3. Accounts Module

Maintaining accounts in a standard way is one of the most important tasks in any organization whether it is private or public. All kinds of financial activities have to be recorded through double entry accounting system. Naturally, it becomes difficult to find any kind of expense or record from the manual register book whenever necessary. This sub module is designed to manage all kinds of financial activities, records, and transactions electronically to facilitate extensive search. It also generates all the standard accounting reports.

3.1 Expected Benefits from the Accounts Module

- Ease of maintaining register books.
- Auto-interface with iBAS++ for salary processing.
- Auto-interface to import approval of GO by the authorized officer.

- Preparation and delivery of accounting reports.
- Facilitating audit operation by producing different reports regarding expenditure.

3.2 List of Sub Modules

- Managing chart of accounts
- Managing Payroll
- Managing pension of the retired employees
- Loan management
- Managing Expenditures
- Managing earned revenue
- VAT, TAX and AIT management
- Managing Asset or inventory accounting
- Fund management
- Central Accounts

3.3 Sub Module: Chart of Accounts

Chart of accounts must be maintained by the Automation System Accounting module to define different accounting heads. Currently there is no chart of accounts set for the ministry or agency. The accounting code set by IBAS++ and the budget book are used to denote the accounting heads for expenditure and incomes. The Automation System must have the provision to make the chart of accounts flexible and dynamic. The following specifies the features related to managing chart of accounts in details:

3.3.1 List of Features

Managing accounting Heads with Codes:

- Addition, deletion and modification of the accounting heads in the chart of accounts
- Keeping necessary information related to the accounting heads
- Linking an accounting head as a parent of another accounting head
- Configuring an accounting head with necessary parameters for different reporting if there is any
- The level of hierarchy must be dynamic in the chart of accounts. Theoretically there will be unlimited number of levels from the root in the chart of accounts.

3.3.2 Master/system data

- Accounting Heads from the budget book
- Different type of accounting heads: Asset, Liability, Expenditure and Income

3.3.3 Actors/Stakeholders

- Accounts Officer
- AG Office

3.3.4 Process Description

If there is a new account head in the budget book then the accounting head is inserted in the Automation System with code assigned to it.

3.4 Sub Module: Payroll

This sub module deals with salary related issues of the employees of an organization. This sub module must have interfacing with the Human Resource Module of the AUTOMATION SYSTEM. The functionality of this sub module is described as follows:

3.4.1 List of Features

Processing monthly salary disbursement

The salary processing must have the following inherent functionalities:

- HRM module will be responsible for keeping records of basic of the employees. This will be the basis of salary calculations.
- Automatic accounting posting for all expenditure heads associated with the salary
- Sub ledger for the General provident fund will be maintained in the database
- The ledger for the repayment of loan will be maintained automatically and the corresponding accounting voucher will be generated
- Any other associated sub ledger for deductions and income will be maintained
- The necessary reporting of the sub ledgers must be available to the authorized users.
- The pay slips of each of the employees must be available to the employees through their authenticated user account.

Managing Salary Certificate for the transferred Employees

This is necessary for the Government employees who are working in an autonomous organization but has been transferred back to the Government or any other autonomous organization. The following points describe necessary features:

- The salary of the transferred employee will be stopped from the organization
- A certificate of the last pay cheque (LPC) will be issued officially from the ERP so that it can be produced to the new organization

Managing GPF of the employees on deputation:

The deputation of the employees could be done in two different ways:

- An employee of an autonomous organization could be deputed to another autonomous organization
- An employee of an autonomous organization could be deputed to another government organization
- An employee of an government organization could be deputed to another autonomous

organization

Following points must be considered for transfer of GPF

- An employee can work for other organization but the GPF will be managed or maintained by the original organization.
- For each of the cases mentioned above the current organization will be responsible for his or her salary. But the deduction for GP fund will be duly transferred to the original organization of the employee every month.
- Any government office is not responsible for holding the amount of GPF. AG office does this management in favor of the government office. The same is true for sending GPF for deputed employees.

