Loans and Savings Management System for Bentuco National High School Faculty Cooperative

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Abstract:- **This project aimed to improve the financial management practices of Bentuco National High School Faculty Cooperative by developing and implementing a Loans and Savings Management System. The project objectives included identifying current loan and savings management practices, determining the technical requirements for an automated system, assessing the potential benefits of implementing the system, and developing a functional system with a detailed timeline, budget, and risk management strategy. A mixed-methods approach was used, involving both qualitative and quantitative data collection and analysis. Data was gathered through interviews, surveys, and observations to identify current practices and common problems faced by cooperative members. Based on these findings, a Loans and Savings Management System was designed using the MERN stack, anchored in Organizational Information Processing theory, and developed using Agile Methodology in software development. The prototype was evaluated using Chi-square analysis, based on ISO 9241-11, and the actual system was evaluated using ISO/IEC 25010. The results showed that the system improved the efficiency, transparency, and accountability of financial transactions within the cooperative. Users were satisfied with the system and found it easy to use. The project provides insights into the benefits of implementing an automated system for financial management in a cooperative setting, and the use of a mixed-methods approach can provide valuable data for designing and evaluating such systems.**

Keywords:- Website, MERN, Cooperative System.

I. RATIONALE

The Bentuco National High School Faculty Cooperative provides an essential financial service to its members, offering savings and loan programs to help them meet their financial needs. However, the current manual system of managing loans and savings is prone to errors and delays, which can result in financial losses and dissatisfaction among members. Therefore, a more efficient and effective system for managing loans and savings in the Cooperative is needed. An automated system can streamline the loan and savings management process, reduce paperwork, and provide real-time access to financial information, making it easier for members to manage their finances.

The article "Role of Cooperatives in Rural Development: A Study of Savings and Loans Cooperative Societies in Oyo State, Nigeria" aims to investigate the role of savings and loans cooperative societies (SLCSs) in rural development in Oyo State, Nigeria. The study employed a mixed-methods approach, which included a survey of 285 SLCS members and interviews with 12 key informants. The results show that SLCSs play a significant role in promoting rural development in the study area. The study found that SLCSs provide access to credit, promote a savings culture, and provide a platform for social mobilization and community development. The study also identified some challenges facing SLCSs, including inadequate capital, poor management, and low level of education among members. The authors suggest that addressing these challenges through capacity building and training programs will enhance the effectiveness of SLCSs in promoting rural development in the study area. (Adenugba & Fakoya, 2018)

Another study on the impact of QuickBooks Pro on the financial performance of SMEs in Addis Ababa, Ethiopia, aimed to evaluate the effectiveness of the software in improving the financial management of small businesses. A mixed-method research design was employed to gather qualitative and quantitative data from business owners and managers using QuickBooks Pro for their accounting needs. The survey questionnaire focused on the financial performance of the SMEs before and after the adoption of the software. It collected information on key performance indicators such as revenue, profit, cash flow, and financial stability. On the other hand, the interviews aimed to obtain in-depth insights into the experience of the business owners and managers with the software.

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Both system software and application software are indispensable constituents of a computer system. System software, which includes the operating system and utility software, controls and manages the hardware and other software programs on a computer. The operating system is the most critical component of the system software, as it manages the computer's memory, processing power, and input/output operations. Utility software, on the other hand, provides additional functionality to the operating system, such as disk management, antivirus, and system optimization tools. Together, the operating system and utility software ensure the efficient functioning of the computer system and provide a platform for application software to run. Application software, as mentioned, is designed to perform specific tasks, such as accounting, customer relationship management, and project management. These software programs use the computer system's resources to process data and provide useful information to users. There are various types of application software available, including general-purpose software and specialized software designed for specific industries or tasks. One significant advantage of application software is its ability to streamline business processes and increase efficiency. For example, using accounting software can help automate financial tasks, such as invoicing and payroll, and reduce the time and effort required for these tasks. Additionally, application software provides users with tools to analyze data and make informed decisions, contributing to better business outcomes. (Baltzan, n.d).

