DEVELOPMENT OF A MULTIPURPOSE COOPERATIVE SOCIETY WEBSITE

BY

ETOMU GBENGA JOSHUA
ENG1804736

TO

DEPARTMENT OF COMPUTER ENGINEERING, FACULTY OF ENGINEERING, UNIVERSITY OF BENIN

SUPERVISED BY
ENGR. PROF. S.T APEH

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CERTIFICATION

This is to certify that this project was carried out by **GBENGA ETOMU** with matriculation number **ENG1804736** in partial fulfillment of the requirements for the award of B.Eng. Degree in the Department of Computer Engineering, Faculty of Engineering, University of Benin, Benin City.

PROF. S.T APEH	**DATE**
(Project Supervisor)	

ENGR. DR. MRS. O. OKOSUN	**DATE**
(Head of Department)	

APPROVAL

This Project work is hereby approved as being adequate in scopes and content in partial fulfillment of the requirement for the award of Bachelor of Engineering (B.Eng.) Degree from the Department of Computer Engineering, Faculty of Engineering, University of Benin, Benin city.

ENGR. DR. MRS. O. OKOSUN	**DATE**
(Head of Department)	

DEDICATION

This project study is foremost dedicated to the Almighty God for his strength, wisdom, understanding, love, protection, inspiration and guidance he granted me throughout my course of study. Also, to my parents, Mr. and Mrs. Etomu, for giving me the foundation upon which this academic journey is made possible, my siblings and finally my prestigious lecturers in the Department of Computer Engineering

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ABSTRACT

The research has designed a system that has a strong security and trust for users to easily access cooperative society or start a cooperative society. The website is designed to make the experience with cooperative society very easy and accessible online, providing a friendly and responsive customer support system. The website has been designed to increase the reach of cooperative society and onboard more cooperative society to the platform. This will help increase the impact of cooperative societies in the nations. The world is trending towards digitalization. In the light of this, there is an urgent need too develop a trusted web platform that onboards cooperative societies and make their services available online.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF STUDY

Multipurpose cooperative societies are community-based organizations formed by individuals with common economic, social, or cultural interests. These societies operate on the principles of mutual assistance, shared responsibility, and democratic decision-making. Members pool their resources to achieve common goals, such as accessing financial services, agricultural support, or other shared resources.

Multipurpose cooperative societies are member-owned businesses that provide a diverse range of financial and social services to their members. These services can include access to credit, essential goods purchase, agricultural support, and educational programs (Awoyemi et al., 2017). In Nigeria, multipurpose cooperative societies play a crucial role in promoting financial inclusion, poverty alleviation, and community development (Federal Ministry of Industry, Trade & Investment, 2023).

In recent years, the role of multipurpose cooperative societies has become increasingly vital, serving as a cornerstone for sustainable community development. However, many of these societies face challenges in efficiently managing their operations and fostering effective communication among members. Also, traditional methods of operation in MCSs often rely on manual record-keeping, limited communication channels, and physical interactions. This can lead to inefficiencies, hampered communication with members, and geographical limitations hindering wider participation (Onyeagu et al., 2018).

In today's digital age, the integration of technology into various aspects of society has become imperative for fostering growth and development. Cooperative societies, in particular, play a vital role in facilitating economic activities and promoting community well-being. However, the traditional methods of operation within cooperative societies are evolving, with an increasing emphasis on utilizing online platforms to streamline processes and enhance accessibility.

The development of a multipurpose cooperative society website represents a significant step towards modernizing cooperative operations and expanding their reach. This project seeks to address the need for a comprehensive online platform tailored to the specific requirements of cooperative societies, with a focus on security, trust, and usability.

Through this project, we aim to design and implement a website that not only facilitates the core functions of cooperative societies but also integrates features to enhance security and trust in online transactions. With a particular focus on secure data handling, security, payment and providing responsive customer support, the website aims to ensure confidence among members and stakeholders.

Furthermore, the development of such a website holds the potential to foster economic development within the community by providing a platform for members to engage in business activities, access resources, and collaborate effectively. By leveraging the power of technology, cooperative societies can overcome geographical barriers and foster greater participation and inclusivity among members.

This research intends to build a website, with a facility to archive a systematic approach to design and develop the multipurpose cooperative society website. The following steps outline the process:

i. Requirement Analysis: We will begin by conducting a comprehensive analysis of the requirements for the multipurpose cooperative society website. This step involves understanding the needs of all stakeholders, identifying key features, and establishing the system's core functionalities.

ii. User Interface Design: The success of the website hinges on its user interface and user experience. We will employ modern design principles to create an appealing and intuitive interface that enhances user experience. Clear navigation, search functionality, categorization, and responsive design will be key considerations.

iii. System Architecture: Building a robust and scalable architecture is crucial for a multipurpose cooperative society website. We will carefully design the system's components, including the database structure, backend infrastructure, and communication protocols. Emphasis will be placed on ensuring reliability, security, and efficiency.

iv. Security Measures: Security is paramount in a multipurpose cooperative society website platform to protect user data, prevent fraud, and ensure trust. We will integrate robust security measures, such as encryption, user authentication, secure payment gateways to instill confidence in stakeholders.

v. Testing and Quality Assurance: To guarantee a stable and reliable system, we will conduct rigorous testing and quality assurance procedures. Thorough testing will be performed to identify and resolve any bugs or performance issues, ensuring a smooth user experience.

1.2 PROBLEM STATEMENT

Multipurpose cooperative societies play a crucial role in fostering community development and supporting members in various economic and social endeavors. However, these organizations often face significant challenges that hinder their efficiency, transparency, and overall

effectiveness. Traditional methods of operation in multipurpose cooperative societies can pose challenges in member engagement, communication, and overall efficiency. Identifying and addressing these issues forms the basis for the proposed development of a dedicated website for multipurpose cooperative societies.

a. Operational Inefficiencies:

One of the primary challenges faced by multipurpose cooperative societies is the presence of manual and time-consuming processes. Tasks such as membership registration, financial transactions, and record-keeping are often handled manually, leading to inefficiencies, errors, and delays in operations. These inefficiencies impede the society's ability to respond promptly to member needs and capitalize on emerging opportunities.

b. Limited Communication Channels:

Traditional communication methods within cooperative societies, such as meetings and newsletters, may be insufficient for fostering active and continuous engagement among members. The lack of a centralized platform for communication hinders the timely dissemination of information, collaborative decision-making, and the exchange of ideas among members. This communication gap can result in a disconnect between the leadership and the membership, hindering the cooperative's overall cohesion.

c. Limited Access to Information:

Many cooperative society members face challenges in accessing essential information related to their cooperative's activities, resources, and projects. This lack of accessibility to relevant data and educational materials restricts members from making informed decisions and fully participating in

cooperative initiatives. A dedicated website can serve as a knowledge hub, providing members with easy access to critical information, training materials, and updates.

d. Security Concerns:

In the absence of a secure and centralized platform, multipurpose cooperative societies may face security concerns related to financial transactions, member data, and confidential information. Manual record-keeping and decentralized systems increase the risk of data breaches, fraud, and unauthorized access. Implementing robust security measures within the proposed website is essential to instill confidence among members and protect the cooperative's integrity.

e. Lack of Transparency:

Transparency is a cornerstone of cooperative societies, yet achieving it can be challenging without a dedicated platform. Members may lack real-time visibility into financial transactions, project updates, and decision-making processes. This lack of transparency can lead to mistrust among members and undermine the cooperative's democratic principles.

In light of these challenges, the development of a multipurpose cooperative society website aims to address these critical issues, enhancing operational efficiency, communication, information accessibility, security, and transparency. By providing a comprehensive digital solution, the proposed website seeks to empower cooperative societies and contribute to the sustainable growth and success of their communities.

1.3 NEED FOR A DEDICATED WEBSITE

The advent of the digital age presents an opportunity to address these challenges through the development of a dedicated website for multipurpose cooperative societies. Such a platform would

serve as a centralized hub for members to access information, conduct transactions, and engage in collaborative decision-making. The key motivations for implementing a website include:

a. **Streamlining Operations:** A dedicated website can automate and streamline various processes, such as membership registration, financial transactions, and communication, reducing administrative burdens and enhancing overall efficiency.
b. **Enhancing Member Engagement:** By providing a user-friendly interface, the website can facilitate active participation and engagement among members. This includes features such as forums, news updates, and collaborative project management tools.
c. **Transparency and Accountability:** The website can contribute to the transparency of cooperative society operations by providing real-time updates on financial transactions, project progress, and decision-making processes. This fosters trust among members and strengthens the cooperative community.
d. **Access to Resources:** Through the website, members can access a repository of resources, educational materials, and information relevant to their specific interests, empowering them with valuable knowledge and support.

In essence, the development of a multipurpose cooperative society website aligns with the evolving needs of these organizations in a digital era. It not only addresses operational inefficiencies but also serves as a catalyst for fostering a more connected, informed, and empowered community.

1.4 AIMS AND OBJECTIVES

The primary goals of the "Development of a Multipurpose Cooperative Society Website" project are carefully crafted to address the identified challenges and enhance the overall functionality of the cooperative society. The objectives are structured to create a comprehensive digital solution

that improves communication, facilitates member transactions, and promotes transparency. The project aims to achieve the following objectives:

a. Enhance Communication:

i. Develop a user-friendly and interactive communication platform within the website to facilitate seamless information exchange among members.

ii. Implement features such as discussion forums, newsletters, and announcements to promote continuous and transparent communication.

iii. Improve accessibility to cooperative society news, updates, and decision-making processes for all members.

b. Streamline Member Transactions:

i. Design and integrate a secure and efficient online transaction system to automate financial processes such as savings deposits, loan applications, and fund transfers.

ii. Implement a user-friendly interface that allows members to conduct transactions easily and monitor their financial activities within the cooperative.

iii. Ensure the website supports multiple payment methods and adheres to stringent security measures for financial transactions.

c. Promote Transparency:

i. Establish a real-time reporting system to provide members with instant access to financial records, project updates, and decision outcomes.

ii. Implement a transparent voting mechanism for cooperative decisions, ensuring that members can actively participate in the democratic processes of the society.

iii. Integrate features that allow for the tracking of fund utilization, project progress, and overall cooperative performance.

d. Centralize Information Access:

i. Create a centralized repository of information, resources, and educational materials to empower members with the knowledge necessary for informed decision-making.

ii. Develop an intuitive search functionality and categorization system for easy navigation through the website's content.

iii. Ensure that all relevant documents, policies, and guidelines are readily accessible to members through the platform.

e. Strengthen Security Measures:

i. Implement robust security protocols to safeguard member data, financial transactions, and sensitive cooperative information.

ii. Employ encryption techniques to secure communication channels and protect against potential cyber threats.

iii. Conduct regular security audits and updates to ensure the continuous integrity and confidentiality of the cooperative society's digital infrastructure.

f. Improve User Experience:

i. Prioritize user experience (UX) design principles to create an intuitive and visually appealing interface.

ii. Conduct usability testing to refine the website's layout, navigation, and overall user interaction.

iii. Ensure that the website is accessible across various devices to accommodate the diverse technological landscape of cooperative society members.

1.5 SCOPE OF STUDY

The scope of the "Development of a Multipurpose Cooperative Society Website" project is defined by the key functionalities, features, and aspects that will be encompassed in the development process. This section outlines the boundaries and limitations of the project, ensuring a focused and achievable outcome. The scope encompasses the following areas:

Membership Management:

i. Develop a comprehensive membership management system that includes features for registration, profile creation, and member authentication.
ii. Implement functionalities for updating personal information, tracking membership status, and managing membership renewals.