3.4.2 Master/System Data

- Rule for taxes set by NBR in each year.
- The salary basics from HR Module
- Information of the Bank account number of the employees
- Configuration of different income and deduction heads
Percentage of house rent
- Medical allowance
- Rate of GP fund deduction
- Advance income tax deduction rates for different slab
- The officers playing the role of authorizers for the salary approving
- The workflow of the salary process functionalities

3.4.3 Actors/Stakeholders

- Employees of the Organization
- AG Office
- Chief Accounts Officer (CAO)
- Accounts Officer
- NBR

3.4.4 Process Description

Processing monthly salary disbursement

The process currently followed by Govt. Agency for preparing monthly salary is given as a process follow diagram below. This is almost a manual process which requires unnecessary time. All the information regarding provident fund loan repayment schedule are maintained in the ledger book.

Currently, this process needs two different data entry, one is done by accountant from the offices and another one is by CAO in AG office. This could be simplified if the following changes are done:

- The bill will be prepared by the employees from the automated system

- All the bills will be sent to the iBAS++ after it is being forwarded electronically through an interface by the approval officer.
- The interface will receive the rejected bills to provide notifications to the corresponding employees

3.5 Sub Module: Pension Management

Pension is the financial benefit an employee receives after their retirement. This is as important as payroll module. There must be an allocation of pension for the retired employees.

3.5.1 List of Features

The major functionalities of the pension management are as follows:

- Approval of pension of a retired employee
- Gratuity disbursement with adjustment of dues
- Monthly pension disbursement

3.5.2 Master/System Data/Operational Rule

- The employees going to the retirement from the HR module
- Clearance of the employees from every department of the organization
- Rules of pension amount for increment every year
- Rules of different allowances for pension holders
- Rules of pension amount for the newly retired employees
- Different types of options for pension holders
- Total GPF amount over the years of active service
- The officers playing the role of authorizers for the pension approving
- The workflow of the pension management process functionalities

3.5.3 Actors/Stakeholders

- Department of Accounts
- Pension Holders
- Newly retired employees
- High level officers approving pensions
- The officers in charge of clearance certificate in the organization

3.5.4 Process Description

Pension Approval, GPF and Gratuity Disbursement:

The following points describe the issues related to the pension approval process:

- The pension approval is done after the retirement of the employee. The Automation System of the government office does not take the responsibility of pension disbursement. AG office takes this responsibility. So the government organization does not store the

information of monthly pension disbursement. But the autonomous organization is fully responsible for the payment of pension of their retired employees.

- The GPF and gratuity of the employees will be disbursed with the approval of pension.
- Clearance from the units of the organization is an important condition of pension approval. That is why pension approval process is dependent on the HRM module for clearance.
- Any deceased employee's successor will receive the pension benefit of the employee. So the Automation System must have the facility to disburse amount to the beneficiary who is not the employee of the organization.
- Physical presence of the employee is required for the disbursement pension when he/she is alive. Similarly the physical presence of the beneficiary is required when the employee expires.
- The process of the pension could be changed with change in the pension policy,

Monthly Pension Disbursement:

This particular functionality is only done in the autonomous organizations as AG office does the monthly pension disbursement of all the employees. Currently Monthly pension amount transferred to a bank account and the pension holder withdraws the pension amount by showing the pension book in the bank counter. Here we propose an automated version of the pension disbursement in the following process flow diagram.

3.6 Sub Module: Managing Expenditure

In any Government and Autonomous organization expenditure must follow the approved budget. That is why the expenditure must be controlled by approval of proper authority through e-Nothi. This controlling can be easily done by the Automation System by following the current rules of business i.e., we must get it approved in e-Nothi. Introduction of e-Nothi will help to expedite the process to some extent.

3.6.1 List of Features

- Advance disbursement for future expenditures
- Bill Payment to a party
- Adjustment after Expenditure by the advance received earlier
- Bill Payment for already done expenditures
- Automated posting of accounting vouchers of the associated expenditures
- Keeping records of bank or cash payments

3.6.2 Master/System Data/Operational Rule

- List of contractors and suppliers with their associated information from the procurement module
- List of employees from the HR module
- The officers playing the role of authorizers for the bill approving
- The workflow of the expenditure processing functionalities

3.6.3 Actors/Stakeholders

- Employees responsible for expenditures
- Employees working as a project implementation personnel
- Suppliers and Contractors of goods and services
- Officers of accounts department of the organization
- Officers responsible for approving expenditures

Process Description

Advance disbursement for future expenditures:

Advance withdrawal of budgeted money is required in the following cases:

- You have to pay the amount during delivery of goods.
- You have to pay the person for rendering service such as payment of honourarium.