Timely access to information is a necessity in forming the best management decision. MIS (Management Information System) can provide the organization with timely access to information on each member's profile, contribution, loans, loan interests, savings and savings interests, and outcomes for planning, directing, controlling, and decision-making from the different parts of the organization or system. (Gitman, McDaniel, & al., 2018)

The implementation of a Loans & Savings Management System (LSMS) for Bentuco National High School Faculty Cooperative can bring about several benefits. First, the system can improve efficiency in loan and savings management by reducing the time and effort required to process transactions, thereby increasing the speed of service delivery. Second, it can provide real-time access to financial information, allowing members to monitor their accounts and make informed financial decisions. Third, it can increase transparency and accountability in the management of the Cooperative's finances, ensuring that members' funds are properly managed and accounted for. An automated system can streamline the loans and savings management process, reduce paperwork, and provide real-time access to financial information, making it easier for staff to manage their finances (Sulistiowati et al., 2020).

Moreover, the implementation of such a system can also contribute to the promotion of financial literacy among cooperative members. By providing members with access to real-time financial information and automated tools for managing their finances, they can improve their understanding of financial management and make more informed decisions about their financial futures. (Sulistiowati et al., 2020) It can also improve transparency and accountability in the management of the school's cooperative finances, as all loans and savings transactions will be recorded and tracked in the system (Jha, 2019).

The implementation of the Loans & Savings Management System in Bentuco National High School is a necessary step to improve the efficiency and effectiveness of loan and savings management practices. It can reduce the workload for administrators. It can improve transparency and accountability. Above all, it can improve financial literacy among its members.

II. PROJECT OVERVIEW

A. Background of the Study

The current system of managing loans and savings in Bentuco National High School Faculty Cooperative is mainly manual, which is prone to errors, delays, and mismanagement. Furthermore, the manual system makes it difficult for members to monitor their accounts and keep track of their financial transactions. The lack of real-time access to financial information can also hinder members from making informed financial decisions, resulting in missed opportunities for financial growth. Consequently, developing and implementing a Loans & Savings Management System is crucial for the Bentuco National High School Faculty Cooperative to overcome these challenges. The system should be designed to improve the efficiency and effectiveness of loan and savings management, provide real-time access to financial information, and enhance transparency and accountability in the management of cooperative funds. The main problem that this study aims to address is the lack of an automated system for managing loans and savings in Bentuco National High School Faculty Cooperative, which results in inefficiency, errors, and mismanagement, leading to financial losses, dissatisfaction among members, and a lack of transparency and accountability.

➢ *The Specific Research Questions that this Study Aims to Answer are:*

- What are the current loan and savings management practices in Bentuco National High School Faculty Cooperative and the common problems encountered by the members?
- What are the features and technical requirements of an automated Loans & Savings Management System that would best meet the needs of the cooperative and its members?
- What are the potential benefits of implementing the system, such as improved efficiency, transparency, accountability, and improved financial literacy among members?
- What is the most effective deployment strategy for the Loans and Savings Management System for Bentuco National High School Faculty Cooperative, considering the unique needs and characteristics of the cooperative

members, the school administration, and the local community?

B. Software Methodology

The software development methodology selected for the Bentuco National High Faculty Cooperative School Loans & Savings Management System Agile Iterative Development. Agile iterative development is a software development approach that emphasizes flexibility and responsiveness to changing requirements throughout the development process. Under this approach, the development process is broken down into small, manageable. At the end of each iteration, the developer presents a working product or a portion of the system that can be tested and evaluated by the users. Feedback gathered from users is then used to make necessary adjustments or changes before the next iteration begins.

The first iteration is the development of high-fidelity prototype using Reactjs where the users evaluated the system using the evaluation tool based on the 9241-11:2018 usability and user satisfaction evaluation (see appendix F). Sprint planning and stand-up in this iteration involves the planning through meeting the stakeholders using the questionnaires and interview guide found in appendix B. The development part is where the developer starts with the development of the high-fidelity prototype from the input of the previous sprint. Testing includes testing the responsiveness of the design that will ensure a user-friendly interface. After testing all the possibilities for the ultimate user experience, the developer will present the high-fidelity to the cooperative for feedback using the evaluation tool for prototype. After the revisions based on the suggestions, the developer will inform the cooperative on the results of the evaluation and the plan for the next iteration. 1 is the first iteration of the development which involves the creation of a high-fidelity prototype. 2 is the second iteration which is the development of both the front and back end of the system.
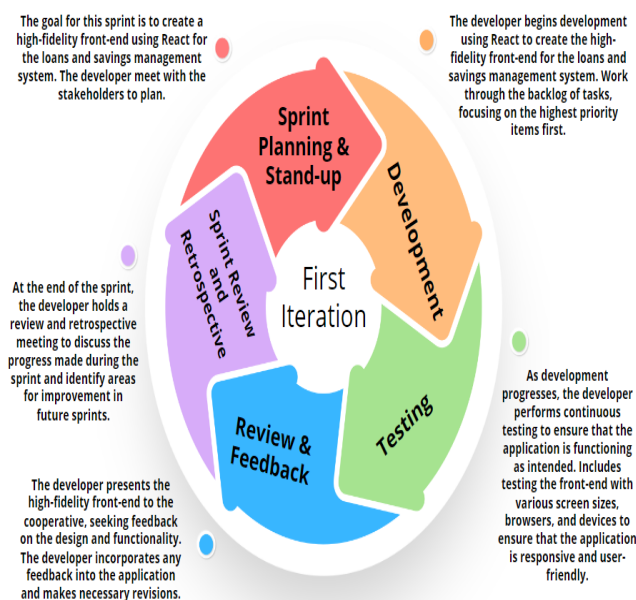