Financial Transaction System:

i. Design and integrate a secure online financial transaction system that enables members to perform activities such as savings deposits, loan applications, and fund transfers.
ii. Ensure compatibility with various payment methods and implement measures for transaction security and integrity.

Communication Platform:

i. Develop an interactive communication platform within the website to facilitate seamless information exchange among members.
ii. Implement discussion forums, newsletters, and announcements to enhance communication and engagement.
iii. Provide real-time updates on cooperative news, decisions, and projects.

Information Repository:

i. Create a centralized repository of information, resources, and educational materials relevant to the cooperative society's objectives.

ii. Organize content for easy navigation and implement search functionalities to enhance information accessibility.

iii. Ensure that important documents, policies, and guidelines are readily available to members.

Decision-Making Mechanism:

i. Establish a transparent and democratic decision-making system, allowing members to participate in voting on cooperative matters.

ii. Integrate features that enable members to propose and discuss initiatives, fostering a collaborative and inclusive decision-making process.

Security Infrastructure:

i. Implement robust security measures to protect member data, financial transactions, and sensitive information.

ii. Utilize encryption protocols, secure authentication methods, and conduct regular security audits to ensure the website's resilience against potential threats.

Usability and Accessibility:

i. Prioritize user experience (UX) design principles to create an intuitive and visually appealing interface.

ii. Conduct usability testing to refine the website's layout, navigation, and overall user interaction.

iii. Ensure cross-device compatibility to accommodate the diverse technological landscape of cooperative society members.

Reporting and Tracking:

i. Develop a real-time reporting system to provide members with updates on financial records, project progress, and decision outcomes.

ii. Implement tracking mechanisms for fund utilization, project milestones, and overall cooperative performance.

Technological Constraints:

i. The project will utilize commonly available web development technologies, ensuring compatibility with a wide range of devices and browsers.

ii. Consideration will be given to the technological literacy of cooperative society members, and user interfaces will be designed with simplicity in mind.

1.6 RELEVANCE OF STUDY

The study on the development of a multipurpose cooperative society website holds significant relevance in several key areas. It aims to enhance member engagement by providing interactive features and fostering a sense of community. The project also focuses on streamlining operations and transactions, improving communication channels, ensuring financial transparency, and promoting inclusivity through accessible online platforms. Additionally, the study addresses crucial aspects such as data security and member privacy, showcasing the cooperative society's commitment to modernization and innovation. The project serves as a strategic initiative to benchmark against industry standards, positioning the cooperative society as a leader in

cooperative management. In essence, the study is integral to empowering the cooperative society, ensuring its sustainability, growth, and positive impact on members.

Moreover, the technological advancements made in developing the multipurpose cooperative society website contribute to the academic world. The integration of HTML, CSS, JavaScript, Nextjs and Python showcases innovative solutions to challenges in web development. This research becomes a valuable reference for future studies and serves as a practical example for academia to explore and advance technology in web-based systems.

CHAPTER TWO

LITERAURE REVIEW

The theoretical foundation of the design and implementation of a multipurpose cooperative society website draws on existing research and literature in the fields of cooperative societies, web development, and information systems. This review aims to identify core concepts, frameworks, and challenges that inform the creation of an effective and user-friendly application to serve the diverse needs of cooperative society members.

2.1 CONCEPT OF COOPERATIVES

Cooperatives are well placed to contribute to sustainable development's economic, social and environmental objectives. They have significant potentials to address the concerns of sustainable development goals beyond employment creation (ILO, 2014; Lemma, 2008; Birchall, 2014; Bibby, 2014). ILO (2017) documented that overall, about one billion people are involved in cooperatives as members, customers, employees/participants or both. Cooperatives create opportunities for the employment of at least 100 million people globally. The livelihoods of nearly half of the world's population have been made secured by cooperative societies. Cooperatives have exhibited resilience in the face of economic crises. The promotion and expansion of cooperatives, as attested by the United Nations Conference on Sustainable development, is crucial in the realization of SDGs (Esin, 2013). Kerre (2013) documented some African Regional Sustainable Development Goals to include:

Goal 1: Eliminating all forms of poverty.

Goal 2: Promoting sustainable agriculture and achieve food security and adequate nutrition for all.

Goal 3: Ensuring quality, adequate, affordable, accessible and comprehensive health services for all.

Goal 4: Achieving universal access to affordable and quality education at all levels.

Goal 5: Achieving gender equality, protect and empower women, youth and persons in vulnerable conditions.

Goal 6: Ensuring social inclusion and protection, including guaranteed minimum income and social security, as well as decent employment for all, particularly for the youth.

Cooperative is conceptualized as "an autonomous association of people united voluntarily to meet their common economic, social and cultural needs and aspirations through jointly-owned and democratically-controlled enterprises" (ILO, 2002). UNRISD concluded that cooperatives are highly significant in the achievement of sustainable development goals based on the following strengths: cooperatives are member-based that constantly think of new activities (productivity, exports, restructuring etc.); members are aware of imminent crisis and can prepare for it due to existing democratic structures and information sharing; decision making is participatory and income gaps among members are relatively small. It has a strong financial stability because safety and support funds guard against shocks and common reserves that cannot be withdrawn easily etc.

According to Veerakumaran (2005) cooperative societies serve as fundamental tools for food security at household level. These societies are the best institutional intervention for food security achievement by any nation. The developed nations like United States of America, Australia, Canada almost all European countries and socialist country like China have attained food self-sufficiency thereby improving their social status through cooperative societies (Chambo, 2009). Getler (2001) maintained that cooperative societies are practical vehicles for cooperation,

collective action and they also build and reinforce community development, stabilize regional economies and provide a favourable condition for investment. Cooperatives reduce inequality and promote equitable cost and benefits of development sharing. According to Kumar, Wankhede and Gena (2015) in their study on the role of cooperatives in improving livelihood of farmers on sustainable basis, observed that since the launch of cooperatives in India in 1904, they have played a significant role in the economy mostly in the development of agricultural and rural sectors. Their efforts in both private and public domains have enhanced productivity of small and marginal farmers and strengthened weaker sectors of the economy. The Indian government recognized cooperatives as the third economic sector immediately after independence to serve as a balancing factor between the private and public sectors (Kumar et al,2015).

Here are some key concepts to consider:

2.1.1 COOPERATIVE PRINCIPLES

The International Cooperative Alliance (ICA) has established seven cooperative principles that define the cooperative business model. These principles are:

i. **Voluntary and Open Membership:** Membership should be open to all who are willing to accept the responsibilities of membership.
ii. **Democratic Control:** Members should have a say in the society's operations through democratic voting processes.
iii. **Economic Participation:** Members contribute to, and democratically control, the capital of their society.
iv. **Autonomy and Independence:** MCSs are autonomous self-help organizations controlled by their members.

v. **Education, Training, and Information:** The society should provide education and training for its members, elected representatives, managers, and employees.

vi. **Cooperation among Cooperatives:** Cooperatives should work together to serve their members' interests and strengthen the cooperative movement.

vii. **Concern for Community:** Cooperatives work for the sustainable development of their communities through policies approved by their members.

2.1.2 MULTIPURPOSE FUNCTIONING

An MCS offers a diverse range of services to its members, catering to their various needs. These services can include:

i. **Financial Services:** Providing access to credit facilities, savings opportunities, and micro-insurance.

ii. **Consumer Goods and Services:** Offering essential goods at competitive prices, potentially including bulk purchasing options.

iii. **Agricultural Support:** Facilitating access to inputs like fertilizers and seeds, marketing assistance for agricultural produce, and training programs.

iv. **Social Services:** Providing educational programs, healthcare initiatives, and community development projects.

By offering a variety of services, MCSs act as one-stop shops for members, addressing their economic, social, and educational needs.

2.1.3 STAKEHOLDER ENGAGEMENT

A MCS operates within a network of stakeholders who influence its success. These stakeholders include:

i. **Members:** The core group whose needs and interests the society prioritizes.
ii. **Management:** Responsible for the day-to-day operations and strategic direction of the society.
iii. **Employees:** Provide essential services to members and ensure the society functions effectively.
iv. **Government:** Regulatory bodies that set guidelines and provide potential support for cooperatives.

Effective communication and collaboration among these stakeholders are crucial for the sustainable growth and development of the MCS.

2.1.4 SUSTAINABILITY AND SOCIAL IMPACT

Beyond member benefits, MCSs strive for long-term sustainability and positive social impact. This can be achieved through:

i. **Financial Sustainability:** Implementing sound financial management practices to ensure the society's long-term viability.
ii. **Environmental Sustainability:** Promoting environmentally responsible practices within the society's operations and encouraging members to do the same.
iii. **Social Impact:** Contributing to community development by providing educational programs, creating employment opportunities, and promoting social inclusion.

The concepts discussed provide a foundation for understanding and developing successful multipurpose cooperative society website. By adhering to cooperative principles, offering diverse services, engaging stakeholders, and prioritizing sustainability, the website can be properly developed to empower members and contribute to a more equitable and just society.

2.2 CONCEPTUAL FRAMEWORKS OF MULTIPURPOSE COOPERATIVE SOCIETIES (MCS) WEBSITE

Building a website for an MCS requires careful consideration of the society's structure, functionalities, and target audience. Here are some key conceptual frameworks to guide the website's development:

2.2.1 USER-CENTRIC DESIGN

The website should be designed with the needs of both members and society administrators in mind. This user-centered approach ensures a positive user experience for all stakeholders:

i. **Member Needs:** The website should be easy to navigate, provide clear information about services and benefits, and offer self-service options for tasks like bill payments or loan applications (if applicable). Accessibility features for users with disabilities should also be incorporated.

ii. **Administrator Needs:** The website should provide a secure and efficient platform for managing member information, content updates, and potentially online transactions. User roles with varying access levels can be implemented to ensure data security.

2.2.2 TECHNOLOGY ADOPTION IN COOPERATIVE SOCIETIES

Studies on technology adoption within cooperative societies reveal the potential benefits of digital platforms in enhancing efficiency and member engagement. Successful implementation requires a careful consideration of the socio-economic context, user demographics, and member literacy levels. The website design should be intuitive, accommodating various levels of digital literacy among members.

2.2.3 INFORMATION ARCHITECTURE

The website's information architecture should be well-organized and intuitive. This ensures users can easily find the information they need:

i. **Clear Categorization:** Information should be categorized logically, using clear and concise labels for menus and sections.
ii. **Search Functionality:** A robust search function allows users to find specific information quickly and efficiently.
iii. **Content Hierarchy:** Prioritize the most frequently accessed information on the homepage and organize content in a logical hierarchy for easy navigation.

2.2.4 SECURITY AND PRIVACY

Protecting member data is very essential. The website should incorporate robust security measures:

i. **Secure Login:** Implement strong password hashing algorithms and consider two-factor authentication for added security.

ii. **Data Encryption:** Sensitive member data like financial information should be encrypted at rest and in transit.

iii. **Regular Security Audits:** Conduct periodic security audits to identify and address vulnerabilities in the website's code and systems.

iv. **Privacy Policy:** Clearly outline a privacy policy that explains how member data is collected, used, and protected.

2.2.5 INTEGRATION AND INTEROPERABILITY

The website should consider potential integrations to enhance functionality:

i. **Payment Gateways (Optional):** If online transactions are a feature, integrate secure payment gateways to allow for online payments for services or loan repayments. This can significantly improve convenience for members and streamline collection processes for the society.

ii. **Social Media Integration:** Integrate social media channels to share news, announcements, promote member engagement, and foster a sense of community. Social media can be a powerful tool for disseminating information, gathering feedback from members, and even facilitating online discussions about topics relevant to the society's services and mission.

iii. **Mobile Compatibility:** Ensure the website is responsive and adapts seamlessly to different screen sizes for optimal viewing on mobile devices. As mobile phone usage continues to grow, a mobile-friendly website is essential for ensuring all members can easily access information and services, regardless of their device.

iv. **Government Agencies (Optional):** Depending on the regulatory environment and the specific services offered by the MCS, there may be potential for integration with government agency databases. For example, if the MCS offers agricultural support

services, integration with relevant government databases could allow for real-time access to market prices or weather data, which can be valuable resources for members.

v. **SMS Integration (Optional):** Consider integrating SMS functionalities to send important updates or reminders to members via text message. This can be a cost-effective way to reach members who may not have regular internet access or prefer text-based communication.

