

Enhancing Cooperative Loan Scheme Through Automated Loan Management System.

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Abstract

The concept of automation has been variously applied in most computing fields. This involves utilization of computing or electronic devices to undertake the tasks that are being handled by people. It is a pertinent factor in a profitable and soundly run financial institution. Financial transactions through manual system of operation are prone to errors and unimagined complexities, making it so difficult a task maintaining all entries of users account, search records of activities, handle loan deduction errors and generate reports. Computers running automated system are targeted towards eradicating the menace – hence making the underlying activities efficient and providing the fast response needed. This underscores our interest in deploying a dynamic system that will effectively manage the loan scheme of a named organization. The system essentially manages both short-term and long-term loans, and keeps track of cash inflow and outflow of a cooperative society among others. It utilized SQL Server database architecture at the back end and Visual Basic.Net framework at the front end. This makes it user-friendly and highly interactive. The Object Modeling Technique (OMT) is adopted for the analysis and design of the Loan Software. Interactions with operators and stakeholders and thorough observation of records of activities/events of time, aided the gathering of the required information. Auto-LMS is an innovation, which is bound to bring swift changes in routine cultural loan practices of cooperative societies as it promotes efficiency and productivity. A pragmatic system bundles with several competent capabilities to eliminate data inconsistency and redundancy as well as ensuring data integrity and security, with guaranteed fast retrieval response time.

Keywords: Status Concept, Ledger, Automation, Amortization schedules. Mortgages, Collateral.

Introduction

The advent of computer technology has salvaged mankind from the dark ages imposed by non-availability of technological know-how and requisite skills for undertaking tasks. Today, technological dynamics can be applied in virtually all facet of human endeavor to beat down complexities with relative ease and achieve maximum productivity even faster. According to Mbam^[1], the application of computers to the various facets of human endeavors has improved

those professions by reducing the time needed to accomplish a given task and hence maximizing productivity and throughput therein.

Hence, the need for an automated system that is competent to harness and manage the operation of any cooperative society with same or similar features.

Background of study

An automated system therefore, is a system designed to take in data and process it using a predefined format, thereby generating the expected result. Loan management system is being designed to automate the back office activities of financial institutions offering different types of loans.

Depending on a company's requirements, loan transactions can be subdivided into product types, which can define specific forms of loan or business areas. You define the product types in customizing for loans according to your individual requirements. Also, assign each product type to a product category and condition group.

The inherent risks, inconsistencies and errors associated with manual financial transactions and computations demands the use of automated system for simplicity of operation, accuracy and proven results.

Information technology era provided gateways to streamline the daily financial transactions of various financial institutions. Therefore, such contentious issues as:

- Time/speed of data operations (i.e. processing and transmission);
- Errors in computation;
- Menace of excess deduction of loan repayment;
- Difficulty in maintaining all entries;
- Difficulty in searching a particular record or group of records;
- Poor and irregular report generation for all transactions are adequately addressed.

These factors have indeed hindered effectiveness, efficiency and overall performance of the scheme. But the system in focus took on these factors - enthroned the desired flexibility, ensured that credibility and integrity of data is highly maintained.

According to Wayne ^[2], to truly manage or operate effectively, you need the requisite skills that

make for attainment of established objectives. Therefore, as a loan manager, it is critical for you to possess industry expertise to assist your chief executive officer and staff in planning. It is equally as important to maintain the technical expertise needed to design and administer systems and controls to carry out policies and required compliance with laws and regulations.

Methodology

The Object Modeling Technique (OMT) is considered most suitable form of methodology in automating the system in question. Osuagwu [3] posits that this methodology deals with object oriented development in terms of analysis and design of a given system. It enhances clarity of the problem and brings out definite concepts associated with this problem domain. The problem in view has to further reflect object, dynamic and functional models which represents system architecture, interactions (creating events) and methods of data operation respectively. OMT helps to model a system in such a way that one can easily manipulate the objects to interact appropriately. It encompasses the structured, information and object-oriented analysis and design.

Moreover, it enhances adequate representation of the system architecture, extracts the objects and gives rise to a design based on these objects. This helps to define concisely the problem in focus, develop solution strategies, identifies and extracts each of the modules and objects (which now form the data structures) in its reasonable smallest comprehensible unit. And finally, the model specifies the appropriate operation to be carried on each module and perform the detailed design.