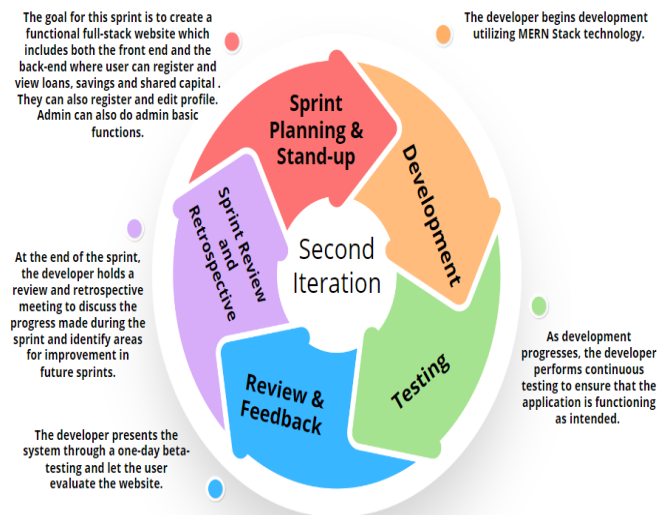Fig 1 The Agile Iterative Model. First Iteration

Fig 2 The Agile Iterative Model. Second Iteration

Figure 3 below is the Context Flow Diagram of the system which involves 2 types of users, members and administrators. The system evaluates the credentials and sends a response whether it is accepted or rejected. If accepted, the user can now do transactions in accordance with the user's type. DFDs or Data Flow Diagram are used throughout the software development life cycle, from requirements gathering to system testing and maintenance.
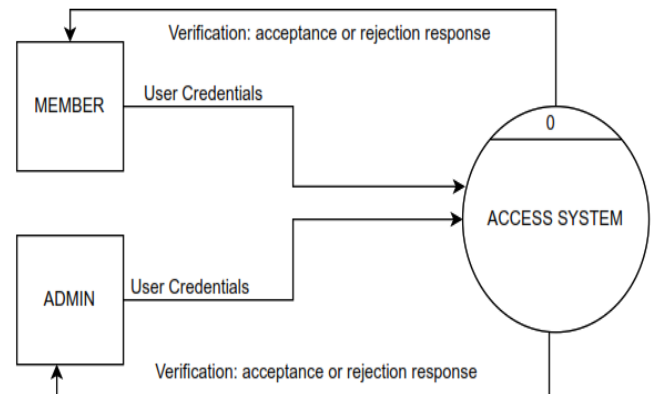

Fig 3 Context Flow Diagram of Loans and Savings Management System for BNHSFC

The researcher utilized high fidelity prototype using react.js. High-fidelity prototypes are highly interactive and functional, and they are as close as they can get to the final product. The front end of the system was developed first without data but with links to show the users the possible interface of the system. The researcher demonstrated the prototypes to the users for their feedback and allowed them to navigate the link. During the try-out of the prototype, the researcher conducted usability and user satisfaction testing for the participants.

The evaluation tool developed for the prototype and the system involves a yes or no response utilizing ISO 9241-11, so the researcher used chi-square fit to goodness to analyze the data. The chi-square goodness of fit test was used to compare the expected results of using the prototype to the

actual results observed during user testing. The expected results were based on the requirements and specifications of the prototype, while the actual results were based on how well users were able to complete tasks or achieve goals using the prototype.