2.2.6 CONTENT MANAGEMENT SYSTEM (CMS)

Utilizing a Content Management System (CMS) offers several advantages for website content management by society administrators, even those with limited technical expertise. A user-friendly CMS interface allows administrators to add, edit, and publish website content without needing to write code. This empowers administrators to keep the website content fresh and up-to-date, ensuring members have access to the latest information about the society's services, news, and events.

Furthermore, a CMS can provide role-based access control (RBAC) functionalities. RBAC allows administrators to assign different levels of permission to various users based on their roles within the society. For instance, a content creator might have permission to add and edit blog posts, while a higher-level administrator might have additional permissions to manage user accounts or website settings. This granular control over user permissions helps ensure data security and website integrity.

Additionally, many CMS platforms offer built-in version control functionalities. Version control allows administrators to track changes made to website content over time. This can be helpful if an error is introduced during the editing process or if administrators need to revert to a previous

version of a page. Version control also facilitates collaboration among multiple administrators working on the website content simultaneously.

2.2.7 SCALABILITY AND MAINTAINABILITY

The website platform should be designed with scalability and maintainability in mind to accommodate future growth:

i. **Modular Design:** Implement a modular design architecture to allow for easier integration of new features and functionalities as the society's needs evolve.
ii. **Regular Backups:** Conduct regular backups of website data to ensure information security in case of unforeseen circumstances.
iii. **Technology Stack Selection:** Choose a technology stack that is well-supported and offers long-term scalability to accommodate future growth in membership and data.

2.2.8 COMMUNICATION AND COLLABORATION FRAMEWORKS

Effective communication and collaboration among cooperative society members are essential for the success of the organization. Existing literature suggests the incorporation of communication tools, discussion forums, and notification systems within the website. A well-designed communication framework fosters transparency, participation, and a sense of community among members.

2.3 ANALYSIS OF SIMILAR EXISTING SYSTEMS

In Nigeria, most of the multipurpose cooperative societies do not have a standard website for easy access. There are a lot of stress, paper works and other issues involve in the manual

operation of the activities involved. There is no system to properly address issues commonly involved in associating with these cooperative societies.

Currently, there is no website to that addresses all the needs of a multipurpose cooperative society in Nigeria. We are going to examine the Dakkada Multipurpose Cooperative Society (DMPCS).

2.3.1 DAKKADA MULTIPURPOSE COOPERATIVE SOCIETY (DMPCS)

The Dakkada Multipurpose Cooperative Societies (DMPCS) is the initiative of Akwa Ibom State Government in Nigeria. It is a sustainable development model. Its activities have alleviated poverty and to some extent bridged gender gap among rural dwellers. It represents the grassroots paradigm of economic development. DMPCS aims at empowering rural dwellers especially the women to raise their level of socio-economic wellbeing as the most crucial development priority. This analysis examined DMPCS wealth creation activities of promoting small scale business development, accessing financial capital, encouraging women participation in local economy, supporting women agricultural services, job creation, expanding social protection and inclusion to the informal sector and achieving sustainable Development Goal of poverty reduction. Failure to achieve integrated poverty reduction stimulated the formation of DMPCS to fill up the gap in rural communities in line with SDGs 1,2,3,4,5 and 8. in Akwa Ibom State Nigeria.

2.3.1.1 THEORETICAL FRAMEWORK

Social Capital Theory

Social capital is associated with Robert Putnam (1993, 2000). The notion of social capital which is mainly used by the poor without collateral in microfinance lending is a key aspect of the current debate on poverty reduction. Ismawan (2000) articulated that the effort to alleviate poverty

traditionally has used and was based on natural capital, physical or produced capital and human capital. Although these constitute the wealth of nations and form the bases of economic prosperity, however, they only determine the effort to keep poverty at a minimal level but forget to recognize how the poor interact and organize themselves to generate growth and development. The missing link is social capital (Kamusaala, 2016). Rakodi (2002) conceptualized social capital in terms of the rules, norms, obligations, reciprocity and trust embedded in social relations, social structures and society institutional arrangement, which enable its member to achieve their individual and community objectives. For social interaction to be termed "capital," it must be persistent, giving rise to stocks (such as trust or knowledge) on which people can draw, even if the social interaction itself is not permanent. The collective resources are built through interaction with other people outside the families. It includes trust as the main component, cooperative behaviour, helpful networks and willingness to give and take and to participate in issues of common interest. Individuals through association membership create communities characterized by more trust and reciprocity (Kamusaala, 2016). Social capital is used as a security in micro finance. Aliyu and Umaru (2016) maintained that micro-finance is the provision of financial services such as credits, savings, micro-leasing, microinsurance, entrepreneurship development, promotion of investment and payment transfer to economically active poor and low-income household to enable them engage in income generating activities in order to get out of poverty and or expand/grow small businesses. Societies all over the world have different ways of addressing the financial needs of the poor. In Nigeria, the thrift or Esusu system is well known. It provides micro-financial services such as small savings, revolving loans and credit facilities. The practice of micro-finance in Nigeria is culturally rooted. The traditional micro-finance institutions provide access to credit for rural and urban low-income earners. They are mainly of the informal Self-Help Groups (SHG), or Rotating

Savings and Credit Associations (ROSCAs). Other providers of micro-finance services include savings collectors and cooperative societies (Imoisi & Opara, 2014; Alani& Sani, 2014). Group lending strategy is considered as the best way to reach the poorest who qualify for microfinance. Available evidence indicates that group credit procedures as operated in Dakkada Multi-purpose Cooperative Society is easier to target at clients taking very small loans. Another potential why social capital is popular to cooperatives members in rural communities of Akwa Ibom state is that the association or trust as experienced in DMPCS is neither bought nor sold. The freely shared social capital is seen as simultaneously contributing to SDGS of financial sustainability (and ease of accessing financial capital) poverty targeting, women empowerment, affordable health/ education services and secured employment. The relevance of social capital to this study is that it helps to rationalize the people-oriented development initiatives of DMPCS. It sustains its functionality, solidarity and resiliency on trust without external intervention to build or increase it. The theory helps to justify the use of qualitative and quantitative methodologies to explain the nexus between DMPCS variables of promotion of small-scale business, accessing financial capital, promoting women participation in local economy etc. and SDGS of poverty reduction.

Theory of credit rationing

The theory of credit rationing was developed from the well-known Stiglitz-Weiss (1981) model. It is concerned with the limiting by lenders of the supply of additional credit to borrowers who demand funds, even if the latter are willing to pay higher interest rates. Based on this, DMPCS, knowing that worthy borrowers are financially excluded from the traditional banking sector is able to distribute small and interest free loans to their members who are also seen as borrowers. The economic rationale behind DMPCS intervention strategy provided by the literature on credit rationing goes beyond the identification of challenges posed by lending to low-income borrowers

as members to include even those without sources of livelihoods but are willing to engage in productive ventures under supervision. Thus, this economic theory provides explanation for the demand for financial capital by members of DMPCS for entrepreneurial and agricultural activities.

Leibeinstein's critical minimum effort thesis

Leibeinstein (1951) developed the thesis that underdeveloped countries are characterized by the vicious circle of poverty that keeps them around a low per capita income equilibrium state. The way out of this impasse is a certain critical minimum effort which would raise the per capita income to a level at which sustained development could be maintained. The thesis argued that in order to achieve the transition from the state of backwardness to a more developed state where steady secular flow is expected, it is necessary, though not always sufficient condition, that at some point, the economy should receive a stimulus to growth that is greater than a certain minimum size (Jhingan, 2006). The theory stressed that every economy is subject to 'shocks and stimulants'. A shock has the impact of reducing per capita income initially while a stimulant tends to increase it. Certain countries are underdeveloped because the magnitude of the stimulant has been small and that of the shocks large therein. It is only when the income raising factors are stimulated much beyond the income depressing factors that the critical minimum is reached and the economy would be on the path to development (Jhingan, 2006).

The rationale of the critical minimum thesis rests on the existence of certain favourable conditions so that the income increasing forces expand at a rate higher than the income depressing forces. In the development process, such conditions are created by the expansion of the growth agents. They are the quantum of capacities residing in the members of the population to carry out growth and development contributing activities. The typical growth and development agents are the

entrepreneur, the investor, the saver and the innovator. The theory implies that DMPCS, is the critical minimum effort needed to facilitate socio-economic change in the Akwa Ibom State through its development activities. DMPCS has expanded the economic activities of members through a sufficiently large critical minimum effort. This has resulted in the creation of entrepreneurship, the increase in the stock of knowledge, the expansion of productive services, increase in the rate of savings and investment etc. DMPCS growth and productive activities serve as the critical minimum effort required to achieve SDG of poverty reduction in Akwa Ibom State of Nigeria. It has created the social and environmental conditions for the promotion of social and economic mobility, also increased specialization and expansion of secondary and tertiary sectors of the economy. The theory is relevance in explaining the positive socio-economic change experienced by members of DMPCS especially the women.

2.3.1.2 METHODOLOGY

Both qualitative and quantitative approaches of survey design were adopted. The study area was Akwa Ibom State, one of Nigeria's 36 states.

2.3.1.3 CASE STUDY

Akwa Ibom state has 3 senatorial districts. Approximately 1/3rd of 6 million people are small holder farmers producing 70 % of food consumed on 60% arable land. In rural areas, 85% depend on agriculture for employment and other necessities. Study population for the study consisted of all the 8225 members of DMPCS in the 3 senatorial districts comprising farmers, fishermen/women, traders and entrepreneurs.

DMPCS model was established in 2016 by the government of H.E. Emmanuel Udom to encourage indigenes to venture into agriculture and entrepreneurship. There are 329 primary societies

registered across the 31 Local Government Areas (LGAs) of the state. Each has an average of 25 members (mostly women). DMPCS seeks to establish a proper system for the strategic marketing of horticulture, aquaculture and poultry products in commercial quantities. Market products include palm fruits, cassava, maize, cocoyam, chicken eggs, sea food etc. Members include entrepreneurs, petty traders and small holder farmers. DMPCS had a paid-up capital of #3.1million as at 31 March 2017. It utilizes an innovative approach to de-risk its members. This has been achieved by raising cost effective capital and loans to finance the members and the cooperative joint projects such as the #1million zero sum interest loan accessed by the 31 chapters of the DMPCS. Overall goal is to improve income base of no fewer than 500,000 farmers and entrepreneurs by 2023. Each LGA has 20 hectares of land for this purpose served by over 300 multi-purpose cooperative societies. Key intervention areas are financial services, agricultural input services, training, development and marketing. DMPCS addresses economic, democratic and social dimensions of poverty reduction simultaneously. Economically weak entrepreneurs and farmers are empowered by enhancing their collective bargaining power. The DMPCS initiatives have improved the commercialization behavior of rural dwellers. Farm productivity and income have been boosted at micro levels. Also, food security, allocative efficiency, poverty and hunger have significantly reduced. DMPCS comprises enterprises that strive to meet the socio-economic progress of members by satisfying both material and cultural interests and protecting the environment.

