



BOOK COMPILATION, STOCK MANAGEMENT, DISTRIBUTION, SELLING AND DOCUMENTATION AUTOMATION SYSTEM (ERP) FOR EDUCATIONAL PUBLICATIONS DEPARTMENT IN SRILANKA.

M.V.T.Malinda

KeyWords

Book Distributions, Education Publications, E-Procurement, E-Selling, Enterprise Resource Planning(ERP), Information Systems(IS), Modular based solution ,Stock Management.

Abstract

The Educational Publications Department has been established in 1965 as a super – graded department under the Ministry of Education-Sri Lanka to accomplish the national task of implementing the national policy of providing school textbooks free of charge to the children of the country to get the benefits of free education and compiling supplements and learning aids connected to that. The department's vision is to '*Ensure equitable access to education through the provision of learning materials of distinctive pedagogical standards that keep abreast with international developments in education*'. The department always makes an effort to enhance the quality and value of education by implementing the Free Textbook Scheme of Government of Sri Lanka, progressively widening the range of available textbooks, workbooks, reference books, supplementary readings of high educational standards enabling to produce worthwhile and intelligent citizens with ability to contribute towards the development of the country. The department provides facilities to buy the text books , work books and other materials from sales promotion centers for a reasonable price specially targeting the International and Private school children. The general public can also purchase books if necessary. The proposed web based solution is based on an Enterprise Resource Planning (ERP) system. The ERP will include a set of formalized and integrated operational processes and procedures to manage operations in Education Publication Department, Sri Lanka.

1. BUSINESS PROCESSES OF THE ORGANIZATION

The distribution of textbooks is done by the Educational Publications Department before the commencement of each school year, for over four million students from grade one to eleven in both government and semi-government schools. This part is mainly done by the Distribution branch. The Regional Distribution Centers collect the number of books needed the following year for each school. A summary of the needed amount of each book using the text book order documents is prepared and sent to the distribution branch of Educational Publications Department by the Regional Distribution Centers. Then it is sent to the IT Branch. The summary is computerized by the IT branch of the department. The summarized book list is compared with the available stock report. Then a final book request report is prepared and sent to the Distribution branch. In addition, the Distribution branch accepts and fulfills the requests of books made by the six sales promotion centers whole year. The Distribution branch sends the book request details to the Publication branch. Publication branch sends the request to the Accounts branch for a procurement process. The Accounts Branch calls for prices, co-ordination of technical evaluation committees, procurement boards and work according to their decisions for all the purchasing of books. Once the tenders are finalized the Accounts branch sends the procurement decision to the Publication Branch. Then the Publication branch gives printing orders, prepare agreements and comes to an agreement with the Printing Presses, prepare and forward paying in vouchers and obtain all the reports relevant to the books given for printing. The publication branch then requests the soft copies of books relevant to the book requests from the IT branch. The book purchase orders along with the soft copies are given to the selected printing presses for printing. Once the order is done the stock is sent to the Main Stores of the Department by the Printers. Then the stocks of books are sent to the schools, island wide regional Distribution centers and the Sales promotion centers as per requirement. An Invoice is sent to the publication branch by the printing presses along with the stock handover document. According to the invoice, payment vouchers are prepared by the publication branch, gets the approval by the relevant authority and send it to the Accounts branch for payment. The compilation and printing of new books is conducted by the production branch. The editorial process, type setting, proof reading and the finalizing the soft copy of the book is managed by the production branch and then the soft copy is sent to the IT branch. The IT branch has a repository of soft copies of each book. The Sales promotion centers engage in the duty of selling the textbooks in all mediums to private schools, International schools and the general public for a reasonable price.