The researcher hypothesized the following based on the category of the evaluation tool; there is no significant difference between the expected and observed frequencies of successful completion of a task by users on the prototype during the usability and user satisfaction testing. Table 2 is the summary result of the evaluation conducted with the 22 members of the cooperative on usability and user satisfaction testing. The chi-squared value of 0.636363636 and a p-value of 0.999914762 with the significance level of 0.05 suggested that the researcher's hypothesis is acceptable. Therefore, the current design of the prototype will not be altered and will be as is. The result of the analysis of the prototype suggests that there will be no revisions to the design of the prototype presented to the user.

Table 1 Usability and User Satisfaction Test Questions for Prototype

Category	Yes	No
1. Usability Testing:		
Is it to navigate the website?		
Are the menus and links clear and intuitive?		
Can users find the information they are looking for easily?		
Does it take to complete common tasks, such as filling out a form?		
Are there any areas of the website that are confusing or frustrating to use?		
2. User Satisfaction:		
Are you with the overall design of the website?		
How likely are you to recommend this website to others?		
Did you encounter any issues while using the website?		
Is the quality of the content on the website good?		
Did the website meet your expectations?		

C. Programming Tools

The tool used in the development of the system is the MERN Stack Technology. The MERN stack is a set of technologies that work together to enable developers to build full-stack web applications using JavaScript. Figure 4 below is the system architecture utilizing the 3-tier architecture of MERN stack:
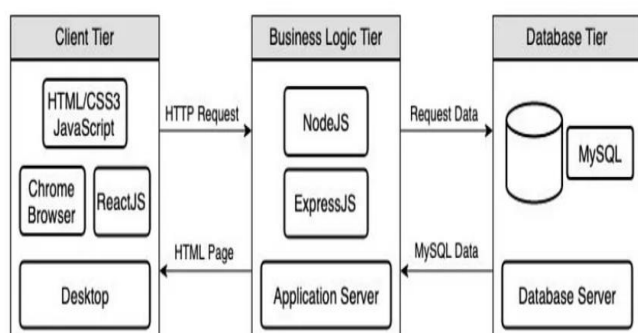

Fig 4 3-Tier Architecture of MERN Stack

III. DISCUSSIONS OF FINDINGS

A. Current Loan and Savings Management Practices and Problems Encountered in Bentuco National High School Faculty Cooperative

At present, the services being offered by the cooperative are loans with lower interest and opportunities for savings with higher percentage returns. 13 is the flowchart of the current loan process of BNHSFC. The process requires that the treasurer receives the loan application and assesses the ability of the member to pay the loan amount. This includes credit investigation. If the member is qualified, the treasurer forwards the application to the chairman. There are also instances where the chairman evaluates the application if she or he deem it necessary. After careful consideration, the chairman can now approve the loan. The process of loan application often takes weeks to complete because of the schedule conflict, especially since the officers in charge of the process are also teachers. This poses one of the problems the members encounter, especially if the purpose of the loan is for an emergency.

The members of Bentuco National High Faculty Cooperative face several challenges when it comes to loan and savings management. However, they handle these challenges with grace by following the three weeks' time frame on loan evaluations and release. Despite this, members still encounter delays in the loan processing due to the verification of records by officers. To address this issue, the members suggested having a system that can provide them with more convenient and efficient ways to manage their loans and savings. Since all members own an android mobile phone, they believe that having a system that can be accessed through their mobile devices would be a great advantage. With such a system, they can easily check their loan application status, savings balances, and loan dues and due dates. This allows them to keep track of their finances more effectively and avoid any potential issues with loan repayment or savings management. The members are excited about the potential benefits that a new system can bring and are looking forward to its implementation.

B. Features of the Loans and Savings Management System for Bentuco National High School Faculty Cooperative

Based on the findings from the first objective, the technical requirements and key features of an automated Loans & Savings Management System were identified. These include a user-friendly interface, secure login, and authentication features, a loan application and approval process, automatic record-keeping and documentation, and real-time access to account information. The Loans and Savings Management System for Bentuco National High School Faculty Cooperative is an automated system designed to help the cooperative manage its loans and savings more efficiently. The system provides a user-friendly interface for members to access their account information, make loan and savings transactions, and view their transaction history.