2.3.1.4 SAMPLE PROCEDURE

Sample size for the study was 378 respondents selected with the aid of Yamene (1967) sample size determination formula. The entire state is administratively divided into 31 local government areas (LGAs). These constituted the 31 strata of the study. Simple random sampling procedure (balloting

technique) was adopted to select ½ of these LGAs. This procedure was necessary to avoid biases in the selection process. Approximately 16 LGAs (strata) were randomly selected. These constituted the 16 clusters of the study. From each cluster, all 25 registered cooperative members were purposively studied since they were not many, giving a total of 300. Key Informant Interviews (KIIs) were conducted with 16 leaders of DMPCS in each cluster. For the Focus Group Discussions (FGD), simple random sampling procedure was still adopted to select ¼th of the 16 clusters. This amounted to 4 clusters. Those selected for the FGD were not involved in the quantitative study. Each group in the cluster consisted of 8 persons. This gave a total of 4 FGDs amounting to 32 participants in all. From the Bureau of Cooperative Development 30 staff members (civil servants) were randomly selected also for the quantitative study. Altogether 378 people (farmers, petty traders, entrepreneurs and civil servants) participated in the study. Data were analyzed using descriptive statistics for demographic and quantitative data while qualitative data adopted Braun and Clarke (2006) six-phase framework for doing a thematic analysis

(Step 1: become familiar with the data, step 2: generate initial codes, step 3: search for themes, step 4: review themes, step 5: define themes, step 6: write up). The questionnaire adopted the Likert scale (SA = strongly agreed, A = agreed, UD = undecided, D = disagree and SD = strongly disagree).

2.3.1.5 ANALYSIS

Table 1: Personal/demographic information of respondents

Variable		**Respondent (N)**	**Percentage (%)**
Age of respondents	less than 24 years	51	13.5
	25-31 years	72	19.04
	32-38 years	137	36.24
	39-44 years	96	25.39
	45 years and above	33	8.73
	Total	378	100
Level education	Completed primary	91	24.07
	Completed secondary	236	62.43
	Completed tertiary	50	13.22
Occupation	Petty trader	103	27.24
	Farmer	131	34.65
	Entrepreneur	114	29.89
	Civil servant	30	7.93
	Total	378	100
Religion	Christianity	366	96.82
	Islam	4	1.05
	African Trad. Religion	8	2.11

	Total	378	100
Marital status	Single	103	27.24
	Married	243	64.28
	Widowed	21	5.55
	Divorced	10	2.64
	Total	378	100
Sex	Male	126	33.33
	Female	252	66.66
	Total	378	100

Source: Field survey, 2018

Table 1 revealed respondents' demographic information. Majority of respondents (N = 137) were in the age bracket of 32-38years while respondents in the least age bracket (N = 33) being 8.73percent were aged 45 years and above. In terms of level of education, respondents who completed secondary education (N=236), 62.43percent were the majority; 24.07 percent(N = 91) had completed primary education while 13.22 percent (N=50) had completed tertiary education. In terms of source of livelihoods or occupation, 27.24 percent (N=103) were petty traders, 34.65 percent (N=131) were farmer;29.89 percent (N=113) were entrepreneurs while 7.93 percent (N=30) were civil servants. Religious orientation indicated 96.82 percent (N=366) as Christians, 1.05 percent (N=4) as Moslems while 2.11 percent (N=8) as those associating with African

Traditional Religion. Marital status showed that majority of respondents 64.28 percent (N=64.28) were married, 5.56 percent (N=21) were widowed while 2.64 percent (N = 10) were divorced. Finally, in terms of gender, 33.33 percent (N=126) were total male respondents while 66.40 (N=251) were the total female respondents. This implied that more women than men participated in the study. It should be added here that majority of the members of Dakkada Multi-purpose Cooperative Society are women whose socio-economic wellbeing have changed through their involvement in cooperative activities. Most of them are successful entrepreneurs and farmers. This positive transformation is consistent with Harvey Leibeinstein's (1967) Critical Minimum Effort theory.

2.4 KEY CHALLENGES OF DMPCS

Inadequate awareness of DMPCS activities poses as a serious challenge. People in rural areas are not well informed about the objectives of DMPCS and the contributions it is making towards poverty reduction. In rural areas, local politics of the community is constraining the dissemination of correct information about DMPCS. Certain community elites who should have helped to spread information about the benefits of DMPCS are rather sponsoring false information about borrowing at high interest rates just to dissuade people from being members.

In rural communities of Akwa Ibom State of Nigeria, the physical infrastructure that could support the operation of DMPCS such as good feeder roads and power supply is lacking. The availability of infrastructural facilities would have enabled, sustained or enhanced the productive activities. DMPCS could have yielded greater results in terms of improving the quality of rural lives if infrastructural facilities were available.

DMPCS faces the challenge of lack of professional approach in the management of its activities. This has hampered the coordination of the cooperative activities. In some local government areas where DMPCS is situated, it has not flourished and expanded because of lack of a strong purposeful character at the head capable of exercising leadership and a vision that motivates people to work together.

2.5 RESEARCH GAPS

Despite the potential benefits of websites for Multipurpose Cooperative Societies (MCS) in Nigeria, there is a significant gap in their implementation. While some MCS websites might exist outside of Nigeria, research specifically focused on the Nigerian context and the unique needs of Nigerian MCSs is scarce. Here are some key research gaps to consider:

User Needs and Expectations:

i. In the absence of existing MCS websites in Nigeria, there's limited research on member needs and expectations for such platforms.
ii. What functionalities would be most valuable to Nigerian MCS members?
iii. How can website design and content be tailored to address the specific literacy levels and technological fluency of members in diverse communities?

Impact on Member Engagement:

i. Research is needed to explore how MCS websites can be designed to foster increased member engagement in Nigeria.
ii. Can website features like online forums, discussion boards, or social media integration encourage a more participatory and interactive experience for members?

iii. How can websites be leveraged to improve communication and transparency between the society and its members?

Integration with Existing Practices:

i. Many MCSs in Nigeria likely rely on traditional methods like physical meetings and paper-based recordkeeping.

ii. Research is needed to explore how websites can integrate with these existing practices to create a seamless transition and minimize disruption.

iii. How can websites be designed to complement, rather than replace, traditional communication channels?

Financial Sustainability of Websites:

i. Developing and maintaining a website requires resources. Research is needed to explore cost-effective solutions for website development and management suitable for Nigerian MCSs.

ii. Can membership fees, partnerships, or alternative funding models be utilized to support website development and maintenance?

Security and Privacy Concerns:

i. Security and privacy are paramount when dealing with member data.

ii. Research is needed to explore best practices for data security on MCS websites in Nigeria, considering the specific regulatory environment and potential cyber security threats.

iii. How can MCSs raise awareness about online safety and educate members on protecting their personal information?

Impact on Operational Efficiency:

i. While websites offer potential for improved efficiency, research is needed to explore the actual impact on MCS operations in Nigeria.
ii. Can websites streamline processes, reduce administrative overhead, and improve overall service delivery for members?
iii. How can website functionalities be designed to optimize staff workflows and resource allocation within MCSs?

Long-Term Sustainability and Impact:

i. Research is needed to explore the long-term sustainability of MCS websites in Nigeria.
ii. How can ongoing website maintenance, content updates, and feature additions be ensured over time?
iii. How can website functionalities be adapted to the evolving needs of the society and its members?

The complete absence of existing MCS websites in Nigeria presents a unique opportunity for research. By addressing these research gaps, researchers and developers can create a roadmap for building effective MCS websites that cater to the specific needs of Nigerian societies and their members. This can ultimately contribute to a more robust and impactful cooperative movement within Nigeria.

2.6 REVIEW OF TECHNOLOGIES TO BE DEPLOYED IN SOLVING THE PROBLEM

A comprehensive analysis of technology suggests prospective options for the development of a website targeted towards the smooth and easy running of a multipurpose cooperative society. In

this project, typescript will be the preferred programming language that will be used for development. Other languages that can be used include javascript, php, c#, etc.

Typescript: TypeScript is a superset of JavaScript that adds static typing to the language. It allows developers to define types for variables, function parameters, return values, and objects, helping catch errors during development rather than at runtime. TypeScript is compiled down to regular JavaScript so it can run in any environment where JavaScript runs. TypeScript offers safety, clarity, and maintainability, all of which are essential when building a scalable, production-ready project like this.

React (Typescript): React is a free and open-source front-end JavaScript library for building user interfaces based on components. It is maintained by Meta and a community of individual developers and companies. React can be used to develop single-page, mobile, or server-rendered applications with frameworks like Next.js.

Node.js (TypeScript): Node.js is well-suited for building scalable and efficient server-side applications, providing a non-blocking, event-driven architecture.

Express.js: A lightweight and flexible Node.js web application framework that simplifies the development of robust backend APIs.

Prisma: Prisma ORM (Object Relational Mapper) is an open-source next-generation ORM. It consists of the following parts: Prisma Client: Auto-generated and type-safe query builder for Node.js & TypeScript. Prisma Migrate: Migration system. Prisma Studio: GUI to view and edit data in your database.

MySQL: MySQL is the most popular Open-Source SQL database management system. It is developed, distributed, and supported by Oracle Corporation.

Communication and Notification Services: This involves integrating services like Twilio for SMS notifications or Firebase Cloud Messaging (FCM) for real-time alerts which include member alerts, notification, and updates.

API Documentation: Creating API documentation using Swagger facilitates collaboration between frontend and backend developers and ensures a standardized API structure.

Git: Git is a widely used version control system that allows collaborative development and helps manage changes in the codebase.

Figma or Sketch: Figma and Sketch are popular design tools that facilitate collaborative and iterative design processes, allowing designers and developers to work seamlessly.

User Testing: UsabilityHub or Maze for conducting usability testing and gathering feedback on the design from potential users.

Secure Payment Gateways:

Integrating secure payment gateways ensures the safe and efficient processing of transactions within the mobile application. Technologies such as SSL/TLS encryption protocols and two-factor authentication can enhance the security of financial transactions, addressing concerns related to fraud and unauthorized access and payment gateways such as flutterwave, paystack and others.

API Integrations with Utility Systems:

Application Programming Interface (API) integrations with existing utility systems enable seamless communication and data exchange. Integrating the mobile application with utility databases, customer relationship management systems, and billing platforms ensures accuracy and consistency in information across the ecosystem.

CHAPTER THREE

METHODOLOGY

3.1 RESEARCH METHODOLOGY

Research methodology is a collective term for the structured process of conducting research. There are many different methodologies used in various types of research and the term is usually considered to include research design, data gathering and data analysis. Part of the research methodology is concerned with how the research is conducted and this is called the study design and typically involves research conducted using questionnaires, interviews, observations and experiments. The term research methodology, is also referred to as research methods, it usually encompasses the procedures followed to analyze and interpret the data gathered. These often use a range of sophisticated statistical analyses of the data to identify correlations or statistical significance in the results. In computer science research methodologies can be grouped into experimental, theoretical, simulation, formal and the build methods. In this chapter, analyses of different research methodologies are carried out and one methodology that best suites the online auction system is undertaken.

3.1.1 BUILD METHODOLOGY

In this project the build research methodology is used as the research methodology. After taking into consideration the different factors, which include the time constraint, budget and the complexity of the system that is to be developed, the build methodology proves to be the most appropriate methodology to use in the development of the purposed website. The build research methodology involves building an artifact either a physical artifact or a software system to demonstrate that it is possible. This accelerates the development of the MCS website platform as

the system is built as part of the research methodology. This approach necessitates creating a novel artifact, either entirely new or incorporating unprecedented features not previously showcased in other artifacts. These novel features encompass the utilization of a matrix for assessing the seller, as well as the utilization of comprehensive feedback ratings, departing from the conventional practice of using solely positive, negative, or neutral feedback.

