Journal of Computer Science and Technology Studies
ISSN: 2709-104X
DOI: 10.32996/jcsts
Journal Homepage: www.al-kindipublisher.com/index.php/jcsts

JCSTS
AL-KINDI CENTER FOR RESEARCH AND DEVELOPMENT

| RESEARCH ARTICLE

Community Extension Program Challenges: Development of a Management Information System

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| ABSTRACT

This study proposes the development of a Management Information System (MIS) designed to streamline the planning, implementation, and evaluation of Community Extension Programs (CEPs). By automating data collection, progress tracking, and reporting, the MIS aims to improve transparency, accountability, and resource optimization. The system will also support data-driven decision-making, enabling program administrators to adjust strategies in real time based on measurable outcomes. Ultimately, the proposed MIS seeks to modernize the management of community extension initiatives, ensuring their effectiveness, scalability, and long-term sustainability. The findings and outputs of this study are expected to benefit a wide range of stakeholders, including educational institutions, faculty and student volunteers, community members, and other organizations involved in community development.

| KEYWORDS

Community Extension Programs (CEPs), Management Information System (MIS), Digital Transformation, Community Engagement, Stakeholder Collaboration, Program Evaluation, Resource Management, Data-Driven Decision-Making, Sustainable Development, Transparency and Accountability, Volunteer Coordination, Institutional Outreach, Monitoring and Reporting, Impact Assessment, Educational Institutions, System Implementation, Survey and Feedback Analysis, Agile Methodology, User-Centered Design, Real-Time Tracking, Centralized Data Storage, Software Development for Community Services, Performance Evaluation, Automated Reporting.

| ARTICLE INFORMATION

ACCEPTED: 14 April 2025 **PUBLISHED:** 24 May 2025 **DOI:** 10.32996/jcsts.2025.7.3.112

1. Introduction

Community Extension Programs (CEPs) are fundamental to the social responsibility efforts of educational institutions, serving as a bridge between academia and local communities. These programs aim to foster sustainable development, enhance community welfare, and drive social transformation. However, despite their importance, many CEPs remain hampered by outdated, manual processes that undermine effective program management, data tracking, resource allocation, and stakeholder engagement. The absence of a centralized system limits the ability to assess program outcomes, adjust strategies in real-time, and document the impact of initiatives accurately.

Recognizing these challenges, this study proposes the design and development of a Community Extension Management Information System (CEMIS) for the University of Cebu – Main Campus. By leveraging digital technologies to automate data collection, monitor progress, and streamline reporting, the proposed system seeks to address persistent inefficiencies and improve the overall management of CEPs. In doing so, the system aims to enhance transparency, accountability, and evidence-based decision-making, ensuring that extension efforts are both impactful and sustainable.

This journal article discusses the findings of a needs assessment conducted among key stakeholders, the design considerations for the system, and the anticipated benefits of integrating technology into community extension program management. Ultimately, the study highlights how digital transformation can empower institutions to maximize the social value of their community engagement initiatives.

The specific research problem lies in the absence of a campus-focused, technology-driven transportation solution that caters to the unique needs of students and staff. By integrating IoT and data analytics, this project seeks to fill this gap and enhance campus mobility.

The structure of this paper includes a detailed review of related literature, the design and development of the proposed system, an evaluation of its feasibility, and an analysis of its impact on campus sustainability and transportation efficiency. This research aims to contribute to the advancement of sustainable campus development through innovative mobility solutions.

2. Literature Review

Community extension programs play a vital role in fostering institutional engagement and contributing to social development. Asio et al. (2022) explored the impact of such programs in a small suburban community and emphasized their significance in enhancing institutional sustainability and garnering community support. Similarly, Llenares and Deocaris (2018) evaluated the measurable outcomes of community extension initiatives in the Philippine academe, underscoring the importance of aligning these programs with community needs and academic objectives to ensure long-term relevance and effectiveness.

In parallel, modern frameworks and tools have emerged to support the planning, implementation, and evaluation of such programs. Laudon and Laudon (2020) highlighted the role of management information systems (MIS) in managing digital transformation across institutional functions, including community engagement. Through data-driven decision-making and systematized processes, MIS enhances the efficiency, monitoring, and scalability of extension activities.