The officer in charge must have sufficient money in his pocket to run such activity.

Bill Payment to a party:

The well reputed parties or contractors wait some time to get the bill after the job has been finished. Generally it is the condition of the contract agreement that bill is paid after the job is finished on submission of the bill. The procurement through tender is done in this way.

3.7 Sub Module: Managing Earned Revenues

An organization might have business that brings income to the organization. There must be sales management software for that business which is out of scope of the Automation System. There might be some regular income from ticket selling, patient admission and diagnostic system. There might be irregular incomes such as selling tender documents, selling forms to the job seekers etc. These are irregular incomes. This module is responsible for all these incomes

3.7.1 List of Features

- The Automation System must have the capability to interface with the sales software for its regular business operations.
- For each sale operation a journal voucher will be posted hitting the income and cash head. But the sub ledger of the sales will be maintained by the sales management software.
- The amount received by the organization of irregular incomes mentioned earlier must be deposited to the bank or treasury. This is managed by the journal entry to the proper accounting heads.

3.7.2 Master/System Data/Operational Rule

- Different types income
- Account Heads related to the incomes of the organizations
- The data of sales from the sales management software
- The list of banks and associated account heads for depositing sales/income amount

- The workflow of the expenditure processing functionalities

3.7.3 Actors/Stakeholders

- General public getting service from the organization
- The officers of accounts department
- The top management officers supervising the earning

3.7.4 Search Options and Report/Dashboard

- Reporting bank and cash receive register
- Reporting sales and other incomes within a particular duration
- Showing the income or sales within a duration in the dash board

3.8 Sub Module: VAT, TAX and AIT Management

Any payment made by the organization must follow the rules and regulation set by NBR. There should be VAT and Tax deduction at source for any kinds of payment.

3.8.1 List of Features

The sub module must have the following functionalities related to the source VAT and Tax payment:

- Generating provisions for VAT and Tax deductions in the automated account voucher
- Generating vouchers for VAT and Tax payment to the designated bank accounts
- All the chaalan copy must be scanned and stored against the payments made. This is might be necessary for audit inquiry.

3.8.2 Master/System Data/Operational Rule

- Accounting heads related to provision for VAT and Tax deductions
- Accounting heads related to banks for payment of VAT and Tax
- There must be a configuration facility in the Automation System to enter the existing rules of VAT and Tax deduction at source. This could be overwritten by the Automation System if exception is occurred.
- The workflow of the VAT and Tax Payment processing functionalities

3.8.3 Actors/Stakeholders

- Contractors and Suppliers
- NBR
- Officers of Accounts Department AG Office
- Top management supervising the accounting operations

3.9 Sub Module: Inventory Accounts

This sub module is responsible for doing necessary posting of accounting vouchers when a particular inventory is updated.

3.9.1 List of Features

- Generating Material Receipt Report
- Generating Material Receipt Voucher
- Material Issue Voucher
- Material Return Voucher
- Calculation of Depreciation

3.9.2 Master/System Data/Operational Rule

- The materials in the store from store module
- Each item must have a depreciation rate which must be assigned during entering items as configuration
- The formula related to depreciation
- The workflow of the process related to supply of goods
- The officers playing the role of authorizers for inventory accounts

3.9.3 Actors/Stakeholders

- Store keepers
- Officer of Accounts Department
- Higher level officers supervising store and purchase
- Suppliers and contractors
- AG Office

3.9.4 Process Description

Supply of Goods by the Vendor:

- A supplier supplies goods in response to the work order with a chaalan copy.
- The officer in charge of store receives the goods after necessary observation and counting
- This does not indicate final acceptance of the goods. Thus this will not be updated in the inventory.
- These items will not be ready for use. Thus there will not be accounting voucher for this operation.