Whenever a research question leads to the building of a software system, the researchers involved should consider the following set of good practices to design the software system, no matter how simple the system is. In choosing a programming language there are various factors that have to be considered which are reliability, expressiveness, run-time speed and available libraries. The build research methodology best suites this project because the working software is the end product and the project involves building an artifact that encompasses new software features which makes this methodology the most appropriate one.

3.2 REASON FOR USING TYPESCRIPT FOR DEVELOPMENT

I. **Type Safety:** TypeScript helps catch bugs early by enforcing types at compile-time. For a project like this involving API routes, email templates, and user input (e.g., newsletter signup), this helps prevent runtime errors.

II. **Better Developer Experience:** With auto-completion, type inference, and inline documentation in editors like vs code, development becomes faster and less error-prone.

III. **Improved Code Maintainability:** Type definitions make the codebase easier to understand and refactor, especially when working with multiple contributors or returning to the project after a while.

IV. **Scalability:** As the project grows (e.g., adding authentication, analytics, or admin panels), TypeScript makes it easier to manage large codebases by enforcing consistent interfaces and types.

V. **Ecosystem Support:** Most modern libraries, including Next.js, Firebase, and Node Mailer, have excellent TypeScript support, making integration smoother.

3.3 SOFTWARE DEVELOPMENT PHASES

The process of developing software generally involves a set of different phases. These phases involve planning and design, implementation, testing, documentation, deployment and maintenance.

I. **Planning and designing**

This is the first phase in the software development. The requirements and analyses are gathered from stakeholders. Everything required for the development of the Multipurpose Cooperative Society website platform is clarified from the different stakeholders of the system.

II. **Implementation**

This stage involves the translation of the system structure into an executable program. For the MCS website platform, Python and TypeScript are the programming languages that is used to translate the system structure. The use of these programming languages allows for the development of the MCS website platform. The database management system that is to be used for this project is MySQL.

III. Testing

This involves running the system and evaluating the defect that can arise and actions are carried out to correct the defects. The methods for testing the system involves unit testing which tests the different components of the system that is the system's interfaces, data storage and how the platform should work.

IV. Documentation

This phase involves taking note and recording all the activities during the development process. The documented information is relevant for upgrades or updates that may be required on the system and for future referencing when carrying out maintenance.

V. Deployment and Maintenance

Plan and execute a smooth deployment strategy to transition the website from the development environment to the live production environment. Also, monitoring for any issues during the initial deployment phase and address them promptly and establishing a system for ongoing maintenance and support to address any issues, apply updates, and ensure the website's continued functionality.

3.4 WORK FLOW SCHEMATIC

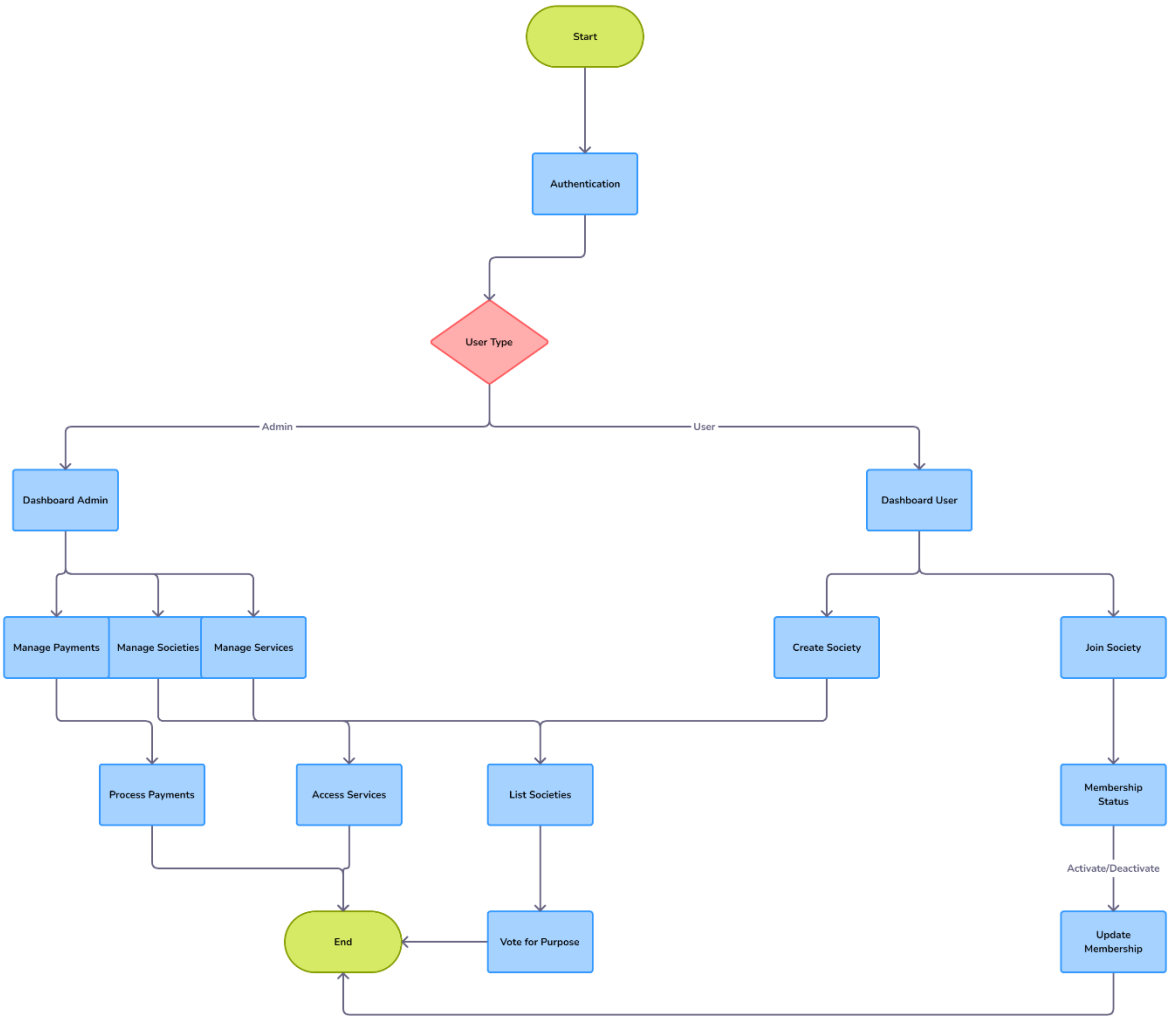


Fig. 1. Flowchart of how the website should work

3.5 SOFTWARE DEVELOPMENT MODELS USED

There are a number of software development models that are in existence. In the development of this website, we chose to go with the agile model

AGILE MODEL

This model follows an iterative and incremental approach. The project is broken down into smaller, manageable units called "sprints" (e.g., 2 weeks). Each sprint focuses on delivering a specific set of features. This allows for continuous feedback and adaptation throughout the development process. It emphasizes flexible planning. Initial requirements are outlined, but details can be refined and adjusted as development progresses based on feedback and learnings from each sprint.

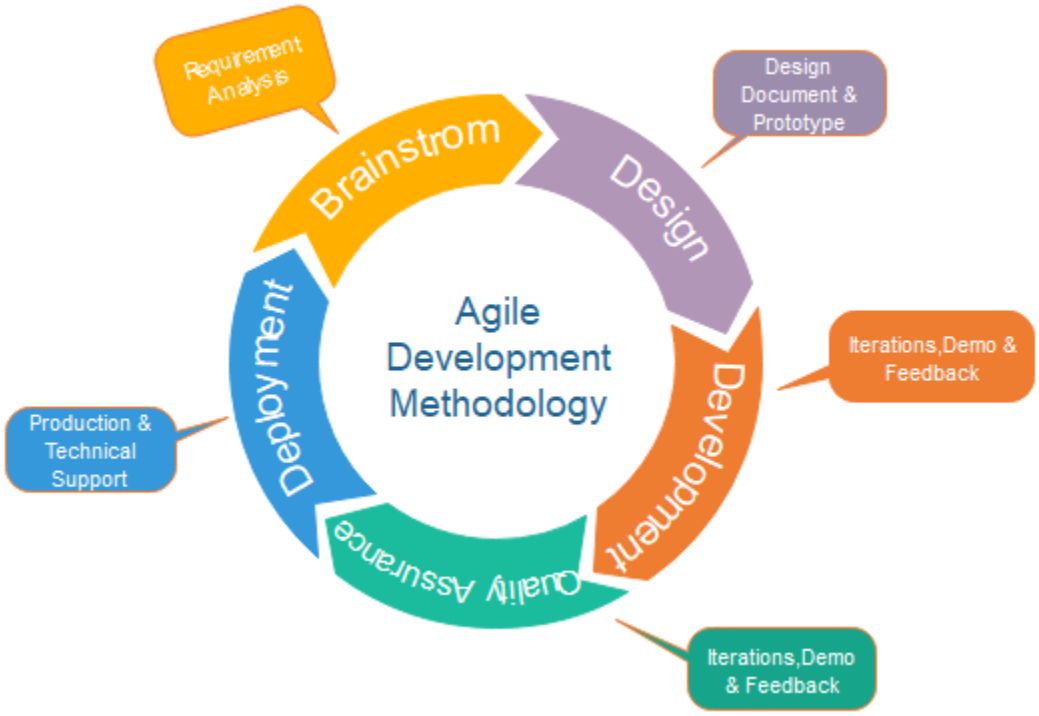


Fig. 2. Agile Model

3.6 PROGRAM/HARDWARE REQUIREMENTS

The computer hardware is the physical components of the computer system. The hardware requirements of this website are:

i. Minimum of Core i3 processor with 1.4 GHZ speed

ii. Minimum of 4 GB of Ram

iii. HDD/SSD of at least 128GB.

Then the software applications that are necessary for the implementation of this application are:

i. **Operating system:** Window 10/11, MacOS, or Linux (preferably ubuntu)

ii. **Environment work:** VS code, Xcode, or any other preferred IDE

iii. **Browsers:** Mozilla Firefox, Google Chrome, Microsoft Edge

iv. **Front end:** Reactjs/Nextjs

v. **Back end:** TypeScript

vi. **Deployment:** Vercel, or Digital Ocean

3.7 PROJECT TIMELINE

Planning Phase (Weeks 1-2):

i. Define project scope and objectives.

ii. Conduct a feasibility study.

iii. Create a detailed project plan.

Design Phase (Weeks 3-6):

i. Develop wireframes and mockups for the website's UI/UX.

ii. Finalize the system architecture and database structure.

iii. Review and obtain feedback from stakeholders.

Development Phase (Weeks 7-35):

i. Set up the development environment.

ii. Implement the website's front-end and back-end functionalities.

iii. Conduct iterative testing and debugging.

Testing and Quality Assurance (Weeks 35-49):

i. Perform unit testing, integration testing, and system testing.

ii. Address identified issues and bugs.

iii. Conduct user acceptance testing (UAT).

Deployment (Weeks 49-50):

i. Prepare for the website launch.

ii. Deploy the website on the chosen hosting environment.

iii. Monitor for any post-launch issues.

Post-Implementation Review (Week 50-51):

i. Evaluate the project's success against defined objectives.

ii. Gather feedback from users and stakeholders.

iii. Identify areas for future improvement.