C. System Evaluation

Based on the results of the system evaluation, it was assumed that the system passed the functionality test. When it comes to the functional completeness test, the system provides all the necessary functionality to meet the user's needs; there are no missing features or functions that would prevent the user from achieving their goals, and there are no unnecessary or redundant features or functions that could be removed to simplify the system. For the functional correctness test, the system produces the correct results when performing its intended functions; there are no errors or bugs in the system that prevent it from working correctly, and the system has been thoroughly tested to ensure that it meets the user's requirements.
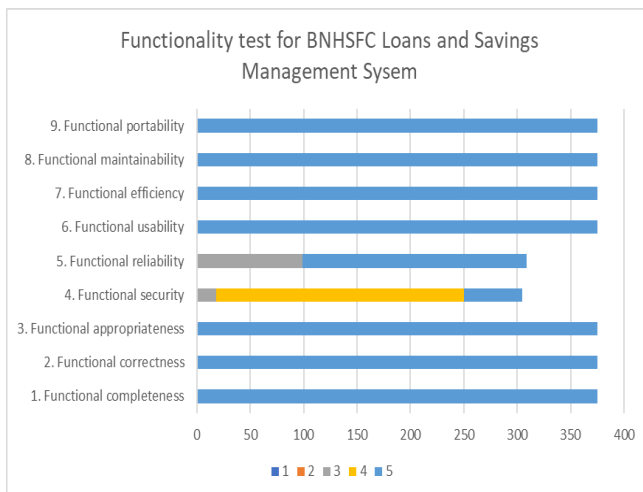

Fig 5 Summary Functionality Test using Likert Scale

D. Deployment Strategy

➢ *Environment Setup*

- Set up production environment: This involves setting up the server, configuring the domain, setting up a database, and installing necessary software like Node.js, MongoDB, and NGINX.
- Set up the Git repository: Create a repository on GitHub or Bitbucket and clone it to the server.
- ConSSH access: Add the server's public key to the repository to allow deployment via SSH.

➢ *Production Deployment*

- Create a Heroku pipeline to deploy the application.
- Use Heroku's continuous delivery feature to automatically deploy code changes to the staging environment.
- Once the changes are tested and approved, promote them to the production environment.

➢ *Monitoring and Maintenance*

- Clogging to track errors and debug issues.
- Schedule regular maintenance tasks, such as backups and updates. Monthly maintenance and quarterly updates on iteration.

➢ *Training and Support*

- Clogging to track errors and debug issues.
- Schedule regular maintenance tasks, such as backups and updates. Monthly maintenance and quarterly updates on iteration.

➢ *Software and Hardware requirements for accessing the app*

- For Desktop or Laptop
- Processor: Intel Pentium 4 or later
- RAM: 2 GB minimum, 4 GB recommended
- Storage: 256 GB Memory or larger
- Display: 1280x1024 or larger
- Operating system: Windows 7 or later
- Recommended google chrome browser but any browser that supports bootstrap will do.
- For mobile devices
- iOS or Android device with at least 2 GB RAM
- The minimum screen size of 4.7 inches
- Sufficient storage space for the app and its data
- Recommended google chrome browser but any browser that supports bootstrap will do.

➢ *Specifications for the Development*

- Database: MongoDB or MySQL
- Backend: Node.js
- Frontend: React.js
- Recommended google chrome browser but any browser that supports bootstrap will do.
- Developed in Sublime Text 3
- GitBash
- Postman in testing the back-end.

➢ *Hosting Requirements*

- Heroku for the backend
- Vercel for the frontend

IV. CONCLUSION AND RECOMMENDATIONS

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A. Conclusions

After the implementation of the Loans and Savings Management System for Bentuco National High School Faculty Cooperative and receiving positive feedback from users, it can be concluded that the system has successfully addressed the issues faced by the cooperative's members in the previous manual system. The automated system has greatly improved the efficiency, transparency, and

accountability of the cooperative's loan and savings management practices. Members can now easily access their account information and apply for loans through the user-friendly interface of the system. Furthermore, the system has also contributed to the financial literacy of the cooperative's members, as they can now track their transactions and balances.

In conclusion, the Loans and Savings Management System for Bentuco National High School Faculty Cooperative has provided significant benefits to the cooperative and its members and serves as a successful example of how an automated system can enhance the management of cooperative loans and savings.