Structural Analysis

Ideally, any cooperative society would basically draw her income from membership registration fee and routine savings contribution of the members over the months. This savings are separated into

project and ordinary savings. The ordinary savings which is a fixed amount is mandatory for every member and it is non refundable, while the project savings is according to the varying salary capabilities of members which can be re-embossed as condition applies.

These contributions are however traded with through giving of loans and stocking goods so as to enhance the financial income of the society and from whence they calculate the benefit of an individual based on the amount so contributed on a monthly or yearly basis.

Conditions/ Modus Operandi of Loan Scheme

Beneficiaries of the loan scheme must be permanent staff of the parent establishment.

Also, the beneficiary must be a registered member of the society who must have saved not less than thirty five percent (35%) of the loan amount being

sought for. Products offered in the scheme include short term and long term or project loan. While the short term loans run on a maximum of three months, the later runs a maximum of 24 calendar months with a definite percentage interest respectively. Loan repayment is evenly or equally distributed to span through the number of months allowed. Deduction is effected through standing order from the society's coordinator to the accounts department of staff employer.

Data Flow Diagram Analysis

Data Flow Diagram (DFD) shows the way data is moving within the system. It essentially helps users to understand how the system works and probably suggest necessary modification(s). The system operation is summarized in DFDs level 0 and level 1 thus:

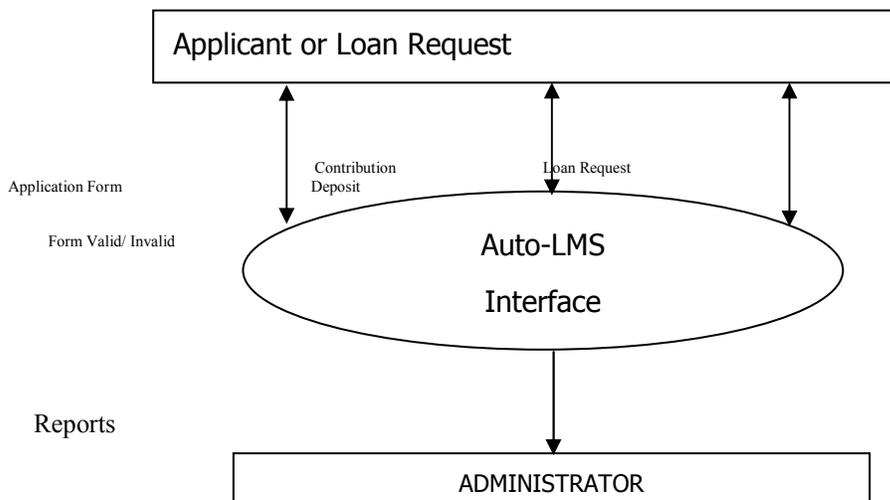


Figure 1: DFD of the model

This DFD is the block summarization of the steps of action involved in the system

showcasing the LMS interface as the central controller.