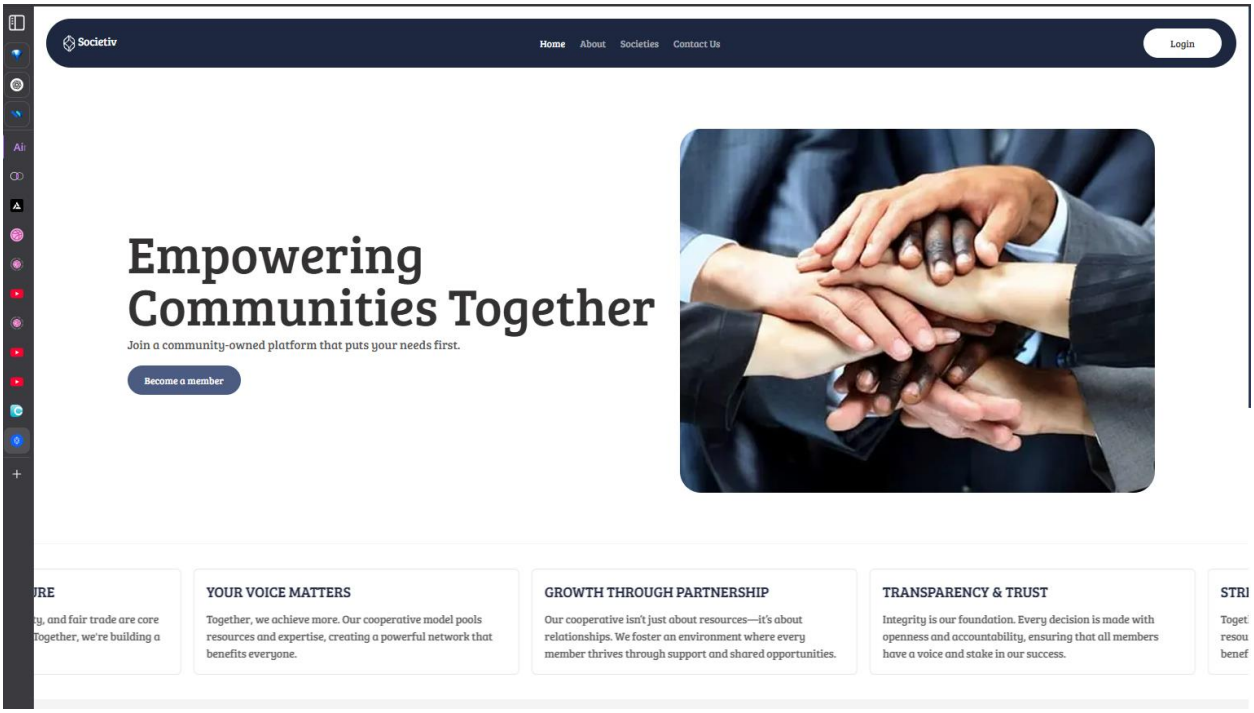
CHAPTER FOUR

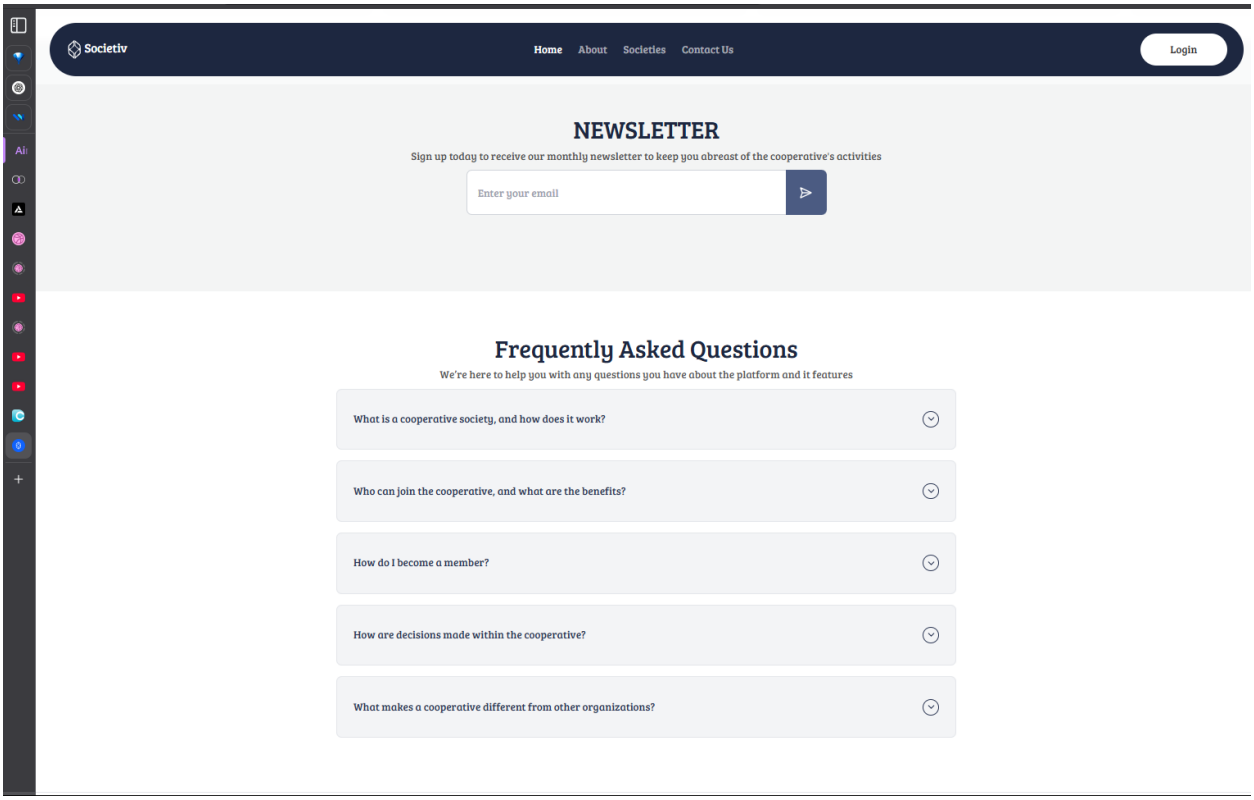
RESULTS AND DISCUSSION

4.1 RESULT PRESENTATION OVERVIEW

We present the results and discussions related to the testing of the Multipurpose Cooperative Society website, equally the overall performance of the website. The information obtained from these tests are essential for future improvement and upgrade to the website and further research.

4.2 LANDING PAGES

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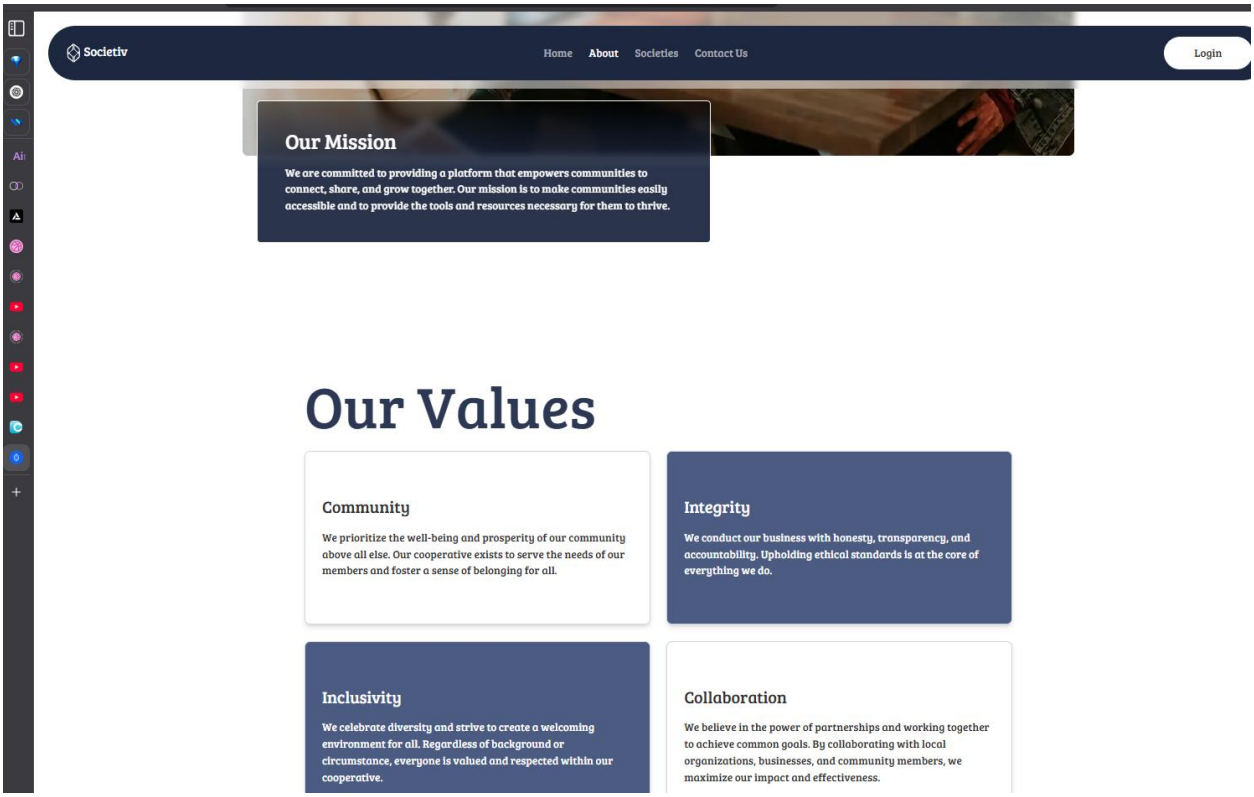
Login
NEWSLETTER
Sign up today to receive our monthly newsletter to keep you abreast of the cooperative's activities
Enter your email
Frequently Asked Questions
We're here to help you with any questions you have about the platform and it features
What is a cooperative society, and how does it work?
Who can join the cooperative, and what are the benefits?
How do I become a member?
How are decisions made within the cooperative?
What makes a cooperative different from other organizations?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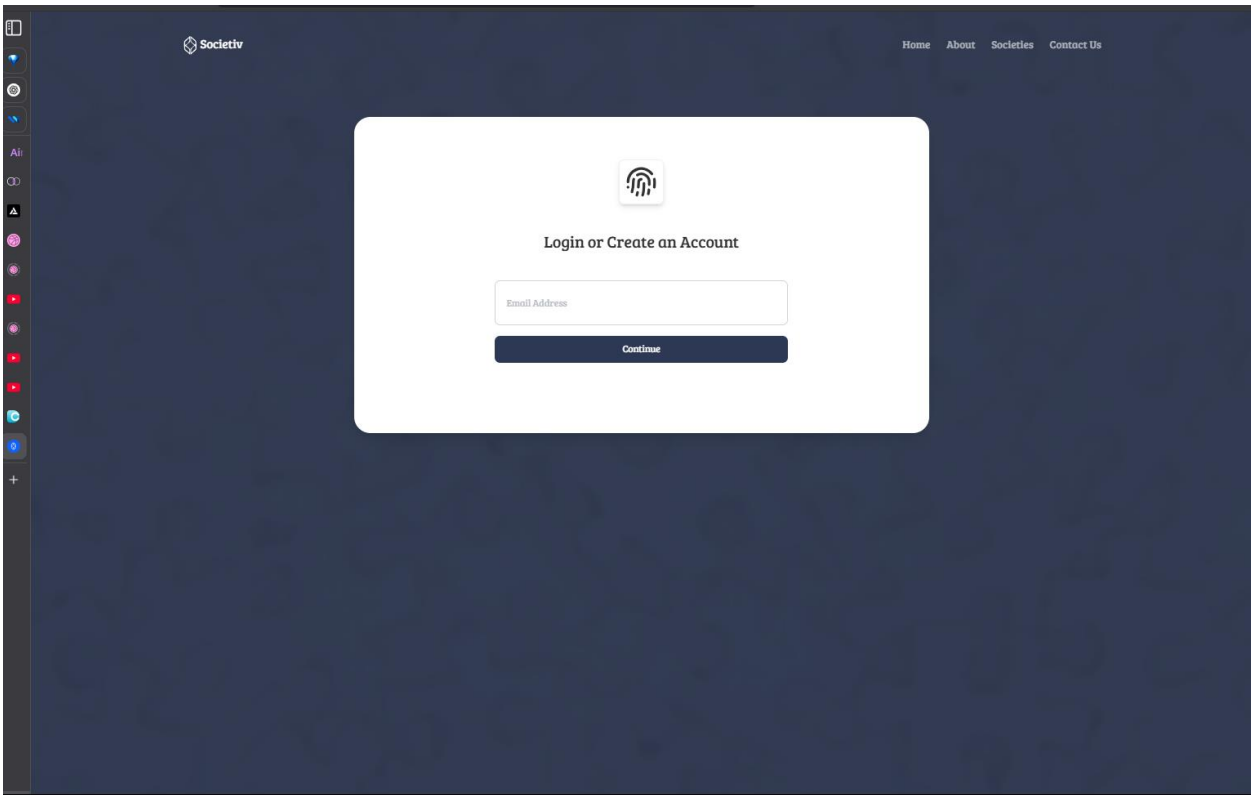
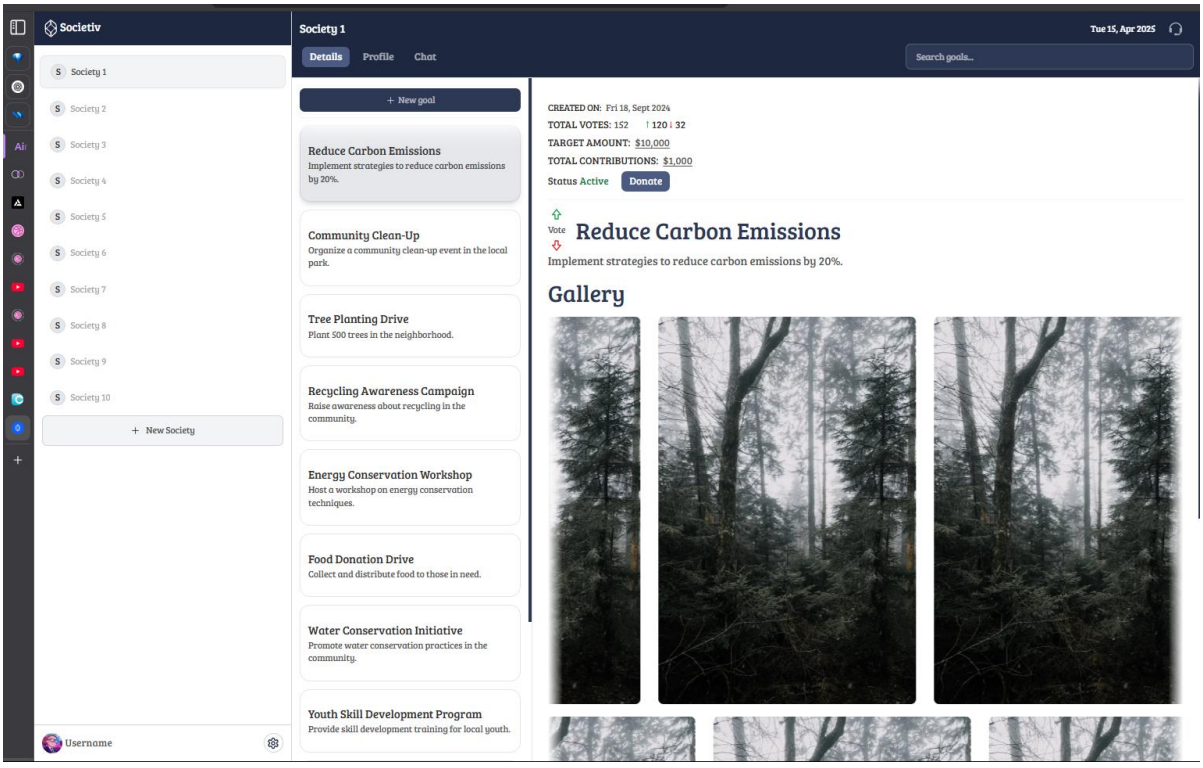
Our Mission
We are committed to providing a platform that empowers communities to connect, share, and grow together. Our mission is to make communities easily accessible and to provide the tools and resources necessary for them to thrive.
Our Values
Community
We prioritize the well-being and prosperity of our community above all else. Our cooperative exists to serve the needs of our members and foster a sense of belonging for all.
Integrity
We conduct our business with honesty, transparency, and accountability. Upholding ethical standards is at the core of everything we do.
Inclusivity
We celebrate diversity and strive to create a welcoming environment for all. Regardless of background or circumstance, everyone is valued and respected within our cooperative.
Collaboration
We believe in the power of partnerships and working together to achieve common goals. By collaborating with local organizations, businesses, and community members, we maximize our impact and effectiveness.



