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Web-Based Marketing Prospect Data Management Information System at Politeknik Ganesha Guru

Luh Putu Cintya Prabandari [1*], Desak Nyoman Dewanggi Triananda Budidana[2]

[1*,2] Politeknik Ganesha Guru, Buleleng, Bali
[1*]*cintyaprabandari@gmail.com*; [2]*dewanggisgr@gmail.com*

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ABSTRACT

Higher education in the modern era faces challenges along with the rap development of technology. Educational institutions such as Politeknik Ganesha Guru need to manage prospect data efficiently to remain relevan and competitive. Unstructured prospect data management is a majo obstacle, with data scattered across multiple formats such as physic documents and spreadsheets, leading to duplication, inconsistency, well as inaccurate data analysis. In addition, tracking the history of lea interactions, such as interest and required follow-ups, was difficu without a structured system, affecting personalization and follow-u effectiveness. Manual management also makes it difficult to access an update data in real-time, hampering the marketing team especially whe off-campus. On the other hand, limitations in data analysis slow dow the evaluation of marketing performance. The utilization of a web-base information system is expected to be an effective solution, as it ca integrate data centrally, improve accessibility, and allow for mo accurate analysis. With this solution, Politeknik Ganesha Guru can l more competitive in attracting potential students and improvin educational services.

1. Introduction

Higher education institutions are currently experiencing increasingly complex challenges due to the rapid advancement of information technology. To remain competitive and relevant, educational institutions are required to continuously adapt their operational and managerial processes. One of the most critical aspects is the management of marketing prospect data, particularly during the new student admission process.

The growing number of prospective students seeking higher education has encouraged institutions to improve the efficiency and effectiveness of their recruitment processes. Effective prospect data management plays an essential role in determining successful marketing and student recruitment strategies. By implementing an efficient data management system, institutions can identify potential students, design targeted marketing strategies, and improve the conversion of prospects into enrolled students.

Despite its importance, prospect data management at Politeknik Ganesha Guru is still conducted manually. Prospect information is collected from multiple sources and stored in

various formats, including physical documents, emails, and spreadsheets. This fragmented data management approach makes information integration difficult and often results in data duplication, inconsistencies, and inaccurate analysis.

Another major challenge is maintaining the interaction history of prospective students. Without a structured information system, important information regarding student interests, previous communications, and required follow-up activities is frequently incomplete or undocumented. Consequently, marketing personnel experience difficulties in providing personalized services and conducting effective follow-up activities.

Furthermore, manual data management restricts real-time data accessibility, particularly when marketing personnel perform promotional activities outside the campus. The absence of integrated analytical tools also limits the institution's ability to evaluate marketing performance and formulate effective recruitment strategies.

The implementation of a web-based information system offers a promising solution to these challenges. Such a system enables centralized data management, improves accessibility, facilitates integration with supporting applications, and provides real-time reporting and analysis to support marketing decision-making.

Based on these issues, this study proposes the development of a Web-Based Marketing Prospect Data Management Information System at Politeknik Ganesha Guru. The proposed system is expected to improve marketing performance, optimize educational services, and strengthen relationships with prospective students through more accurate, efficient, and well-organized prospect data management.

Based on the background presented above, this study is formulated to address two main research problems. First, how can a web-based Marketing Prospect Data Management Information System be designed to support the marketing activities of Politeknik Ganesha Guru? Second, how can the proposed system be implemented effectively, and how can its functionality be evaluated through system testing to ensure that it meets the intended operational requirements?.

In line with the formulated research problems, this study aims to design and develop a web-based Marketing Prospect Data Management Information System for Politeknik Ganesha Guru. Furthermore, the study seeks to implement the proposed system and evaluate its performance through functional testing to ensure that the system operates correctly, meets user requirements, and supports marketing activities efficiently.

This research provides several theoretical contributions. For the authors, it offers an opportunity to apply the theoretical knowledge acquired during academic studies to the design and development of a web-based information system while enhancing practical skills and a deeper understanding of prospect data management. For Politeknik Ganesha Guru, the study contributes to the body of scientific knowledge by providing a reference for future research related to marketing information systems and educational institution marketing strategies. In addition, the findings of this research are expected to benefit researchers, academics, and readers by expanding their understanding of marketing prospect information systems and serving as a reference for the development of similar.

From a practical perspective, the implementation of the proposed Marketing Prospect Data Management Information System is expected to improve the efficiency and effectiveness of prospect data management processes at Politeknik Ganesha Guru. The system enables centralized data management, enhances accessibility, transparency, and data accuracy, and supports faster and more informed decision-making for marketing activities. Moreover, the system is expected to improve the management and monitoring of prospective student data, thereby increasing the effectiveness of follow-up activities and supporting the conversion of prospective students into enrolled students while strengthening the institution's competitiveness in attracting new applicants.

2. Method

2.1. Research Method

This study employed the Prototype software development method to design and implement a web-based Marketing Prospect Data Management Information System at Politeknik Ganesha Guru. The Prototype model was selected because it enables continuous interaction between developers and users, allowing system requirements to be refined iteratively until they meet user expectations.