Agile methodology, as introduced by Beck et al. (2001) in the Manifesto for Agile Software Development, also offers relevant principles that can be applied to community development projects. Its emphasis on collaboration, iterative progress, and responsiveness to change provides a flexible framework for designing community extension programs that are adaptable to evolving local contexts.

Furthermore, the user-centered philosophy emphasized by Norman (2013) in The Design of Everyday Things supports the need for community programs to be intuitive, accessible, and designed with the end user—i.e., the community—in mind. His insights into design thinking reinforce the value of empathetic planning and engagement, ensuring that community services are both meaningful and functional.

Together, these studies and frameworks highlight a multidisciplinary approach to community extension—one that integrates social responsibility, information systems, agile methodology, and human-centered design to maximize impact and institutional value.

The reviewed literature highlights the critical need for a Management Information System in managing Community Extension Programs. Challenges such as manual processes, disorganized data, and poor coordination can be addressed by implementing a digital solution. Prior studies and frameworks confirm that MIS improves efficiency, transparency, and decision-making, especially when developed with stakeholder input and supported by modern technology.

CEPs serve as vital instruments of social transformation and institutional outreach. As academic institutions face increasing demands for accountability and impact assessment, the need for robust information systems becomes more evident. The integration of MIS not only streamlines administrative processes but also empowers stakeholders to participate more actively and meaningfully in community development initiatives. These insights form the foundation for the proposed system and its potential to enhance community development efforts at the University of Cebu – Main Campus.

3. Methodology

3.1 Research Design

This study utilized a Developmental Research Design, specifically employing a Design and Development Research (DDR) approach. This methodology is appropriate for studies aimed at creating and evaluating new products or systems, such as a Management Information System (MIS) for Community Extension Programs (CEPs). The research design combined both quantitative and qualitative methods to gather a comprehensive understanding of current challenges and to guide the development of the proposed system.

The research was conducted in four main phases:

a) Needs Assessment Phase

To understand the existing practices and challenges in managing CEPs, the researchers conducted a needs analysis using surveys and interviews. Key stakeholders, including community extension directors, department coordinators, faculty volunteers, student volunteers, and community beneficiaries, participated. The quantitative data were collected through structured questionnaires, while qualitative insights were gathered through open-ended responses and interviews.

b) System Design Phase

Based on the results of the needs assessment, the design specifications for the Management Information System were formulated. The system was designed to address key issues identified, such as inefficient tracking, lack of centralized data storage, and delayed reporting. User-centered design principles were applied to ensure usability and accessibility for all types of users.

c) System Development Phase

Using an Agile Software Development approach, the MIS was built in iterative cycles. Each iteration included system prototyping, stakeholder feedback, and system refinements. Core features developed included automated reporting, real-time progress tracking, centralized document storage, volunteer management, and impact assessment tools.

d) System Evaluation Phase

The developed system was tested through usability testing and stakeholder feedback sessions. Surveys and interviews were again employed to assess system effectiveness, user satisfaction, and areas for improvement. The evaluation focused on the system's ability to improve efficiency, transparency, stakeholder coordination, and decision-making in managing CEPs.

Through this structured approach, the study ensured that the proposed Management Information System was grounded in the actual needs of its users and aligned with best practices in community engagement and information system development.

4. Results and Discussion

4.1 Results

Based on the distributed questionnaires among stakeholders of the Community Extension Programs (CEPs) at the University of Cebu – Main Campus. It includes a discussion of the demographic profile of the respondents, an assessment of the existing challenges in CEP management, the perceived usefulness of a proposed Management Information System (MIS), preferred system features, and insights from qualitative feedback.

A total of 75 stakeholders participated in the survey. The respondents represented various roles within the Community Extension Programs, as follows:

Community Extension Director – 1 (1.33%)
Department Coordinators – 11 (14.67%)
Faculty Volunteers – 15 (20%)
Student Volunteers – 30 (40%)
Community Beneficiaries – 18 (24%)

Most of the respondents (65%) had been involved in CEPs for 1 to 3 years, while 20% had more than 4 years of experience. This distribution indicates a relatively experienced group, capable of providing valuable insight into the strengths and weaknesses of the current CEP practices.