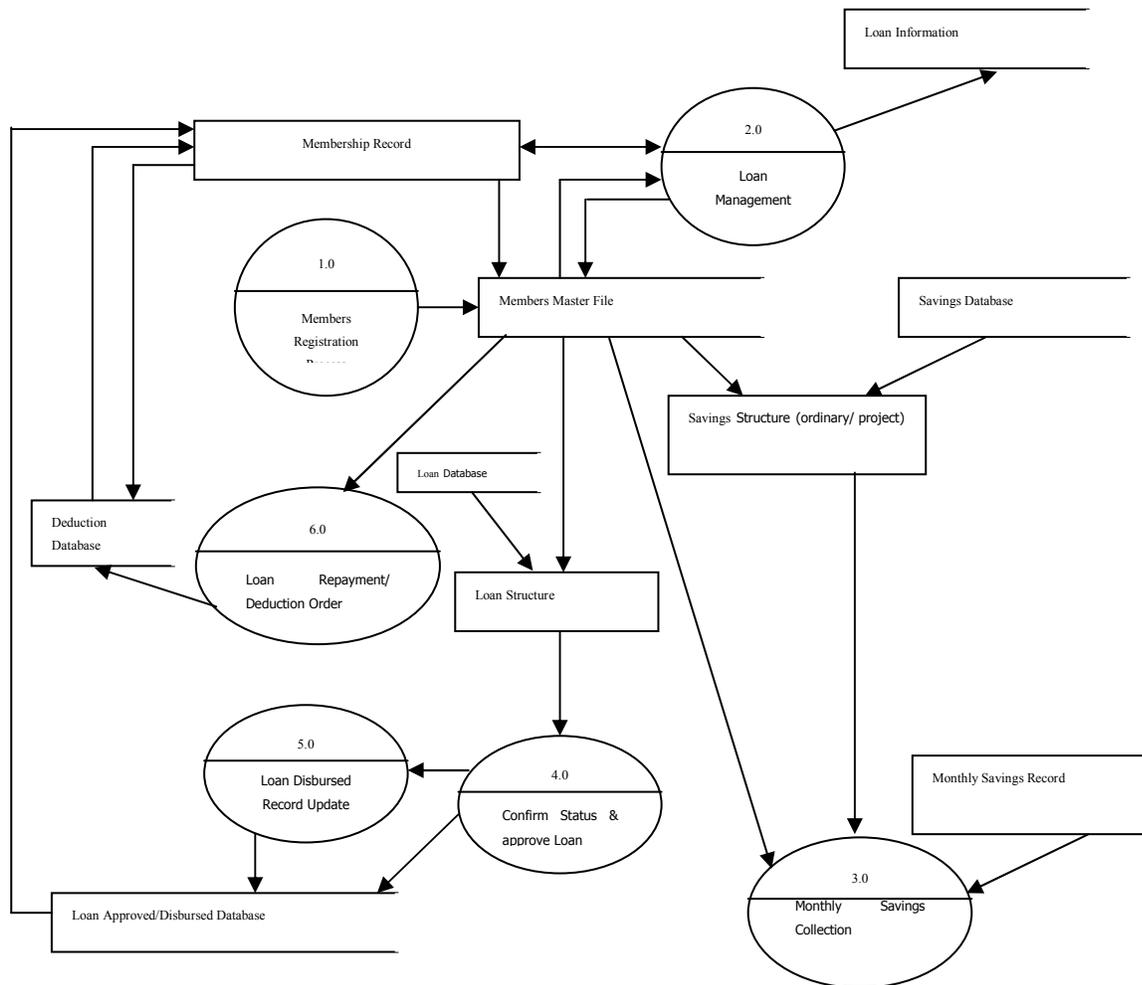


Fig.2: Data Flow Diagram Level 1

The level 1 DFD elaborately described the stages of transaction processes involved in managing a loan facility. In detail, it undertakes the entire task of loan processing utilizing information contained in the member master file. Prospective benefiting member contribution (saving) status and product type being sort are ascertained before loan approval and disbursement is accordingly effected. Each complete and or waiting transaction(s) is captured and validated through appropriate module.

Discussions

Basic Principles of Loan Scheme Operation

- a). Contract conditions form the basis for the contractual relationship. The conditions are used to generate planned records, which are required for processing loan receivables and payables later on.
- b). Loans Management uses the status concept to reflect the various stages of the contract process (prospective customer through to conclusion of a contract).
- c). In the loans area, central business partner management offers functions for assigning business partners to loans in specific roles (for example, main borrower or lender, guarantor, issuer). You maintain the business partners in the same way as for the other Treasury areas.
- d). Enter details for important real estate objects and other collateral in the system, including guarantees, pledged securities and encumbrances.

Integrated Financial Accounting

The accounting processes for loans are supported within Loans Management. There are manual and automatic functions for generating debit items, and functions for transfer postings and portfolio valuation. In addition to keeping the sub-ledger, the component offers open item management. The relevant posting information is transferred to Financial Accounting via an interface. Incoming payments to the system is unable to assign to an appropriate

customer account are posted to rejection accounts, while advance payments and overpayments are posted to the relevant customer account. You can then process these payments manually using the incoming payment post-processing functions.

Transaction Management

You can enter rudimentary data from prospective customers or concrete inquiries for specific contract conditions. The flexible condition structure allows you represent complex interest and repayment terms. The task of drawing up standard contracts is supported with predefined condition tables and reference loans. Once you have calculated the credit standing, assigned collateral and objects, and where appropriate, calculated the collateral value, you can add any missing information before you conclude the contract. Thereafter, you disburse the contract or consignment fully. Additional process security can be incorporated by linking release requirements to the process steps. A filed documents facility is available for managing all the documents relating to a loan.

