Development and Evaluation of Management Information Systems for Christian Workers Movement Multi-Purpose Cooperative

Jose Carlos M. Bernardo [1,*], John E. Fidelino [2], Christian Noel A. Lamigo [3], Aaron Patrick B. Santelices [4], Rex P. Ringula [5], Mary Grace G. Ventura [6]

[1,2,3,4,5,6] University of the East, Philippines
[1] jhokobernardo@gmail.com*; [2] johnfidelino@gmail.com; [3] ian.lamigo@yahoo.com; [4] aaronsantelices@yahoo.com; [5] rex_bringula@yahoo.com; [6] mggarces@yahoo.com;
* corresponding author

Abstract

The Christian Workers Movement Multi-Purpose Cooperative (CWMMC) is a financial institution that caters to more than a thousand members in rendering timely financial assistance by making use of manual transaction processing. The company has encountered a number of problems pertaining to its services, strategic office location, and data / information management. This study was conducted in an attempt to design and develop a software system that would make loaning processes and other company-related business transactions simple, convenient, reliable, and dependable. A management information system was developed for and implemented at CWMMC. The software was found acceptable to the end-users and technical experts. Hence, it was recommended that the software be used continuously.

Keywords: Database Driven-Software Application; Management Information System; Transaction Processing

1. Introduction

In the Philippine setting, there are several financial institutions that exist on a macro or micro level. Foremost among the goals of these institutions is to ease the financial burden that their members carry on their shoulders by means of lending, over-the-counter money transactions, and various kinds of loans. These particular ways of schemes support and assist the borrowers through easy and practical payment terms and conditions that will surely not hurt their tight man's budget. Banks, money lending agencies, and cooperatives exist for the very reason that they serve as instruments in providing assistance to those who are in dire need concerning money matters. This was the reason why Christian Workers Multi-purpose Cooperative was founded.

The primary purpose of this cooperative is to render timely financial assistance to its members by offering low interest rates and convenient payment schemes. For more than forty years of dedicated and professional service, the CWMM members of the said cooperative. It has expanded its loaning opportunities when it became a multi-purpose cooperative attuned to the needs of the members.

From its modest inception, the CWMMC lived through the years and even managed to outlive other savings and loan associations with increased membership. Today, 2,081 members withdrew the amounting to P40,960,516 which prove that many believe in the vision and mission of the cooperative.

Over the years, CWMMC has built a solid foundation in rendering financial aid to its members, which they consider a huge success factor. Having an average of about 50or higher approved loans daily, they experienced slow down on their processes / services especially during the peak seasons when people needed intermediate cash. Since they were using the manual processing of loans, there were times when they found it difficult to process bulks of loan application files simultaneously because individual record members were stored in a record book which they used to keep track of their credit history. storing records made their transaction slower and less effective.

Seeing this as a major concern, the developers have conferred a project plan of developing an information system integrated to a database technology that will contain all information which is reliable to end-users such as the

members of the cooperative, employees of each division, and the executive body of the company. It will provide details of each member's information and status, credit available for loan and history of loan, loan computations, record management, checks and balances and cash disbursement. This will boost, strengthen, and make the processing system much quicker and hassle-free with minimal errors, redundancies and mistakes. The system features data validation, security, accuracy, and integrity that are incorporated with back-up and archiving capability. The system also facilitates the generation of daily, weekly, monthly, and annual reports of financial statements, abstract of collections, and issuance of vouchers and invoices. This study has revolutionized and innovated the traditional processing of loans being practiced by the said cooperative. Hence, it could possibly depict the future of loan processing in the Philippines.

2. Object of the Project

The principal objective of this project is to develop an object-oriented software application which is dynamic, user-friendly, and dependable. Management Information System (MIS) includes necessary data, information, reports, materials, and other business-related resources that will uplift the organization's business processing of loans such as computation, presentation and analysis that is geared towards growth and enhancement. Specifically, it aims to

- design a well-rounded prototype that performs the goals of each and every activity around the company, such as registration, information management, loans processing and monitoring, checks and balances, collection, and an upright reports generation.
- implement a dedicated software system that is dependable and which can transform the conventional manner of flowing through sound decision-making, accurate and reliable data processing, timely and precise reports via computer usage.
- implement computer-aided application modules for each department that will aid the members to perform their duties and responsibilities with lesser time; and supply them with the necessary information in-line regarding their respective tasks.