Generating Material Receipt Report:

- This is done after checking of the received goods by the experts and the users.
- If there is any discrepancy in the quality of the items then those will be returned back to the vendor. The inventory is updated in this case.
- The generated Material Receipt Report contains the number of received good. But the accounting book does not show this asset until unless this is approved by the accounts department.

Generating Material Receipt Voucher:

- A copy of the Material Receipt Voucher is forwarded to the accounts department. The accounts officer places necessary command to evaluate the received items as per work order.
- The price of the items will be automatically updated from the work order as the items have been received against a work order.
- There will be provision for changing the prices with proper reasons as remarks.
- An accounting voucher will be posted creating payable to the vendor and creating asset with proper types (fixed or current).
- This payable will be nullified when the bill against the supply will be paid in favour of the vendor.

Material Issue Voucher:

- This voucher will be issued when an item is issued by an officer
- The officer in charge of the store does necessary issue related job. The inventory is updated with the change of location of the items.
- The type of the asset could be changed to work in progress. This will be reflected in the accounts voucher.

Material Return Voucher:

- This voucher will be issued when an item is returned by an officer to the store
- The officer in charge of the store does necessary receiving related job of the items. The inventory is updated with the change of location of the items.
- The type of the asset could be changed to fixed asset from the work in progress. This will be reflected in the accounts voucher.

Calculation of Depreciation: All the items in the organization must have depreciation. The tasks related to depreciation calculation are depicted below:

- The depreciation could be calculated daily, monthly, quarterly or yearly.
- This is actually a process doing calculations of depreciation.
- The amount of depreciation during a period of time is stored in the database which is used to generate schedule of depreciation.
- The depreciation calculation is reflected as an accounting voucher for reducing assets and introducing expenditure.

3.10 Sub Module: Fund Management

This module is responsible for managing following funds of the organization:

- Bank Accounts
- Fixed Deposits
- Shares

- Bonds
- Any other form of funds

3.10.1 List of Features

General Functionalities of Fund Management Module: This sub module supports the following functionalities related to the above mentioned funds:

- All the information related to the funds is stored in the Automation System database
- The calculation and reporting of present value of the funds
- Automated posting of interest income and charge expenditures
- Alert system for the renewal of instruments such as share certificate, FDR etc.
- Interfacing of the feed for share prices from stock exchange
- Maintaining the portfolio of the shares purchased
- Updating the stock position for purchase and sell of shares
- Creation of automated vouchers for buy and sell of shares

Bank Account Reconciliation: The bank statement will be imported through interfacing to the Automation System for reconciliation among the Automation System and bank. Some of the cheques issued or deposited might not be cleared right away. That is why the bank statement from the banks may differ from the position shown in the accounting book.

3.10.2 Master/System Data/Operational Rule

- Data of the Bank Accounts
- Data of Bank related instruments
- Data of Share instruments
- Interest rates of the bank accounts

3.10.3 Actors/Stakeholders

- Officer of Accounts Department
- Higher level officers supervising Finance
- Banks
- Brokerage Houses
- AG Office

3.11 Sub Module: Central Accounts

This sub module manages core accounting engines by recording debit and credit transactions for different types of vouchers. That is why all kinds of standard accounting reports will be generated from this sub module.

3.11.1 List of Features

- Identifying the accounting units of the organizations

- Posting accounting voucher which are structured through a process
- Generating Sequence number for voucher numbers
- Incorporating the financial transaction done by other modules through automated creation of account vouchers

3.11.2 Master/System Data/Operational Rule

- An organization could be divided into multiple units. The top management may want to see the summary reports for each unit separately. That is why we need to associate the identifier of the unit with each accounting entry. The existence of such entry in a government and autonomous organization would be as follows:
 - The main organization
 - Each of the projects running under the organization
 - Each of the branch offices
- For each accounting entry (each of debit and credit side) the associated unit will be attached with the accounting head
- Configuration of different voucher types and short name of voucher type to be used in the voucher number for identification

3.11.3 Actors/Stakeholders

- Officer of Accounts Department
- Higher level officers supervising Finance and Accounting
- AG Office

3.11.4 Process Description

Following controls must be established to administer the accounting operations in the Automation System:

- There may be multiple level of authorizations to finalize an accounting posting
- Multi-level authorization would be configurable by using work flow management
- Each accounting entry cannot be deleted. Any deletion will be done by using reverse entry.
- Only the creator of an entry has the right to change an accounting entry. If any higher level checker finds any problem with an entry then it is sent back to the creator for further review with necessary instructions for change.