4.3 DASHBOARD INTERFACE



4.4 DATABASE SCHEMA

Users TABLE

This table stores information about all users of the platform, including society members and individual users.

Column Name	Data Type	Description	Not Null	Primary Key	Foreign Key
user_id	INT	Unique identifier for the user	YES	YES	
first_name	VARCHAR(255)	User's first name	YES		
last_name	VARCHAR(255)	User's last name	YES		
email	VARCHAR(255)	User's email address	YES		
password	VARCHAR (255)	Hashed password for secure user authentication	YES		
phone_number	VARCHAR(20)	User's phone number (optional)	NO		
user_type	ENUM('individual', 'society_admin', 'member')	User type (individual user, society admin, or member)	YES		

```
CREATE TABLE Users (
  user_id INT PRIMARY KEY AUTO_INCREMENT,
  first_name VARCHAR(255) NOT NULL,
  last_name VARCHAR(255) NOT NULL,
  email VARCHAR(255) NOT NULL UNIQUE,
  password VARCHAR(255) NOT NULL,
  phone_number VARCHAR(20),
  user_type ENUM('individual', 'society_admin', 'member') NOT NULL
);

DELIMITER //
CREATE TRIGGER password_complexity_check BEFORE INSERT ON Users
```

```
FOR EACH ROW
BEGIN
    IF CHAR_LENGTH(NEW.password) < 8 THEN
        SIGNAL SQLSTATE '45000'
            SET MESSAGE_TEXT = 'Password must be at least 8 characters long.';
    END IF;
    IF NOT (NEW.password REGEXP '^(?=.*[A-Za-z])(?=.*\\d)(?=.*[@$!%*?&])[A-Za-
z\\d@$!%*?&]{8,}$') THEN
        SIGNAL SQLSTATE '45000'
            SET MESSAGE_TEXT = 'Password must contain at least one letter, one digit, and
one special character.';
    END IF;
END //
DELIMITER ;
```

Membership Table

This table links users (members) to the societies they belong to.

Column Name	Data Type	Description	Not Null	Primary Key	Foreign Key
member_id	INT	Unique identifier for the membership record	YES	YES	
user_id	INT	Foreign key referencing the user_id of the member	YES		user_id (FK)
society_id	INT	Foreign key referencing the society_id	YES		societies (FK)
joined_date	DATE	Date the user joined the society	YES		
membership_status	ENUM('active', 'inactive')	Status of the member's membership (active or inactive)	YES		

```
CREATE TABLE Membership (
  member_id INT PRIMARY KEY AUTO_INCREMENT,
```

```
  user_id INT NOT NULL,
  society_id INT NOT NULL,
  joined_date DATE NOT NULL,
  membership_status ENUM('active', 'inactive') NOT NULL,
  FOREIGN KEY (user_id) REFERENCES Users(user_id),
  FOREIGN KEY (society_id) REFERENCES Societies(society_id)
);
```

Societies Table

This table stores information about the different Multipurpose Cooperative Societies (MCS) registered on the platform.

Column Name	Data Type	Description	Not Null	Primary Key	Foreign Key
society_id	INT	Unique identifier for the society	YES	YES	
society_name	VARCHAR(255)	Name of the Multipurpose Cooperative Society	YES		
society_description	TEXT	Description of the society's purpose and services	YES		
location	VARCHAR(255)	Society's location (address or area)	YES		
registration_date	DATE	Date the society was registered on the platform	YES		
admin_user_id	INT	Foreign key referencing the user_id of the admin	YES		user_id (FK)

```
CREATE TABLE Societies (
  society_id INT PRIMARY KEY AUTO_INCREMENT,
  society_name VARCHAR(255) NOT NULL,
  society_description TEXT NOT NULL,
```

```
  location VARCHAR(255) NOT NULL,
  registration_date DATE NOT NULL,
  admin_user_id INT NOT NULL,
  FOREIGN KEY (admin_user_id) REFERENCES Users(user_id)
);
```

Services Table

This table stores information about the various services offered by MCSs.

Column Name	Data Type	Description	Not Null	Primary Key
service_id	INT	Unique identifier for the service	YES	YES
service_name	VARCHAR(255)	Name of the service offered by the society	YES	
service_description	TEXT	Description of the service	YES	

```
CREATE TABLE Services (
  service_id INT PRIMARY KEY AUTO_INCREMENT,
  service_name VARCHAR(255) NOT NULL,
  service_description TEXT NOT NULL
);
```

Society Services Table

This table links societies to the services they offer. (Many-to-Many relationship between Societies and Services)

Column Name	Data Type	Description	Not Null	Primary Key	Foreign Key
society_service_id	INT	Unique identifier for the link record	YES	YES	
society_id	INT	Foreign key referencing the society_id	YES		societies (FK)
service_id	INT	Foreign key referencing the service_id	YES		

```sql
CREATE TABLE Society_Services (
  society_service_id INT PRIMARY KEY AUTO_INCREMENT,
  society_id INT NOT NULL,
  service_id INT NOT NULL,
  FOREIGN KEY (society_id) REFERENCES Societies(society_id),
  FOREIGN KEY (service_id) REFERENCES Services(service_id)
);
```

Announcements Table

This table stores information about announcements made by societies to their members.

Column Name	Data Type	Description	Not Null	Primary Key	Foreign Key
announcement_id	INT	Unique identifier for the announcement	YES	YES	
society_id	INT	Foreign key referencing the society_id	YES		societies (FK)
announcement_title	VARCHAR(255)	Title of the announcement	YES		
announcement_content	TEXT	Content of the announcement	YES		
posted_date	DATE	Date the announcement was posted	YES		

```sql
CREATE TABLE Announcements (
  announcement_id INT PRIMARY KEY AUTO_INCREMENT,
  society_id INT NOT NULL,
  announcement_title VARCHAR(255) NOT NULL,
  announcement_content TEXT NOT NULL,
  posted_date DATE NOT NULL,
  FOREIGN KEY (society_id) REFERENCES Societies(society_id)
);
```

News Table

This table stores information about news articles or updates relevant to the platform or the cooperative movement in general.

Column Name	Data Type	Description	Not Null	Primary Key
news_id	INT	Unique identifier for the news article	YES	YES
title	VARCHAR(255)	Title of the news article	YES	
content	TEXT	Content of the news article	YES	
posted_date	DATE	Date the news article was posted	YES	

```
CREATE TABLE News (
  news_id INT PRIMARY KEY AUTO_INCREMENT,
  title VARCHAR(255) NOT NULL,
  content TEXT NOT NULL,
  posted_date DATE NOT NULL
);
```

User Settings Table

This table stores optional user settings for personalization (e.g., notification preferences).