The Prototype development process consists of the following stages:

2.1.1. Requirement Gathering

At this stage, information regarding user requirements was collected through observation, interviews, and literature review. The objective was to identify existing problems in prospect data management and determine the functional and non-functional requirements of the proposed system.

2.1.2. Prototype Development

Based on the identified requirements, an initial prototype of the system was designed. The prototype focused primarily on the user interface and core functionalities, enabling stakeholders to visualize the proposed solution before full-scale development.

2.1.3. Prototype Evaluation

The prototype was evaluated by prospective users, including administrators and marketing personnel. Feedback obtained during this stage was used to improve the system design and ensure that user requirements were accurately represented.

2.1.4. System Development

After the prototype was approved, the complete system was developed using PHP as the programming language and MySQL as the database management system. Additional features, including user authentication, prospect management, follow-up recording, reporting, and dashboard visualization, were implemented during this stage.

2.1.5. System Testing

The completed system was evaluated using the Black Box Testing method to verify that every functional requirement operated according to the specified system requirements. Testing focused on validating user input, system outputs, navigation, access rights, and overall workflow.

2.1.6. System Implementation

Following successful testing, the system was deployed for use by administrators and marketing personnel at Politeknik Ganesha Guru to support marketing prospect management activities.

2.2 Research Framework

The research framework illustrates the sequence of activities conducted throughout this study, beginning with problem identification and concluding with system implementation and evaluation.

The research stages are summarized as follows:

1. Problem Identification
2. Literature Review
3. Requirement Analysis
4. System Design
5. Prototype Development
6. Prototype Evaluation
7. System Development
8. Black Box Testing
9. System Implementation
10. Conclusion

2.3. System Design

The proposed system was designed using the Unified Modeling Language (UML) to model functional requirements and business processes. UML diagrams facilitate communication between developers and stakeholders while providing a structured representation of system behavior. The system design consists of the following components:

- Use Case Diagram
- Activity Diagram
- Database Design
- User Interface Design

These design artifacts serve as the foundation for system implementation and ensure that all functional requirements are properly represented.

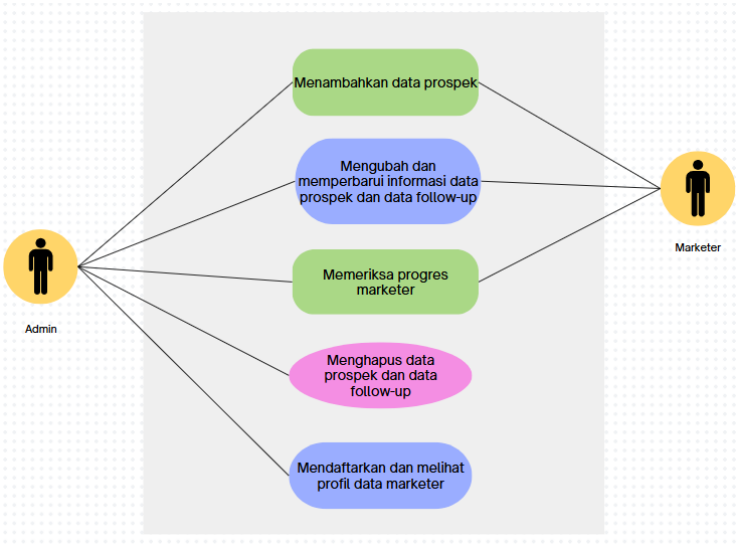

Figure 1. Use Case Diagram

3. Result and Discussions

3.1. Prospect Data Management

The prospect data management process begins with the collection of prospective student information by marketing personnel through a web-based interface. The collected data include the prospective student's full name, contact information, intended study program, and previous educational institution. After submission, the data are stored in a centralized MySQL database, enabling efficient storage, retrieval, and updating.

Marketing personnel are authorized to manage and update their assigned prospect records, while administrators have full access to monitor, modify, and manage all prospect data. Prospect records that are no longer relevant can also be removed by administrators to maintain data accuracy and integrity.

3.2 Follow-up Process

The follow-up process ensures that every prospective student receives appropriate and timely communication. Marketing personnel may conduct follow-up activities through telephone calls, email correspondence, or social media messaging.

After each interaction, the follow-up details—including the communication method, contact date, and interaction outcome—are recorded in the system. These records provide a comprehensive communication history that assists marketing personnel in planning future interactions and evaluating prospect engagement.

3.3 Prospect Progress Monitoring

Once prospect information and follow-up activities have been recorded, the system provides a progress monitoring feature that enables administrators and marketing personnel to observe the current status of each prospect.

The dashboard categorizes prospects into several status groups, such as New, Follow-up in Progress, Interested, Registered, and Not Interested, allowing users to monitor recruitment activities more effectively.

Administrators can also evaluate marketing performance by reviewing the number of prospects successfully converted into prospective students, thereby supporting performance assessment and strategic decision-making.

3.4 User Management

The user management module enables administrators to manage system users, including creating, updating, and deleting marketer accounts.

Role-Based Access Control (RBAC) is implemented to ensure that each user can only access information relevant to their responsibilities. This approach enhances system security while maintaining data confidentiality and integrity.