The proposed study focused on developing a Management Information System (MIS) coupled with the introduction of Centralized Database Management System (CDBMS) which has been deployed and implemented. The study was accomplished in order to equip The developers covered the certain processes and production of CWMMC which are as follows:

- Membership procedure
- Verification, filing, computation, and evaluation of loan / s
- Checking, balancing, approval, and releasing of loan / s
- Voucher disbursement record
- Generation of check and cash disbursement record
- Generation of financial statements, abstracts of collection, and invoice and voucher

All of the processes mentioned above are associated with computerized record keeping, tracking and file management and organization to reduce manual labor, eliminate notebooks, and maximize workspace area for a comfortable and energizing work environment.

3. Analysis of Existing System

Christian Workers Movement Multi-Purpose Cooperative utilized a manual system as its standard operating procedure and it was aided by the use of commercialized software applications in generating their reports. The CWMMC, being one of the financial institutions in the country, was driven to fulfill the need of its members in helping them by means of loans servicing. Averaging to about 2,000 members, CWWMC has built and is still building a strong bond and a solid foundation to its constituents. In using the manual system, CWMMC encountered numerous concerns about record keeping and handling, storage, information management, tracking, computational flaws and loans processing. Looking and updating for important data pertaining to a member's record took time because of disorganized file storage.

In addition, inaccuracies of the information and reports were encountered by the management. Since recording, checking, balancing, computing, tracking, monitoring, reporting were done manually, it took them a while to process the loans which resulted in infrequent errors in the daily transaction as well as reports generation. To better understand the process scenario, a diagram that follows shows the involved entities and the different processes that took place in the loan processing. This indicates the system that the Christian Workers Movement Multi-purpose Cooperative has been using for several years.

The CWMMC workforce initiates its course of action when an employee of Manila City Hall applies for a membership at CWMMC (See Process no. 1 in Figure 1.). The employee then gets an application form for membership and the list of the requirements for compliance. After the completion of the form and preparation of requirements, he or she will submit the form to the CWMMC Office for approval. The management will review the details about the applicant if he / she is qualified or not. After knowing the eligibility, recommendation to the CWMMC Board of Directors will be made. The result will be known after the Executive Body assembly. Assuming that the membership is approved, the CWMMC Operations Division will create a new member's record book. The record book will be used to write down all the necessary details for future reference.
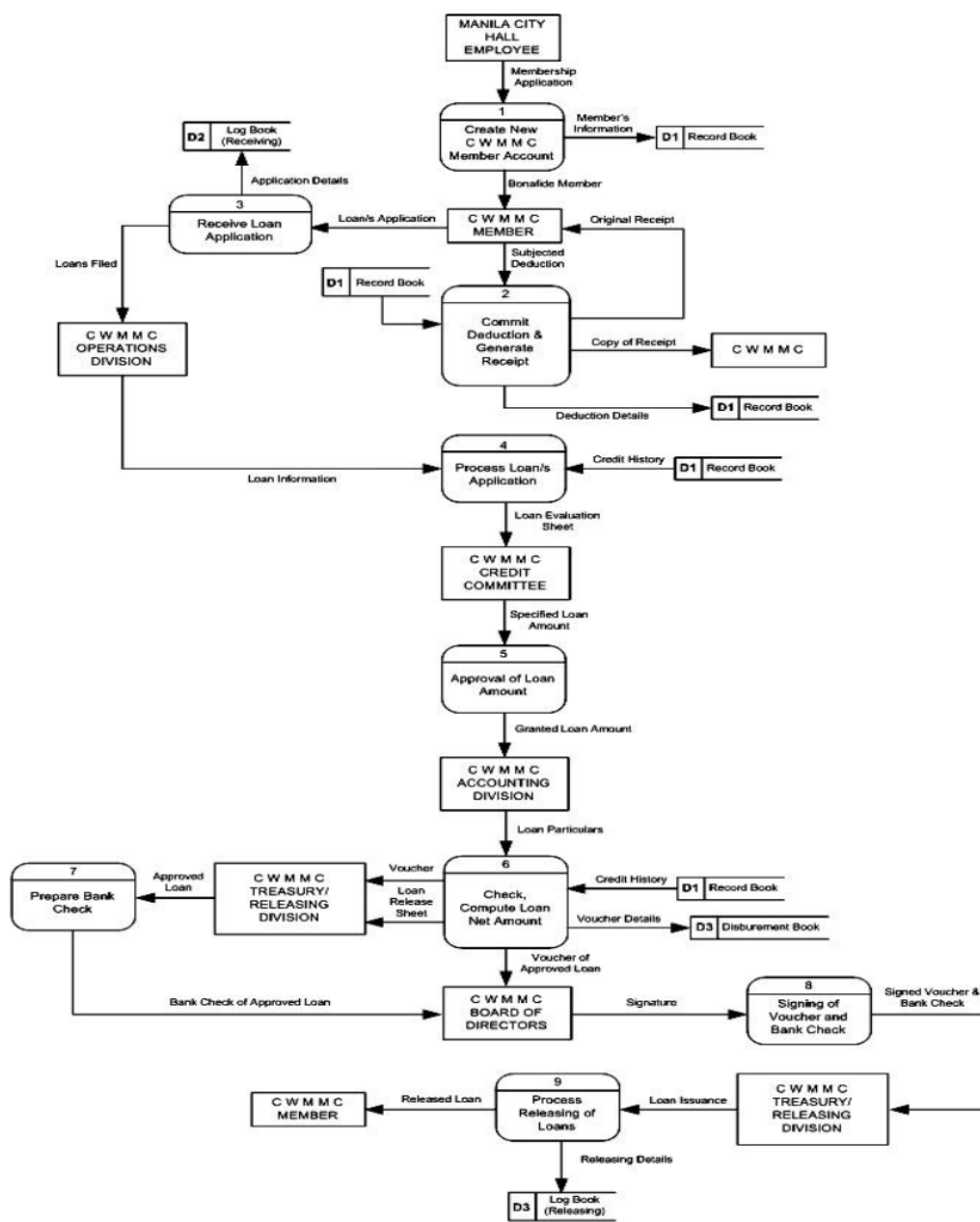