Implementation Resources

For proper system integration and alignment, the front end/GUI tool is **Visual Basic.net** framework ideal due to its object-oriented nature which uses event-driven concepts:

- To avail easy creation of graphical and user-friendly interface as a window-based system.
- To bring about interactivity by exploring the key features of Microsoft windows - Multiple Document Interface (MDI), Object Linking & Embedding (OLE) and Dynamic Data Exchange (DDE).

Also, **SQL Server 2005** database architecture is used at the back end as a Relational Data Base Management System (RDBMS) used in primary data model for commercial data processing applications.

It runs on Windows OS (2000, XP, Vista, Win. 7) environment at minimum and hardware requirement of any Pentium Processor, 128MB RAM with 40GB HDD at minimum.

User Interface

Usability of an application is greatly dependent on the interface. It is the link between the system

and users. Onu [4] asserts that the effectiveness of any system depends partly on how it relates with the user and partly on how robust it carries out all computations accurately. User interface is perhaps the most important aspect of an application and certainly the most visible, presenting the entire system at a glance.

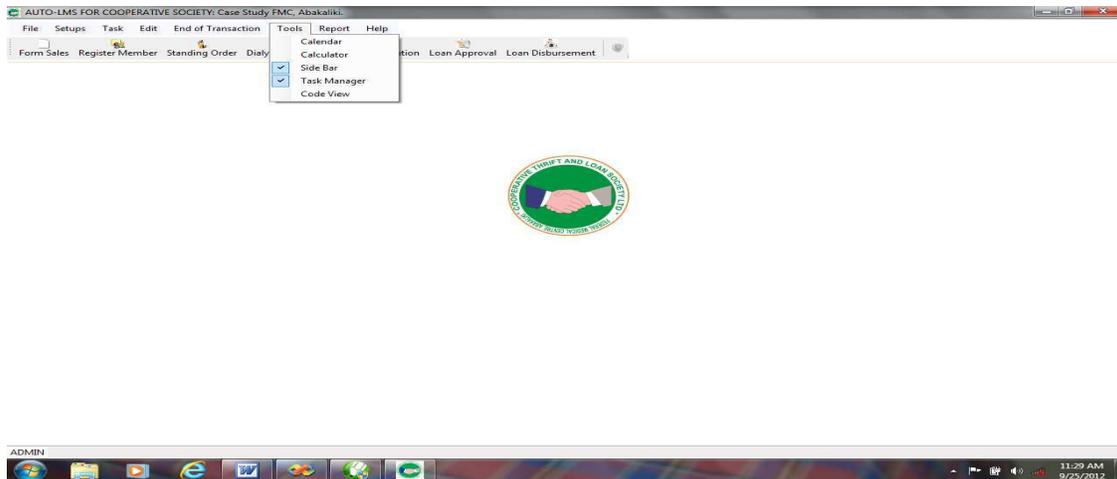


Fig.4: Auto-LMS Menu Interface

Fig. 4 above is a menu-driven highly interactive and user-friendly interface that insulates the user from the underlying technology.

Results

The system is bundled with enormous benefits outlined thus:

1). **Manages Loans More Effectively:** Loan Management System tracks loans payable or receivable from the application phase through daily processing and reporting. An Integrated system that allows you to accrue interest, make or receive payments and manage your loan portfolio.

2). **Find and search records of information with ease:**

The system has the capacity of reporting information for decision making about members of the society, savings status and loan scheme facility among others. It accesses the data you need with an intuitive graphical user interface similar to the standard Microsoft Dynamics SL interface. Transactions are seamlessly integrated and posted to the accounting system under your control. It enables you to create your own reports or use one of the many standard report formats that come with the system.

3). **Put your information to work:** Track loans from the application process, through approval and processing with high efficiency.

View Loan Schedules

Membership ID: 1001 Surname: Ude Department: Clinical
 Loan Number: 100 Firstname: Joe Phone No: 08075875757
 Middle Name: O File No: 67676

Payment No	Monthly Payment	Cumulative Payment	Balance	Date Due	Status
1	41667	41667	958333	Apr 03, 2012	UNCLEARED
2	41667	83333	916667	May 03, 2012	UNCLEARED
3	41667	125000	875000	Jun 03, 2012	UNCLEARED
4	41667	166667	833333	Jul 03, 2012	UNCLEARED
5	41667	208333	791667	Aug 03, 2012	UNCLEARED
6	41667	250000	750000	Sep 03, 2012	UNCLEARED
7	41667	291667	708333	Oct 03, 2012	UNCLEARED
8	41667	333333	666667	Nov 03, 2012	UNCLEARED
9	41667	375000	625000	Dec 03, 2012	UNCLEARED
10	41667	416667	583333	Jan 03, 2013	UNCLEARED
11	41667	458333	541667	Feb 03, 2013	UNCLEARED