The whole process of controlling are shown as follows in the process diagram

There might be lots of financial operations in other modules of the Automation System. These have been specified in the detail functional specifications of the other modules. In order to facilitate the operations of other modules there should be a web interface to do necessary equivalent accounting posting (debit and credit transactions) of those financial transactions. There must be a linkage between the financial transactions of the external modules and the automated vouchers so that it can be easily verified by the accounts administrators.

4. Procurement Module

The digitization of any procurement related activities is of utmost importance for Digital Bangladesh. To automate the procurement process to some extent, Bangladesh Government has developed National e-Government Procurement (e-GP) system. The e-GP system is developed, owned and being operated by the Central Procurement Technical Unit (CPTU), IMED of Ministry of Planning.

4.1 Current State of Procurement through e-GP:

The e-GP system provides an on-line platform to carry out the procurement activities by the public agencies: Procuring Agencies (PAs) and Procuring Entities (PEs). The e-GP system is a single web portal from where and through which PAS and PES are able to perform their procurement related activities using a dedicated secured web based dashboard.

The following tasks are currently performed by the e-GP system:

- Entry of Annual Procurement Plan (APP) of an agency / department
- Publishing of Tender notice
- Tender submission by the vendors
- Tender opening
- Tender evaluation and selection of a vendor
- Notification of Award (NOA)

After the selection of vendor (through the e-GP system), Notification of Award (NoA) is given and contract of Award is signed between the agency and the supplier (vendor). The vendor then delivers their product (goods, works or service). The proposed inventory sub-module will take care of the delivery and reception of the products after NoA has been awarded.

The e-GP provides a web portal to procure goods and works only for national procurement. According to PPR, there are different standards of procurements to procure goods and works.

4.2 Procurement Methods in e-GP:

Currently, e-GP allows the following major methods of procurement (for national **procurement**):

- Open Tendering Method (OTM): This is most popular method of procurement. In this method the tender information is notified to all the vendors enlisted in e-GP system.
- Limited Tendering Method (LTM): A short list of vendors is prepared before launching the procurement notice. This is done for special cases when Goods (and related Services) and Works are of specialized nature, such as aircraft, specialized medical equipment, telecommunication equipment, silos, etc., and these items are available only from a limited number of qualified potential Suppliers or Contractors.
- Two Stage Tendering Method: Technical proposal and financial proposal are submitted in two different envelopes. Financial proposal is not opened before the evaluation of Technical proposal.
- Request For Quotation (RFQ) Method: But RFQ is not restricted to five vendors; it notifies all the enlisted e-GP vendors. Thus it is quite similar to OTM.
- Direct Procurement Method (DPM): The Procuring Entity may use the Direct Procurement method from one source without going through Tendering or other Procurement methods

but shall under no circumstances be used to avoid competition or to favour a Contractor.

4.3 Scope of Improvement in e-GP:

- Currently, the purchase department of an agency needs to prepare an Annual Procurement Plan (APP). This is done by requesting the officers of an agency to know what items they need in a financial year and then compiling the item list with requested quantity. The Admin department then finalizes the APP. This is currently done by a manual process. The items may be an existing item (previously purchased) or a new item. So, this process can be automated in the proposed procurement sub-module which may export the APP to the e-GP system. Finally, the prepared APP is entered into the e-GP system through manual entry.
- The procurement of a government office can be of two types: National and International. For each type of procurement, it can be further divided into three categories: goods, works, and services. The current e-GP system only supports the procurement of goods and works for national type procurement.
- There is no provision for testing, acceptance or rejection of goods or items procured through e-GP and there is no provision for handshaking with the Accounts and other related modules such as Inventory.