Figure. 1. Diagram 0 of the Existing CWMMC Manual System

As shown in Process 2 in Figure 1, each member of CWMMC is subjected to deduction. For new members, upon membership, they would have to pledge an amount for Fixed Deposits and Saving Deposits which will constantly be deducted from their regular pay, as well as the Membership Fee and the Annual Fee. They need to wait for the first deduction of CWMMC which will be reflected on their pay slip. When this is done, the initial loan will be ready for release.

Considering the existing members of CWMMC, they are charged with the same deductions such as Fixed and Savings Deposits, Annual Fee, but without the Membership Fee. In addition, Deduction for loan balances is also based on the type and the corresponding payment scheme.

For new members, they are entitled to an initial loan. They need to submit a loan application form depending on the type of loan which they are going to avail items of. Forms are acquired at the CWMMC Office. The members must accomplish the form with complete details, signatories, and they must also attach a photocopy of their latest payroll or pay slip with the certification of their payroll clerk or payroll master. The form is submitted to the CWMMC operations Division for processing.

For existing members, all loans are available for them, provided that their previous loans have satisfied the conditions of the loan policies. They can get the forms at CWMMC Office. They need to accomplish the application form with complete details, signatories, and attach a photocopy of their latest payroll or pay slip with the certification of their payroll clerk or payroll master. They may now submit the form to the CWMMC Operations Division for processing.

As for the processing, the CWMMC Operations Division is responsible for receiving loan applications filed by the members. They are also in charge of checking the completeness of requirements and validity of information through the access of the member's record book (See Processes no.3 and4 in Figure 1.). From this point, they can identify what loans are to be approved or rejected. After the verification of account and furnishing of Loan Evaluation Sheet, they will now forward the sheetto the CWMMC Credit Committee.

The Credit Committee will determine the gross loan amount to be granted to the member based on the computations indicated in the Loan Evaluation Sheet (See Process no.5 in Figure 1.). The Officer-in-Charge of the said committee will label the approved gross amount and affix his / her signature in the evaluation as a sign of approval for the amount. Afterwards, the loan application will be forwarded to the CWMMC Accounting Division.