Column Name	Data Type	Description	Not Null	Primary Key	Foreign Key
setting_id	INT	Unique identifier for the user setting record	YES	YES	
user_id	INT	Foreign key referencing the user_id	YES		user_id (FK)

setting_name	VARCHAR(255)	Name of the user setting (e.g., notification_type)	YES		
setting_value	VARCHAR(255)	Value of the user setting	YES		

```sql
CREATE TABLE User_Settings (
  setting_id INT PRIMARY KEY AUTO_INCREMENT,
  user_id INT NOT NULL,
  setting_name VARCHAR(255) NOT NULL,
  setting_value VARCHAR(255) NOT NULL,
  FOREIGN KEY (user_id) REFERENCES Users(user_id)
);
```

Loan Applications Table

This table can be used to manage loan applications within the platform (if applicable).

Column Name	Data Type	Description	Not Null	Primary Key	Foreign Key
loan_application_id	INT	Unique identifier for the loan application	YES	YES	
member_id	INT	Foreign key referencing the user_id of the member applying for the loan	YES		membership (FK)
loan_amount	DECIMAL(10,2)	Amount of loan requested by the member	YES		
loan_purpose	VARCHAR(255)	Purpose for which the loan is being requested	YES		
repayment_period	INT	Loan repayment period in months	YES		

interest_rate	DECIMAL(5,2)	Interest rate applied to the loan	YES		
application_status	ENUM('pending', 'approved', 'rejected')	Status of the loan application (pending, approved, or rejected)	YES		
submitted_date	DATE	Date the loan application was submitted	YES		

```
CREATE TABLE User_Settings (
  setting_id INT PRIMARY KEY AUTO_INCREMENT,
  user_id INT NOT NULL,
  setting_name VARCHAR(255) NOT NULL,
  setting_value VARCHAR(255) NOT NULL,
  FOREIGN KEY (user_id) REFERENCES Users(user_id)
);
```

Payments Table

This table can be used to track various payment transactions within the platform (e.g., loan repayments, service fees).

Column Name	**Data Type**	**Description**	**Not Null**	**Primary Key**	**Foreign Key**
payment_id	INT	Unique identifier for the payment transaction	YES	YES	
member_id	INT (optional)	Foreign key referencing the user_id of the member making the payment (optional)	NO		membership (FK)

society_id	INT (optional)	Foreign key referencing the society_id receiving the payment (optional)	NO		societies (FK)
payment_amount	DECIMAL(10,2)	Amount of the payment transaction	YES		
payment_type	ENUM('loan_repayment', 'service_fee', 'other')	Type of payment (loan repayment, service fee, or other)	YES		
payment_date	DATE	Date the payment transaction occurred	YES		
payment_method	VARCHAR(255)	Method used for the payment (e.g., online payment gateway, cash collection)	YES		

```sql
CREATE TABLE Payments (
  payment_id INT PRIMARY KEY AUTO_INCREMENT,
  member_id INT,
  society_id INT,
  payment_amount DECIMAL(10,2) NOT NULL,
  payment_type ENUM('loan_repayment', 'service_fee', 'other') NOT NULL,
  payment_date DATE NOT NULL,
  payment_method VARCHAR(255) NOT NULL,
  FOREIGN KEY (member_id) REFERENCES Membership(member_id) ON DELETE SET NULL,
  FOREIGN KEY (society_id) REFERENCES Societies(society_id) ON DELETE SET NULL
);
```

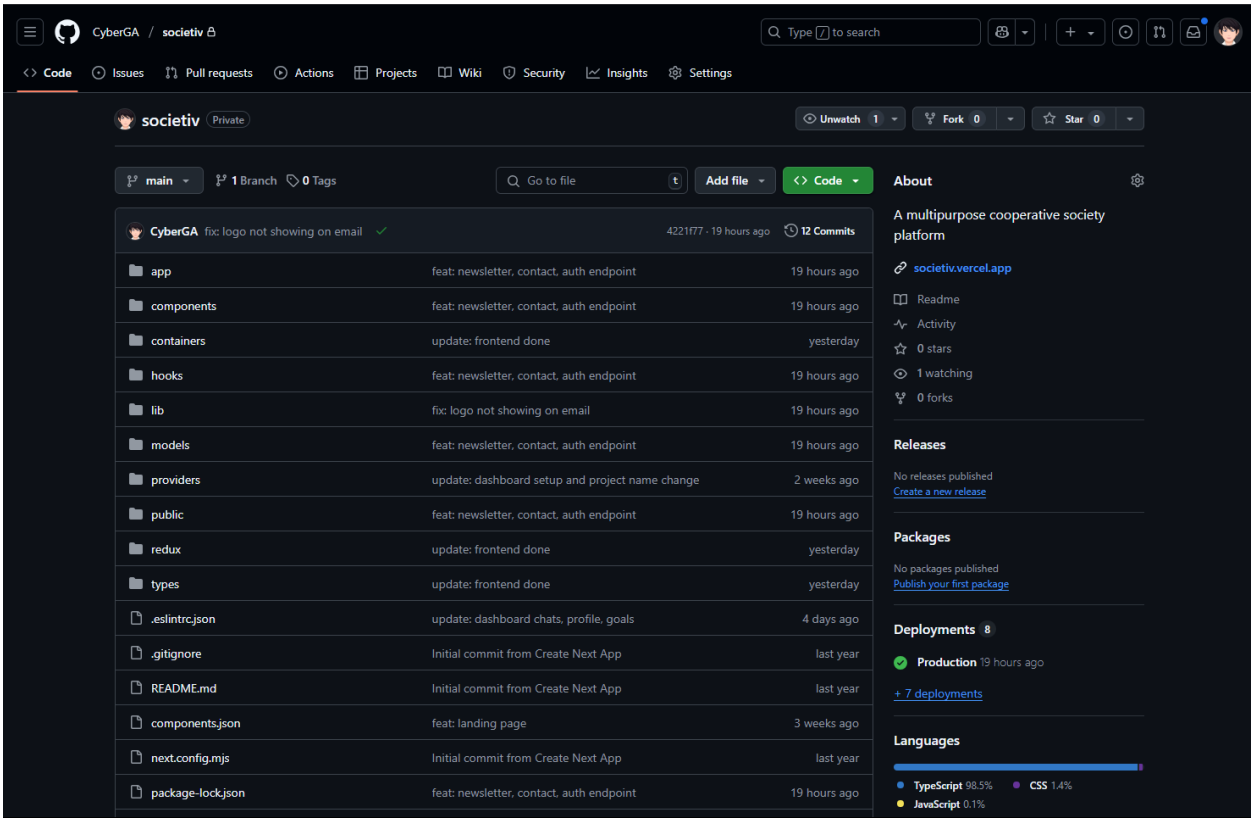


Fig.3. Codebase structure screenshot

The successful implementation of the multipurpose cooperative society website is anticipated to yield a range of positive outcomes, aligning with the project's objectives and contributing to the overall enhancement of the cooperative's operations and member experience. The results can be categorized into several key areas:

ENHANCED MEMBER ENGAGEMENT:

Result: Increased participation and interaction among cooperative members.

Impact: Fosters a sense of community and belonging, encouraging members to actively participate in discussions, events, and collaborative initiatives.

IMPROVED FINANCIAL TRANSPARENCY:

Result: Transparent and accessible financial information through the website.

Impact: Members can track their financial transactions, view account balances, and gain insights into the cooperative's financial health, thereby building trust and accountability.

EFFECTIVE COMMUNICATION:

Result: Seamless and secure communication channels within the cooperative.

Impact: Timely dissemination of announcements, updates, and important information, leading to improved coordination and awareness among members.

AUTOMATED LOAN MANAGEMENT:

Result: Implementation of a robust loan application and approval system.

Impact: Streamlined loan processes, faster approvals, and automated notifications contribute to a more efficient and transparent lending system within the cooperative.

USER-FRIENDLY INTERFACE:

Result: Intuitive and user-friendly website interface.

Impact: Members can easily navigate the website, fostering positive user experiences and reducing the learning curve for new members.

ENHANCED REPORTING AND DECISION-MAKING:

Result: Comprehensive financial reports and visualizations.

Impact: Administrators and stakeholders can make informed decisions based on accurate and up-to-date data, contributing to effective financial planning and strategic development.

IMPROVED COMMUNITY NETWORKING:

Result: Member directory and social features for community building.

Impact: Encourages networking among members, leading to stronger relationships, collaboration, and a sense of belonging within the cooperative community.

INCREASED ACCESSIBILITY AND CONVENIENCE:

Result: 24/7 online access to cooperative services.

Impact: Members can engage with cooperative services at their convenience, overcoming geographical limitations and promoting inclusivity.

DATA SECURITY AND PRIVACY COMPLIANCE:

Result: Implementation of robust security measures.

Impact: Protects member data, ensures privacy, and builds confidence in the security of online transactions and information.

MONITORING AND EVALUATION:

Continuous monitoring of website analytics, user feedback, and transaction logs to assess the platform's performance and identify areas for improvement.

Regular surveys and feedback sessions to gauge member satisfaction and gather insights into their experiences with the website.

Periodic reviews of financial reports and transaction logs to ensure accuracy and compliance with established standards.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 CONCLUSION

This project has outlined the design of a comprehensive database schema and potential functionalities for a Multipurpose Cooperative Society (MCS) website. The proposed structure allows for the creation and management of user accounts, societies, memberships, services, announcements, and various communication features (optional). Additionally, the inclusion of optional functionalities like loan applications, payments, and society creation requests can further enhance the platform's capabilities.

This website has the potential to serve as a valuable platform for cooperative societies, empowering them to expand their reach, attract new members, connect with a wider audience, streamline operations, manage memberships, services, and communication efficiently.

By utilizing this website, Multipurpose Cooperative Societies can create a dynamic and connected ecosystem that fosters collaboration, growth, and shared success.

Through careful planning, implementation, and ongoing development, this Multipurpose Cooperative Society website holds the potential to become a vital resource for fostering a more connected and prosperous cooperative movement.

5.2 RECOMMENDATIONS

The successful launch of the MCS website marks a significant milestone. However, to ensure its long-term success and user engagement, here are some key recommendations to consider:

User Adoption and Engagement:

i. **User Onboarding:** Develop a clear and informative onboarding process to guide new users through the platform's functionalities and benefits.

ii. **Content Strategy:** Create engaging and informative content that caters to the diverse needs of the user base. This could include success stories, educational resources, and best practices for cooperative societies.

iii. **User Feedback:** Actively solicit feedback from users through surveys, polls, and forums. Use this feedback to continuously improve the website and its features.

iv. **Accessibility:** Make the website accessible to users with disabilities by adhering to WCAG (Web Content Accessibility Guidelines) standards.

v. **Community Building:** Encourage interaction and collaboration among users by fostering online communities, forums, or discussion boards.

Marketing and Promotion:

i. **Targeted Outreach:** Develop a targeted marketing strategy to reach the ideal user base, including potential members, society administrators, and relevant organizations.

ii. **Social Media Presence:** Maintain an active presence on social media platforms to promote the website, share valuable content, and engage with users.

iii. **Partnerships:** Collaborate with other organizations and stakeholders within the cooperative movement to cross-promote the platform and expand its reach.

Ongoing Maintenance and Development:

i. **Security Updates:** Regularly update the website's software and security measures to address potential vulnerabilities.

ii. **Feature Enhancements:** Continuously evaluate the need for new features and functionalities based on user feedback and evolving needs.

iii. **Data Analytics:** Leverage website analytics data to understand user behavior and identify areas for improvement.

iv. **Performance Monitoring:** Monitor website performance metrics to ensure optimal speed, uptime, and user experience.

By following these recommendations and continuously adapting to user needs and technological advancements, you can ensure your MCS website remains a valuable resource for the cooperative movement, fostering collaboration, knowledge sharing, and collective success for years to come.

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