4.4 Proposed Procurement Module

To alleviate the limitations of existing procurement systems and to have fully integrated procurement systems, we propose an internal procurement module interfaced with e-GP and other Automation System modules. We see that internal APP is generated from the online requisition slips within the department. This APP is then pushed into e-GP for standard tendering process. The e-GP takes care of the procurement process up to the step of Notification of Award (NoA). The NoA is then fed into the procurement module again. In the procurement module a testing/acceptance committee checks the items supplied by the vendor, and issues a materials received voucher for the Accounts module. Received items are then forwarded to appropriate locations through Inventory module.

4.4.1 Process Description

- First, purchase requisitions are placed by the officers of an agency / department. Each officer has certain entitlement for placing requisition that is checked at this point.
- All the requisitions are then compiled by the purchase department and budget requirement is estimated. Official estimation may also be performed by some committee
- The compiled list of items for procurement is then placed for approval to the Head of Procurement Entity (HOPE). Upon approval of the HOPE, this becomes the Annual Procurement Plan (APP).
- The approved APP is then given input to the e-GP system by the authorized person from the agency / department.
- Tender publishing, Tender submissions, Tender opening, Tender evaluation and Notification of Award (NoA) are performed by the e-GP system.
- After the issue of the NoA, formal award of Contract is signed and/or Work Order is issued to the winning vendor.

- The vendor supplies the product to the agency / department and it is stored at some store / site for inspection by the acceptance committee.
- The acceptance committee will have the provision to enter comments upon inspection of the goods or works. The committee may accept fully, partially or reject all items / quantities.
- Upon acceptance, the products are then finally recorded in accordance to the acceptance committee's recommendations) by the store keeper and entered into the inventory sub module.
- The chaalan of the delivery is kept by the store while the bill for the product is submitted to the Accounts for payment processing.

4.5 Expected Benefits from the Procurement Module

- Auto-interface with e-GP system and to export (interface) Annual Procurement Plan (APP) of a department to the e-GP system
- Auto-integration with accounts module for procurement management and payment to the vendor
- Ease of compilation of the requisitions from the officers while checking their entitlements
Ease of preparation of the Annual Procurement Plan
- Auto-integrations of received items with inventory and assets modules
- Summary report of the items received and approved by the receiving committee
- Summary report of the total procurement of the agency and total procurement budget of this fiscal year

4.6 List of Features

- Provision to request requisition from the officers
- Provision to enter official estimation of products (supplied by the estimation committee)
- Keep records of inventory sites information with details breakdown. Products will be kept there by the vendor (temporarily) before it is tested for acceptance
- Generate materials received vouchers for accounts for bill processing and asset accounting
- Keep records of testing of the supplied items received from the vendor
- Automatic compilation and preparation of Annual Procurement Plan and feedback / approval on the APP by the authority / HOPE
- Support for International procurement and all types of service procurements if possible

4.7 Master/System Data/Operational Rule

- Information of all vendors that have received work order from the agency / department
- Product information (old and new), works and services information
- Store location information
- Officers information

- Entitlement of each officer
- To interface with e-GP system, the Tender ID (TID) need to be used so that the Procurement sub-module can pull vendor and products related information automatically from e-GP system. It requires interface with e-GP.
- Requisition of officers for items needs to be checked with their entitlements
- Annual Procurement Plan has to be consistent with the Budget allocation for the agency. It requires integration with Accounts and Budgets.

4.8 Actors/stakeholders

- Officers of the agency
- Data entry operator
- Procurement consultant Head of Purchase department / Procurement-in-charge
- Head of Procurement Entity (HOPE)
- Interfaced with e-GP system / CPTU (the Procurement sub-module will need to pull information related to the tender)

5. Module: Inventory

The inventory module is vital for any agency for keeping records of all the purchased goods purchased (or already available items). For managing different types of items possibly kept in different stores/locations, an efficient and effective inventory module is a must to have component in an Automation System.

Different items are purchased through different procurement methods are delivered to the agency through a delivery chaalan. The receiving committee then checks the items quality (to make sure they are okay) and upon their acceptance, the items are finally entered into the inventory. The inventory module allows members of the agency to issue different items for use for different periods of time.