Total Amount Paid: 0.00 Balance: 1,000,008.00 [Print] [Reset]

Fig.1: Loan Repayment Schedule Report for a Beneficiary

Assess fees for late payment or write off balances as necessary. Loan Management System will generate amortization schedules; automatically allocate payments between principal and interest, and print checks, payment receipts, or statements.

4). **Integrate powerfully**: Highly dynamic in terms of exchanging records of members. Empower your business by combining the Loan Management System with the general ledger, personal ledger and accounts repayment or deduction modules, ensuring accuracy while reducing redundant data entry.

Performance and Capacity Planning

Ensuring optimal performance of automated systems is critical to customer satisfaction and profit maximization. Achieving optimal

performance is not one-time event, since automation creates on-going, shifting loads on your computing infrastructure.

Therefore, to be proactive, it requires a means to both measure performance and plan sufficiently for the future so that your computing infrastructure will meet the demand of automation. Effective performance management and capacity planning for an automated system depends greatly on the ability to understand the system in terms customer orders received per day/week/month/year as well time spent processing an order.

Moreover, understanding an existing business activity trends, as well as the timing of new products launches or sales and marketing promotions, will help in anticipating plans for increased computing workloads. For a better insight, evaluate such critical questions as:

- Do your performance management and capacity planning processes enable you to identify if performance problems are rooted in unanticipated business activity (i.e. demand for product, new product launch, and sales promotion)?
- Can you correlate your business activity to both computing resource requirements and response time requirements?

Security Support

Security is a critical component of not only an automated system but for all applications, either software or hardware. This is primarily driven by these reasons:

- To make the users and other customers believe that they can transact with you on trust on a reliable system.
- Ensure that the use of automated system must not by any means compromise their financial or social relevance.

Suitable security policies and practice should be based on the drivers for the automation, regulatory requirements that must be adhered to and other level of risk acceptable to the society. So, where automated applications are critical to financial and or business corporations, security violations will tantamount to loss of millions of funds. Hence, the obvious need for an end-to-end security that will be consistent with the demands of an automation process so as to avert security breach. Security system covers all layers of the automation environment especially the database.

Apparently, automated system security can be considered in the perspectives of authentication, access control, data integrity and confidentiality. Unauthorized users are avoided through authentication process of both internal and external users. It is also vital to create enforceable access control across the automated system architecture. Modify access control from both a user and administrator perspective considering controls on legacy system on which the automated device relies upon.

Accuracy of data, relevance and timely delivery characterize data integrity. Virus protections using firewalls technologies create adequate measure for securing and validating data from malicious mix.

Conclusion

With utmost amazement, the realities of ICTs, the rich potentials of VB.net and SQL Server-2005, created a credible and viable alternative for managing loan scheme facility. Auto-LMS is indeed a concept of the now, a swift change in routine cultural loan practices.

A pragmatic system bundled with several competent capabilities. The underlying technologies and software engineering principles created a broad door of transition to a world of accurate and/or error-free computations, error-proof operations, onscreen transactions/report generation, and fast retrieval of records.

References

- [1] Mbam B.C.E.(2002); Information Technology and Management Information Our Saviour Press LTD Enugu.
- [2] S. Wayne Linder (1993); Total Quality Loan Management: Applying the Principles of Tqm to Improve Lending Performance, Bankline Publication.
- [3]. Osuagwu O.E (2008); Software Engineering: A Pragmatic and Technical Perspective; Olliverson Industrial Publishing House - Owerri. Pp.310, 326-330.
- [4] Onu F.U. (2005); Development of an Intranet-Based Elections Management System. *Master of Science Degree Dissertation* pp.25.
- [5] Inyama H.C and Alo U.R.(2008); Practical Approach to Corporate Data Processing, the Dynamic Informer, Enugu.
- [6] Pressman S. Roger (1999); Software Engineering, A practitioner's Approach. McGraw-Hill Companies Inc New York.
- [7] TR-LO (2012) On-line: <http://help.sap.com> , 5/31/2012.