The Accounting Division will receive the application of loan, review the computations, calculate the net amount of loan, and prepare the Voucher and Loan Release Sheet (See Process no.6 in Figure 1.) and these will be recorded in the Disbursement Book. After doing so, Voucher and Loan release Sheet will be sent to the CWMMC Treasury / Releasing Division.

The Treasury / Releasing Division will now receive the above-mentioned files. They will be responsible in preparing a Bank Check to be given to the member in the releasing procedure. This is shown in Process no. 7in Figure 1. When this process is done, they will now give the check to the CWMMC Board of Directors. In Process 8, The Board of Directors will visit every department of CWMMC especially the Treasury / Releasing Division. They will sign the voucher and loan release sheet and give the sheet back to the Treasury / Releasing Division. The Treasury / Releasing Division waits for the members to go to the office to claim the bank check as depicted on Processno. 9 in Figure 1.

4. Literature Review

According to Stefan and Valentina [2], shipping companies should continuously adapt their business operations in order to meet the challenges of rapid and increasing complexity of business activities. An enterprise resource planning (ERP) system was one tool that could address these challenges. ERP covered planning, procurement management, order tracking, inventory management, interaction with suppliers, customer relationship management, order tracking, financial management, and human resource management. It is valuable since failures due to lack of centralized coordination of projects can be removed. It could also make a project portfolio analysis that could assess the performance and profitability of the business. In other words, integration and synchronization of functions could be established in ERP. As such, ERP is a highly regarded information system.

Information systems (IS) add value to the operations of the organization or business.Once the three layers (ie, business architecture, application architecture, and technology architecture) [9] are integrated in the IS, it could

centralize the database and the processes of the organization which leads to easy access and retrieval of data and information [6]. In short, the information provided by the system could support decision makers [1, 3,10].

The study of Ayal and Seidmann [5] identified and measured the benefits of the implementation and integration of large-scale enterprise information systems. Specifically, the study investigated electronic medical records of patients with picture archiving of a regional medical center. The benefits of the IS were measured in terms of financial revenues, operating lead times, and subjective satisfaction levels of clinical staff and referring physicians. Through longitudinal data, it was revealed that clinical process lead time was improved significantly after deployment and integration of the systems. It was also disclosed that the performance metrics improved at a learning rate of 63%. Further, referring physicians had a higher level of satisfaction with the IS.

Al-Gharaibeh and Malkawi [8] identified the impact of management information systems (MIS) on the Jordanian Ministry of Planning, a governmental organization. A validated and a reliable questionnaire was distributed to 77 employees in the ministry. It was revealed that there was no impact of hardware and software equipment on the performance of the organization. On the other hand, there was a significant impact of networks, individuals and procedures, and MIS as a whole on the performance of the governmental organization.

MIS was also studied by Karim [1]. According to the researcher, MIS was an important element in attaining efficient decision making in an organization. The study investigated whether selected financial institutions in Bahrain vary in terms of the use of MIS leadership of decision making for strategic and tactical planning purposes. Data gathered from the 190 distributed survey forms showed that MIS was used to enhance strategic planning. It was also disclosed through regression analysis that tactical planning had no effect on decision making while strategic planning had an effect on the decision making effectiveness.

A university can also benefit from the capabilities of MIS. Ensour and Alinizi [4] investigated the impact of MIS techniques on the quality of services at the University of Tabuk as perceived by the staff. Four hundred twenty-six employees participated in the study. It was shown that the staff of the University of Tabuk that perceived the University's MIS were at a high level. It was also disclosed that the quality of services at the University was influenced by the MIS. Specifically, MIS explained 46.9% of the variance in the quality of the University services.

5. Testing and Evaluation

The evaluation material is given to different individuals who frequently use the system. They are the divisions present in Christian Workers Multi-Purpose Cooperative. In addition, IT experts and other individuals with knowledge of Management Information Systems have evaluated the system. The result of this procedure verified if the goal developed system was adopted or if it failed. The evaluation rating is taken from a five-point scale evaluation instrument. This instrument determines if the system is acceptable or not. The rating, mean range, and verbal interpretation below in Table 1.