5.1 Expected Benefits from the Module

- An Admin can get a summary stock of items at a glance. Inventory low stocks report will help the Admin/Purchase department to order items before those items are out-of-stock.
- Consequently, decisions to order new items (with adequate quantity) can be taken by the admin. Budget can be proportionately allocated to items needed for the period / quarter.
- A smart bar-code based tracking will be introduced, where exact location (rack number, row number, location, etc.) of the item in the store / warehouse can be obtained immediately from the software.
- Item-wise purchase report can be generated to know when the item was last purchased from which vendor and what the last price was. This can help in estimating the price for new purchase.
- If any item is sold from the inventory, the sales report can be produced to see the revenue amount generated.
- Asset items can be tagged and automatically transfer to the asset module for further

management and processing for accounts update.

5.2 List of Features

- Record product category and details information of each product
- Keeping records of inventory sites information with details breakdown
- Reorder level configuration and alert system
- Provisions can be kept to receive products in separate locations / branches of the agency/ department
- Provision of various costing methods (Weighted Average, LIFO, FIFO) for inventory valuation.
- Inventory module should be to handle a large varieties of transactions/slips that include the following:
 - Material Received Chaalan
 - Item Requisition Form
 - Material Delivery Chaalan
 - Material Return Slip
 - Defective Return Slip
 - Inter-Inventory Requisition Slip
 - Inter-Inventory Delivery Chaalan
 - Transfer Slip

5.3 Master/System Data/Operational rule

- Information of all products/items of the inventory
- Purchase information of all products/items
- Inventory category / type information
- Inventory / store location information
- Officers information
- Entitlement of each officer

5.4 Actors/Stakeholders

- Data entry operator (officer who can enter new item information and quantity)
- Store Manager (receives products, issues products, collects approval from Admin)
- Admin / Inventory-in-charge (approves requisition, can view inventory in dashboard, summary report, can check products that are below EoQ that need to be purchased)
- Users (officers of the agency who can place requisition for items)
- Super Admin/System Admin (creates user/ deletes user, assigns role(s) to users, checks/ analyzes user activity log, system maintenance task)

5.5 Process Description

- Any officer in an agency/department can place requisition for a certain item(s). The requisition slip can be generated by the officer using a requisition sub-module.
- The admin officer/ Inventory-in-charge approves or rejects the requisition. If the number of items in the store is less than the requested number of items, the admin officer may initiate procurement process that will hit the procurement module. If the quantity is available, the item is issued to the officer along with a receipt generated and recorded by the system. This requires integration with Procurement.
- Any officer may return item(s) previously issued or may compensate for any damaged or lost item issued from the inventory. This part has to be linked to the Accounts. This requires integration with Accounts.
- The vendor / supplier of certain item(s) may store the items temporarily in some store location for inspection by the acceptance committee. The inventory sub-module may flag it under inspection. After acceptance, the flag may be marked as received. If some item(s) (all or fraction) is found to be defective, the receiving committee should only accept items that were found to be satisfactory. Other items should be returned and a return receipt should be generated and recorded by the system against the TenderID, vendor name /ID and date. This requires integration with Procurement.
- The delivery of item(s) by any vendor (after the approval by the acceptance committee through e-Nothi) hits the inventory module and the items are recorded with quantity based on the delivery chaalan received by the Store Keeper / Manager. A received copy of the delivery chaalan is given back to the vendor and it will be used for payment request by the vendor. This requires integration with Accounts and Interfacing with e-Nothi.
- Delivered items can be stored at multiple inventory locations.
- In the delivery chaalan, there may be existing item(s) and new item(s). The data entry operator enters the information of the new item into the inventory system. Alternatively, the procurement module may send the online delivery chaalan to the store Keeper / Manager who accepts it, thereby the new item information is pulled from the procurement module into the inventory module (with quantities updated accordingly) while for old items, only the quantity is updated.
- For the low quantity item, automatic alert should be generated if the quantity of an item goes below a certain threshold (that is configured by the admin of the sub-module after consultation with the Head of Inventory).
- Alert should be generated based on product ageing.
- Inventory items can be transferred from one location to another (using inter-inventory requisition slip).
- Selling of products (old) from the inventory and update the accounts and inventory accordingly.
- Acquisition of items from different projects to an agency may need to be incorporated.
- A user can book an item for issue in some future recent date if the item is not currently available in the inventory.