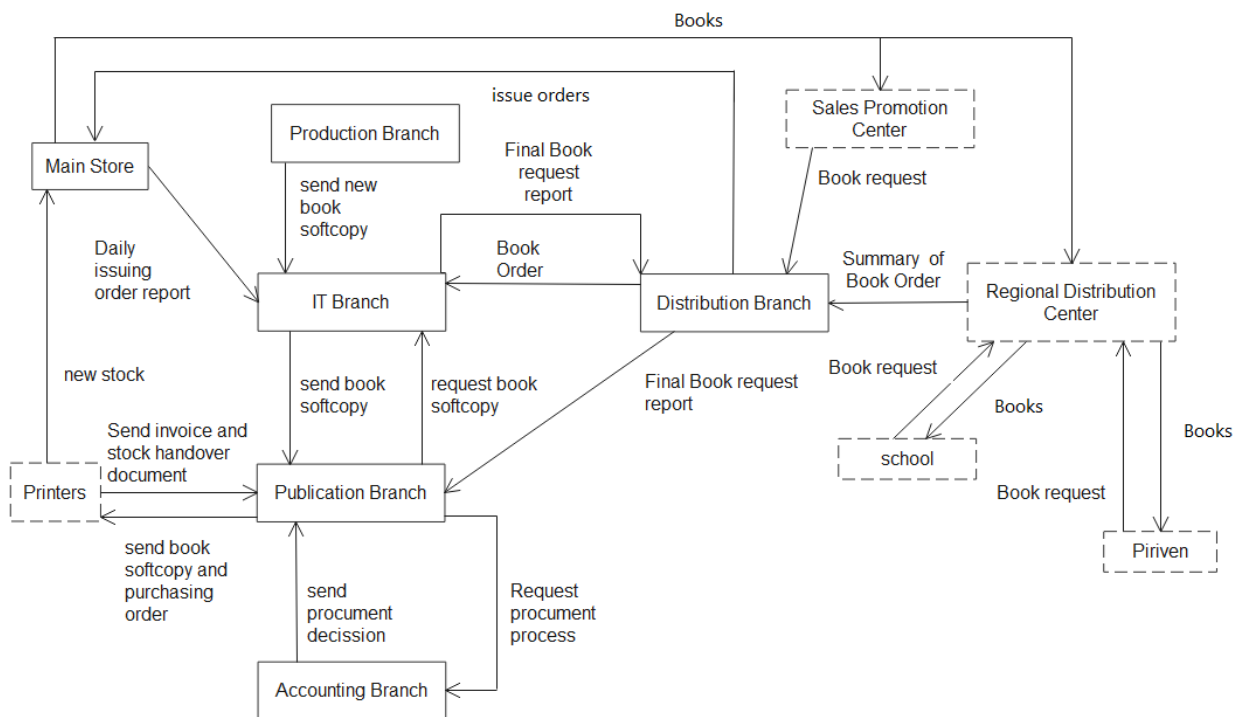


Figure 1 – Business Process of the organization

2. EXISTING INFORMATION SYSTEMS

2.1 BOOK REQUEST MANAGEMENT

The Book request management of the Educational Publications Department is handled manually and the final reporting process is done using a spreadsheet software. The functions of the system are listed below.

- The amount of books needed for the schools and piriven schools are collected through the Textbook order document.
- The government schools send the text book order document to the Regional Distribution Centers.
- Regional Distribution Centers prepare a summary of the needed amount of each book using the text book order documents.
- Then this summary report is sent to the Distribution Branch of Educational Publications Department. Then it is sent to the IT Branch.
- The summary is computerized by the IT branch of the department.
- The summarized book list is compared with the available stock details in the inventory.
- Then a final book request report is prepared and sent to the Distribution branch.

2.2 BOOK PRINTING MANAGEMENT

The Book Printing Management is done manually within the department.

- The Distribution branch sends a hardcopy of book request report to the Publication branch.

- Publication branch sends the request to the Accounts branch for a procurement process.
- Once the tenders are finalized the Accounts branch sends the procurement decision to the Publication Branch.
- Then the Publication branch gives printing orders, prepare Agreements and comes to an agreement with the Printing presses, prepare and forward paying in vouchers.
- The publication branch then requests the soft copies of books relevant to the book requests from the IT branch.
- The book purchase orders along with the soft copies written on a CD/DVD are given to the selected printing presses for printing.