Table. 1. Rating, Mean Range, and Verbal Interpretation

Rating	Mean Range	Verbal Interpretation
5	4.51 - 5.00	Highly Acceptable
4	3.51 - 4.50	Acceptable
3	2.51 - 3.50	Moderately Acceptable
2	1.51 - 2.50	Slightly Acceptable
1	1.00 - 1.50	Not Acceptable

To test the system, the following criteria in the evaluation were selected. These were adapted from ISO 9126. However, Content and Availability are not ISO 9126 software criteria [7]. The researchers came up with these criteria since it was deemed appropriate to evaluate the content and availability of the software.

1) **Content** – refreshes to the overall feature of the system and the updates of the content.
2) **Functionality** – refers to the ability of the system to perform all the desired tasks. It also tests its operability, user friendliness, and efficiency.
3) **Reliability** – refers to the ability of the system to perform all the desired goals, accurate performance, absence of failures and recoverability that are required under stated conditions for the period of time.
4) **Availability** – refreshes to the completeness of the system. This is the capability of the system to meet the specified requirements, specification and users' expansion.
5) **Maintainability** – refers to the set of attributes that bear in the effort needed to make specified modification which may include correctness, improvement, changes in the requirements, and functional specifications.

6. Result and Discussion

6.1. The Developed Software

The CWMMC MIS is a dedicated software system that is implemented for the cooperative itself. It encompasses processes such as registration, loan filing, loan approval, loan releasing, a member's profile viewer, credit history, and other related company operations. The system features data sharing via local area network (LAN) wherein all modules are interconnected through a centralized database that resides on the server.

The CWMMC MIS has seven modules, namely: the Registration Module, the Members Account Module, the Operations Division Module, the Credit Committee Module, the Accounting Division Module, the Treasury Division Module and the Master Application Module. Each module is designed and equipped with the functionalities, methods, and procedures within the cooperative for a much more convenient and faster way of transactions. Each module has its user's manual which has clear and detailed instructions that discuss each and every course of action by the user.

Figure 2 shows the registration module. It allows applicants to fill out the information form prior to approval of membership. Users take their own pictures with the use of an image capturing device (e.g. Web Camera, Digital Camera). It allows the system administrator to view all application forms with or without printing them for less paper transactions. Applicant is limited only to enter the necessary details for membership application.
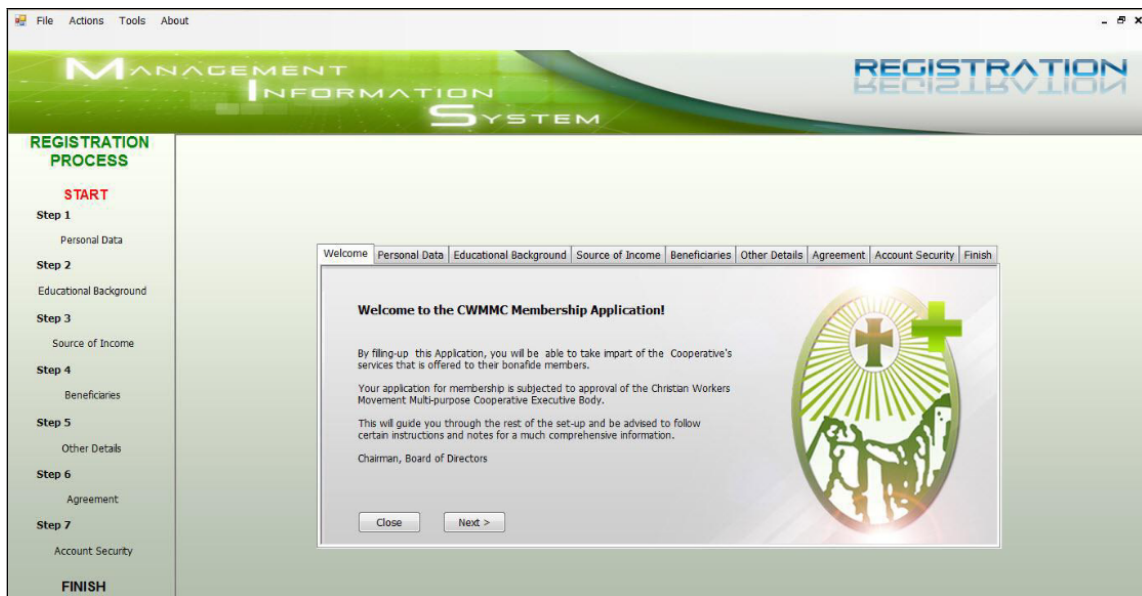