B. Recommendations

Based on the successful implementation and user satisfaction with the Loans and Savings Management System for Bentuco National High School Faculty Cooperative , the following recommendations are suggested:

Based on the research findings, it is recommended that the Bentuco National High School Faculty Cooperative transition from their current manual record-keeping system to an automated system that would address the problems encountered by the members, such as errors and delays in updating member accounts, difficulty accessing account information, lack of real-time updates, and lack of transparency and accountability in loan and savings management practices.

The recommended features and technical requirements for an automated Loans & Savings Management System for the cooperative include a user-friendly interface that is accessible and easy to navigate for all members, real-time updates and notifications for loan and savings balances, automated loan and savings calculations, a centralized database for member records, and secure login and data protection features.

The potential benefits of implementing the system include improved efficiency in loan and savings management, increased transparency and accountability in financial transactions, enhanced member satisfaction and trust, improved financial literacy among members, and potential cost savings for the cooperative in terms of time and resources. It is therefore recommended that to fully utilized such benefits, an integration of payment gateway be added in the next iteration because it will provide ease on paying loan dues and adding additional savings and shared capital. The cooperative can apply for an e-payment gateway such as GCash, Maya, and ShoppeePay so members can securely do online banking.

The recommended deployment strategy for the Loans and Savings Management System should consider the unique needs and characteristics of the cooperative members, the school administration, and the local community. This involve a phased approach that includes training and support for members and staff, pilot testing of the system, and ongoing evaluation and improvement based on feedback from users.

Additionally, partnerships with local financial institutions or government agencies may be explored to leverage resources and expertise in implementing the system.

Further recommendations were also given such as the inclusion of subsidiary ledger. A subsidiary ledger is a record-keeping system that contains detailed information about specific accounts, such as loans or savings accounts, and is used to support the general ledger. It is recommended that the cooperative implement a subsidiary ledger for its loan and savings accounts, in order to provide more accurate and detailed information about member accounts and improve overall record-keeping practices. This involve creating a separate ledger for each type of account, which would track individual member transactions and balances. By implementing a subsidiary ledger, the cooperative could improve its ability to manage member accounts and ensure accuracy and transparency in its loan and savings management practices.

Another recommendation is continuous monitoring and evaluation. The system should be regularly monitored and evaluated to ensure that it continues to meet the needs of the cooperative and its members. This will help identify any issues that arise and provide an opportunity to address them before they become major problems. Regular training should also be conducted specially after every iteration. The cooperative should provide regular training to its members to ensure they are familiar with the system and its features updates. This will help members use the system effectively and reduce the need for support and assistance.

REFERENCES

[1] Adenugba, A. A., & Fakoya, M. B. (2018). Role of Cooperatives in Rural Development: A Study of Savings and Loans Cooperative Societies in Oyo State, Nigeria. International Journal of Economics, Commerce and Management, 6(11), 232-246.

[2] Aggarwal, M. (2017). Role of cooperatives in financial inclusion: An empirical study of agricultural cooperatives in the Philippines. Journal of Asian Finance, Economics, and Business, 4(1), 43-50.

[3] Bacalso, L. G. (2015). The perceived benefits and challenges of participating in a teachers' cooperative. Asia Pacific Journal of Multidisciplinary Research, 3(1), 1-6.

[4] Baltzan, P. (2008). Business Driven Information Systems. New York: McGraw-Hill/Irwin Companies Inc.

[5] Banzon, E. P. (2016). A review of the cooperative movement in the Philippines: History, policies and challenges. Journal of Cooperatives and Community Development, 8(1), 16-30.

[6] Binion, R. W. (n.d.). Understanding Cooperative Bookkeeping and Financial Statements. Washington, D.C.: U.S. Department Of Agriculture (Rural Business-Cooperative Services).

[7] Brodie, S. (2019, July 11). Step by Step: Testing Your Prototype. Qualaroo. Retrieved from https://qualaroo.com/blog/step-by-step-testing-your-prototype/

[8] Co-operative Accounting System 6.0. (n.d.). Retrieved from Software.Informer: https://co-operative-accounting-system.software.informer.com/6.0/

[9] Dizon, J. S. (2018). The Financial Performance of Selected Teachers' Cooperatives in Pangasinan. International Journal of Research Studies in Management, 7(2), 69-80.

[10] Djukanovic, J., Kovacevic, M., & Knezevic, Z. (2020). Development of a web application for personal finance management. Journal of Information Technology and Applications, 1(1), 12-23.