2.3 BOOK STOCK MANAGEMENT

The Book Stock Management is mainly done manually and some files are maintained electronically within the IT branch of the department.

- Once the order is done the stock is sent to the Main Stores of the Department by the Printing presses.
- An Invoice is sent to the publication branch by the printing presses along with the stock handover document.
- The Publication Branch maintains an inventory book to handle stocks. Once a stock is received available stock of the inventory book is updated with the new stock details.
- Also, a copy of the stock invoice is sent to the IT branch. They maintain a spreadsheet file to record the stock details. The available stock balance is updated within that spreadsheet stock file.

2.4 BOOK DISTRIBUTION MANAGEMENT

Most of the functions of the Book Distribution Management are done manually and the stock files are maintained electronically within the IT branch of the department.

- The IT branch sends the updated stock details to the Distribution Branch.
- According to the updated stock details and the Textbook order document the Distribution Branch Plans the book distribution and prepare issue orders for the books which are to be sent to schools, Pirivena , regional book distribution centres and Sales Promotion Centers. The distribution plan and the issue orders are then sent to the main store.
- Then amount of books are distributed to the schools, Pirivena, island wide regional Distribution centers and the sales promotion centers according to the plan.
- An issuing order report is prepared daily according to the daily book order issues by the main store.
- This report is then sent to the IT branch and the IT branch updates the available stock balance within the stock file(spreadsheet file).

3.1 OVERVIEW OF THE PROPOSED WEB BASED ERP SOLUTION

The proposed Web based solution is based on an Enterprise Resource Planning (ERP) system. The ERP will

include a set of formalized and integrated operational processes and procedures to manage operations at following locations.

- Distribution Branch
- Publication Branch
- Production Branch
- IT Branch
- Accounts Branch
- Main Store
- Regional Distribution Centers
- Sales Promotion Centers
- Schools

This ERP is fully compliance with the objectives of the Education Publication Department (EPD). The system will be implemented in a Lanka Government Cloud (LGC 2) environment. Where the entire organizations under the EPD will be able to access the system. The Information security of the proposed system is ensured with the LGC2 security standards. An open source development platform is used as it saves cost. The system database is handled centrally in the LGC2 cloud environment. This reduces the overall maintenance cost. The data and information can be shared, integrated, analyzed and distributed for decision making, planning and reporting efficiently. There is a hybrid backup system that combine local backups and automatically copy the information to a remote site. This provides both a local backup for quick recovery and a remote backup for security. This web-based solution manages distribution process of school text books to improve the efficiency of overall operation while minimizing mistakes throughout the process. The system facilitates,

- Making book request from national schools, provincial schools, Privena and regional distribution centers.
- Processing total requirement and ordering of books printing from selected printers.
- Receiving stocks to main store and distributing to destinations as per the requested quantities.
- Acknowledgement mechanism for goods acceptance using the goods acceptance note.
- Monitor delivery status.
- Printers accounts are also maintained to keep track of their payment.

3.2 MODULARIZED SOLUTIONS ON THE PROPOSED ERP INFORMATION SYSTEM



Figure 2 – ERP IS Modules

3.2.1.BOOK REQUEST MANAGEMENT

The manual Book Request Management process consist of following problems:

- Less accuracy of data in the documents
- Document misplacement
- Time limitations and Time waste
- High Cost for Transportation, Stationary and man power
- High Paper work

The proposed information system gives a web interface to the schools, regional centers to enter the book requests. So, no need to fill several forms and transfer them everywhere. The users can register with the system and login to the system to do their book requests and do other transactions regarding distribution easily. The entered data is stored on a centralized, secured database. Book requests sent from all schools and regional distribution centers are reviewed and analyzed the total text books requirement of the year. So, the next year's book requirement can be predicted.

Since there are less paper work the accuracy of the data will be high. The cost that should be spent for the Transportation, Stationary and man power are very much less with the proposed IS.

No need to transfer documents among the branches, all can access the centralized database to view data. The relevant branches and higher management can view the summarized reports which support easy decision making. The available stock can easily be check whenever needed without going through the manual documents.