4.1.1 Existing Challenges in CEP Management

Respondents were asked to rate their agreement with statements describing common challenges in CEP management. The results are presented in the table below:

Table 1. Quantitative Results

Metric	Mean Rating	Interpretation
The current management is time-consuming and inefficient.	4.36	Strongly Agree
There is a lack of centralized data storage.	4.25	Agree
Tracking progress is difficult due to manual processes.	4.45	Strongly Agree
Coordinating with stakeholders is often challenging.	3.88	Agree
Program outcomes are not effectively monitored.	4.12	Agree

The data reveals that most stakeholders agree or strongly agree that the current system is inefficient. The highest concern is with tracking progress (mean = 4.45), which indicates a pressing need for digital tools to automate and systematize monitoring and reporting. The lack of centralized data storage (mean = 4.25) further complicates efficient resource use and transparency.

4.1.2 Perceived Usefulness of the MIS

Participants evaluated how a Management Information System could address the identified challenges. Their responses are summarized below:

Metric	Mean Rating	Interpretation
MIS improves efficiency of planning and reporting.	4.55	Strongly Agree
Automated tracking enhances accountability.	4.48	Strongly Agree
Real-time access improves decision-making.	4.50	Strongly Agree
MIS aligns CEPs with institutional goals.	4.38	Agree
Willingness to adopt a digital CEP system.	4.62	Strongly Agree

There is overwhelming support for the MIS among respondents. The highest mean rating (4.62) reflects a strong willingness among stakeholders to adopt a digital platform. Participants expect that the MIS will significantly improve accountability, decision-making, and alignment with broader institutional goals.

4.1.3 Preferred System Features

Stakeholders were asked to select system features they deemed most important. The top choices were:

Automated reporting (87%)
Real-time progress tracking (83%)
Centralized document storage (76%)
Volunteer task assignment (69%)
Impact assessment tools (65%)

These responses reinforce the need for a well-rounded and multifunctional MIS. The emphasis on automated reporting and tracking suggests users are particularly interested in efficiency and transparency. Centralized storage is also highly valued, indicating a desire to eliminate fragmented documentation practices.

Open-ended responses provided further depth to the quantitative results. Several recurring themes emerged:

1. Lack of Organized Documentation: Respondents noted difficulty in retrieving and sharing records, especially those needed for monitoring or institutional reporting.
2. Delays in Reporting and Coordination: Manual systems were criticized for causing communication gaps and delays in reporting.
3. Tracking Volunteer Activities: Many stakeholders expressed frustration with the lack of tools for managing schedules, responsibilities, and participation metrics.
4. System Expectations: Respondents suggested features such as mobile accessibility, real-time updates, user-friendly dashboards, and beneficiary feedback mechanisms.

5. Training and Support: Several stakeholders emphasized the importance of training sessions and user manuals to aid in the system's adoption.

4.2 Discussion

The findings indicate that an IoT-based bicycle-sharing system is both feasible and impactful in an educational setting. High utilization rates reflect strong user interest, while the environmental benefits align with the university's sustainability goals. Addressing operational challenges, such as peak-hour demand, could further enhance the system's effectiveness.

4.2.1 Interpretation of Findings

The results of the conducted survey revealed critical gaps and inefficiencies in the current community extension practices at the University of Cebu – Main Campus. These findings provide a clear basis and justification for the development of a Community Extension Management Information System (CEMIS). The system must address the following core needs such as Automation of scheduling, reporting, and volunteer management, Centralization of data storage and access, Tracking of volunteer participation Systematic evaluation of programs & Ease of retrieval of historical records. The high adoption rate and positive feedback indicate strong acceptance among the university community. The pilot project validated the feasibility and effectiveness of the proposed system.

5. Conclusion

The results of this study clearly support the development and implementation of a Management Information System for the University of Cebu's Community Extension Programs. By addressing critical issues such as fragmented data management, inefficient reporting, and poor monitoring, the MIS is expected to improve operational efficiency and stakeholder coordination. Furthermore, the findings highlight that all involved parties are open and ready for change, with many providing actionable suggestions for the system's features and rollout. This research provides an evidence-based roadmap for the MIS development team, ensuring that the proposed solution is not only technically sound but also socially responsive and institutionally relevant.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

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