[11] Estrada, R. J. (2019). Factors Influencing the Financial Sustainability of Teachers' Cooperatives in Nueva Ecija. International Journal of Innovative Research in Management Studies, 4(2), 9-16.

[12] Gayas, R. M., & Rosario, J. (2015). Financial performance of agricultural cooperatives in the Philippines. Review of Integrative Business and Economics Research, 4(3), 272-283.

[13] Gitman, L. J., McDaniel, C. D., Shah, A. K., & Reece, M. (2018). Introduction to Business. Pearson.

[14] Hensley, R. (2008). "Owner Quandary: How Much to Spend on New Technology?". Cincinnati Business Courier.

[15] Herrmann, A., & Fronza, I. (2019). Agile Development with the MERN Stack. In Agile Processes in Software Engineering and Extreme Programming (pp. 176-188). Springer.

[16] Jha, N. (2019). Advantages and disadvantages of automated financial management system. International Journal of Engineering Research & Technology, 8(2), 122-127.

[17] Lin, H. F., & Chou, T. Y. (2021). The role of information technology infrastructure in organizational information processing: A multilevel analysis. Information & Management, 58(1), 103343.

[18] Mook, L., Quarter, J., & Jane, B. (2007). What Counts: Social Accounting for Non-profits and Cooperatives. London: Sigel Press.

[19] Lofranco, A. B., & Manalaysay, M. A. (2017). Factors affecting the financial performance of selected agricultural cooperatives in the Philippines. Journal of Applied Management Accounting Research, 15(1), 27-47.

[20] Magno, M. M., & Acosta, A. R. (2021). Sustainability of Teachers' Cooperatives: The Role of Social Capital. Journal of Economics, Management and Trade, 27(4), 123-133.

[21] Nguyen, C. (2021, June 17). FullStack Development with M.E.R.N Stack: Part 1. Level Up Coding. https://levelup.gitconnected.com/a-complete-guide-build-a-scalable-3-tier-architecture-with-mern-stack-es6-ca129d7df805.

[22] Philippine Cooperative Central Fund. (n.d.). About us. Retrieved from https://pccf.coop/about-us/

[23] Philippine Daily Inquirer. (2019, October 2). DepEd to hold financial literacy campaign for students. Retrieved from https://newsinfo.inquirer.net/1171281/deped-to-hold-financial-literacy-campaign-for-students

[24] Podeswa, H. (2010). UML For The IT Business Analyst (Paperback). Boston: Course Technology PTR.

[25] Purposes of Cooperative. (1990, March 10). Republic Act 6938 "Cooperative Code of the Philippines", p. 6. Retrieved from The LawPhil Project: https://www.lawphil.net/statutes/repacts/ra1990/ra_6938_1990.html

[26] QuickBooks Features and Pricing. (2018). Retrieved from QuickBooks Cloud Accounting: https://quickbooks.intuit.com/

[27] Reyes, C. M. (2018). Factors influencing the loan repayment behavior of agricultural cooperative members in the Philippines. Journal of Asian Finance, Economics and Business, 5(4), 129-136.

[28] Rola-Rubzen, F. (2016). Enhancing the Role of Cooperatives in Philippine Agriculture: The Case of the Agric

[29] Rohilla, R. (2017). A study on the role of financial literacy in promoting financial inclusion in India. Journal of Entrepreneurship, Management, and Innovation, 13(2), 7-23.

[30] Sommerville, I. (2011). Object Oriented Design using UML. In I. Sommerville, Software Engineering, 9th Edition (pp. 178 -198). Boston: Addison-Wesley.

[31] Sulistiowati, E., Fahlevi, H., & Hidayatullah, F. (2020). The importance of financial literacy for students. KnE Social Sciences, 4(19), 280-287.

[32] Reyes, C. M. (2018). Factors influencing the loan repayment behavior of agricultural cooperative members in the Philippines. Journal of Asian Finance, Economics and Business, 5(4), 129-136.

[33] Rola-Rubzen, F. (2016). Enhancing the Role of Cooperatives in Philippine Agriculture: The Case of the Agric

[34] Vitez, O. (2010). The rationale of computerized accounting information systems.

[35] Wexler, J. (2000). Why computer users accept new systems. Sloan Management Review

[36] Yap, D. B., & Remolona, E. M. (2015). Performance of Philippine cooperatives: An empirical study. Asia Pacific Journal of Management, 32(2), 441-467.