3.2.2 BOOK PRINTING MANAGEMENT

The problems identified in the manual Book Printing Management are;

- Procurement process takes more time.
- The book copy should be sent to the Printing Presses with a CD each time.
- Purchasing order process contains more documents.
- Difficult to get updates of the printing process status.

E-Procurement is used with the proposed Information system. The Tenders are advertised on the web and tender submissions, evaluations and selections are done via the system easily and securely. This improves the efficiency of the procurement management .

Printing orders can be sent online along with a soft copy of the relevant book without sending documents manually. The Printing presses can give an update of the printing process through the web daily. So, the Department can easily track the status of the printing process.

3.3.3 BOOK STOCK MANAGEMENT

The Book stock management process consist of the following problems:

- Cannot take the available stock on time.
- Difficult to update the Stock.
- In the manual system, the stock is maintained in several locations. So that there can be inconsistencies with the stock data.
- Due to the above problem there may be unnecessarily printing of more books which causes an unnecessary cost.

In the proposed information system, the databased is handled centrally. Data is stored and updated in a single database file. Therefore, the data redundancy is minimized and the data inconsistency is reduced. Once a new stock is entered the available stock is updated in a single database file without duplicating the same stock details. The book purchase orders can be placed with accurate stock details. Through improved inventory planning the unnecessary cost can be reduced.

As there are less paper work and handling inventory books is not necessary, therefore stationary cost can be minimized.

Arrangement of the main store can be implemented in this system to track a particular item faster and to utilize the space more efficiently.

3.3.4 BOOK DISTRIBUTION MANAGEMENT

Within the existing Book Distribution Management process the following problems are identified:

- Due to the Less accuracy of the data incorrect amounts of books can be distributed to schools.
- Difficult to prepare and view the summery reports.
- Difficult to analyse the data.
- Goods acceptance note is not properly updated.
- No prior notification is sent to the schools.

The proposed information system ensures the data accuracy through validation and verification. So, it's guaranteed that the correct amount of books is distributed to the schools.

Since the proper reporting facilities are available in the information system, the various reports on different criteria can be prepared and viewed easily. Also, using the analytical tools of the IS, collected data can be analysed properly to identify patterns and make decisions.

Email / SMS Notification and alert system are introduced with the proposed IS. An alert is sent to the school, regional distribution center and EPD indicating every distribution of book order. Once the alert is received the regional centers get ready to unload the book stock. So that, it saves more time and increases the efficiency of the process.

After the distribution of books to the regional centers, the regional distribution centers can enter the Goods acceptance note through the web without any delay.

3.3.5 BOOK SALES MANAGEMENT

- At present, the book store carries out its book selling process in a completely manual manner and the amount of paper work makes the system rather error-prone and inconvenient.
- It is very inconvenient to sell the books during the month of December, January and February as the parents buy new text books due to the commencement of new academic year.
- When the customers come to buy the books, they waste their valuable time as they have to wait in a long queue.

Due to the inefficiency of the current manual system, EPD wants to introduce a web-based interface for the sales promotion centers to enhance the book selling process, providing an efficient service to the public. Since the number of sales promotion centers can be reduced the maintenance cost is also can be reduced.

With the initiation of selling the publications online, the citizens and students of the country would immensely be benefited as the department is opened 24 hours a day. Therefore, the manual process of selling and purchasing of publications is made available to handle online.

Conclusion.

Enterprise resource planning (ERP) is a process used by companies to manage and integrate the important parts of their businesses. Many ERP software applications are important to companies because they help them implement resource planning by integrating all of the processes needed to run their companies with a single system. An ERP software system can also integrate planning, purchasing inventory, sales, marketing, finance, human resources, and more. The proposed ERP Increase operational Efficiency, provide firm-wide information to support decision making, Enable rapid responses to customer requests for information or products, Improved Collaboration and Workflows, Higher productivity, cost savings through Improved inventory planning and better procurement management, include analytical tools to evaluate overall organizational performance and real time data reporting in Education Publication Department in Sri Lanka.

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