Figure. 2. Registration Module

In this module, the facilitator of Operations Division is the one in charge of validating membership, evaluating loans that are filed by the members and forwarding the form to the next process of approval. The facilitator is allowed to view his / her account and change the password. In the event that the facilitator forget the password, a password reset can be performed so that he / she can log-in to the system. The facilitator can also check the information of the

co-maker which has been selected by the maker of a particular loan as well as the beneficiaries of the maker. The module allows users to view the ledger of a specified member to see if deductions or transactions have been made. This module is further discussed in the user's manual.

Figure. 3. Operations Division Module

Figure. 4. Credit Committee Module

6.2.   Testing Result

The Christian Workers Movement Multi-Purpose Cooperative Management Information System (CWMMC MIS) transformed the conventional and traditional way of processing loans within the company. From the registration, approval of membership, filing of loans, forwarding to other departments for approval, as well as to the point of releasing the loan, it made one's tasks a lot easier, manageable, and hassle-free.

Table. 2. Evaluation Results on the Acceptability of CWMMC MIS

Criteria	Mean Range	Verbal Interpretation
Content	4.53	Highly Acceptable
Functionality	4.43	Acceptable
Reliability	4.44	Acceptable
Availability	4.48	Acceptable
Maintainability	4.50	Acceptable
Overall Mean	**4.48**	**Acceptable**

The overall rate of acceptability of the implemented system to the users was acceptable. This means that the software passed the requirements of the company and was ready to be implemented.

6.3.   Implementation

The developers scheduled a meeting with the Board of Directors, Officers, and Employees Christian Workers Movement Multi-Purpose Cooperative to discuss all necessary steps to be done prior to installation. Mapping out a system policy was the focal point in order to achieve the success of the deployment and the efficiency of the system.

The developers required the company to have an I.T. department wherein they hired professionals to be the administrator of the system so that troubleshooting, maintenance, system measures, protocols, and policy will be handled by these personnel. Since the cooperative was using outdated computers, the developers submitted a quotation of the hardware and peripherals needed to ensure stability of the performance of the system.

The developers conducted a series of training for the company's employees in order to know the work around the system, their limitations in using the system, and the do's and don'ts when operating the system prior to testing. The system underwent alpha testing which occurred during the development. Beta testing took place on the premise of the company which lasted for three months. The manual system is not yet eliminated since it would be compared to the developed software to determine whether the latter conforms to the specifications and processes of the company.

7.   Result and Discussion

It can conclude that the Management Information System for Christian Workers Movement Multi-Purpose Cooperative has improved the quality and efficiency of the processes and transactions of the company. The system objectives have been achieved through the security, adaptability, reliability, accessibility, recoverability, usability, testability, operability and accuracy pertaining to the contents of the system. The system was highly accepted by the cooperative specifically both to the members and the administration because it has resolved the problems they have experienced in the manual system. It had also eased the burden of dealing with papers because the system provided them with less-paper transactions wherein it became helpful not only to the organization but also to the environment. Now Christian Workers Movement Multi-purpose Cooperative (CWMMC) has a competitive edge over other financial institutions.

The Management Information Systems for Christian Workers Movement Multi-Purpose Cooperative has provided the company with improvement and advancement in terms of their loan processing. The developers recommend that they should have an I.T. Department where Database Administrator, Network Administrator, System Administrator will be in charge of the system maintenance. Also, dependable computer platforms for the clients and a mid-range server are required for the networking architecture of the software for fast and reliable data processing. The system is running over local area networks; hence, when the cooperative opens its doors and accommodates non-city hall employees of Manila, transpiring to a Rich Internet Application (RIA) will play a big consideration so that members can easily make a transaction with just one click away via the World Wide Web. In the long run, integration and incorporation of new technology is necessary for better functionality and interoperability. Since smartphones are at their peak, the integration of mobile application technology is also recommended for faster transaction and communication.

With the implementation of the Management Information System for Christian Workers Movement Multi-Purpose Cooperative, acquiring credit by means of loan can be simple, convenient, and hassle-free.

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