3.5 System Interface Implementation

a. Login Page

The login interface authenticates users before granting access to the system according to their assigned roles (Administrator or Marketer).

The interface is intentionally designed to be simple, secure, and responsive while ensuring that user credentials are protected through authentication mechanisms.

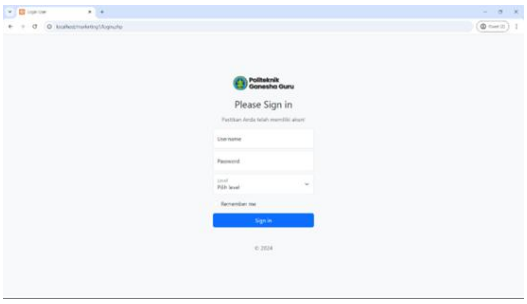

Figure 2. Login Page

b. Administrator and Marketer Dashoard

The Prospect Data page displays prospect information in a structured table format. Administrators are permitted to create, update, and delete prospect records, whereas marketers may only manage the prospects assigned to them.

To improve usability, a search feature is provided to facilitate quick retrieval of prospect information.

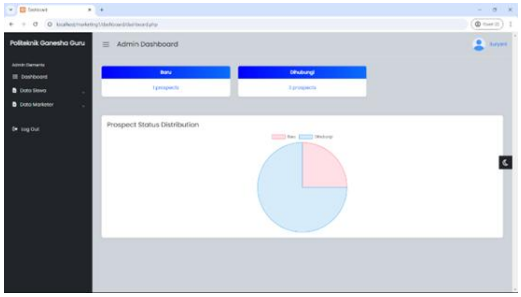

Figure 3. Admin Dashboard

c. Prospect Data Page

The Prospect Data page displays prospect information in a structured table format. Administrators are permitted to create, update, and delete prospect records, whereas marketers may only manage the prospects assigned to them.

To improve usability, a search feature is provided to facilitate quick retrieval of prospect information.

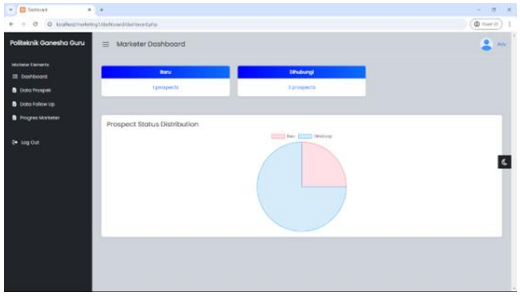

Figure 4. Prospect Data Page

d. Follow-up Page

This page records all follow-up activities conducted by marketing personnel.

Each record contains the communication date, communication method, follow-up outcome, and additional remarks. Administrators can access all follow-up records, while marketers are only permitted to manage their own records.

The integrated search functionality enables users to locate follow-up records efficiently.

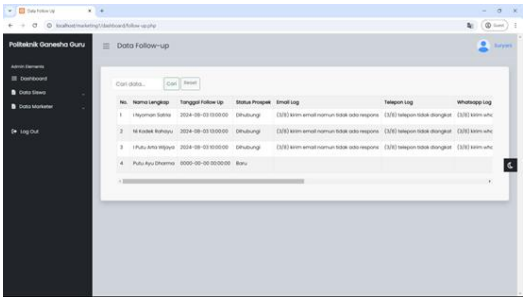

Figure 5. Follow-up Page

e. Marketing Progress Page

The Marketing Progress page provides statistical information regarding prospect status for each marketer.

Users can select a particular status category to view detailed information regarding associated prospects.

This feature enables administrators to evaluate marketer performance while assisting marketers in prioritizing follow-up activities.

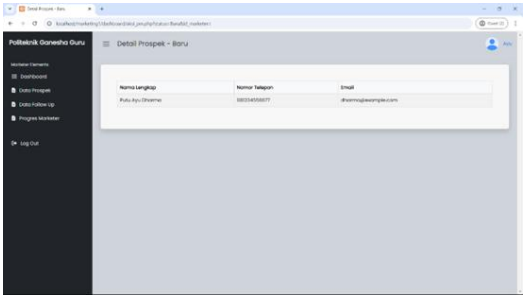

Figure 6. Marketing Progress Page

f. Prospect Progress Detail Page

This page presents a detailed list of prospects based on a selected status category.

For example, users can display only prospects currently in the **Follow-up** stage, enabling more focused management of recruitment activities.

Administrators can monitor all prospect records, whereas marketers are restricted to viewing only their assigned prospects.

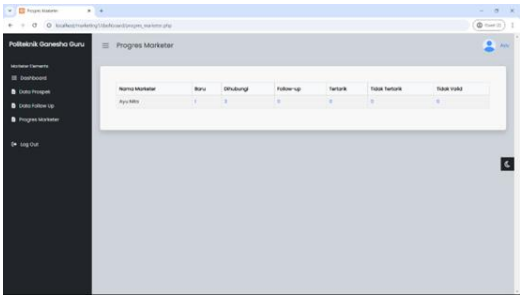

Figure 7. Prospect Progress Detail Page

g. Marketing Personel Data Page

The Marketing Personnel page enables administrators to manage user accounts.

The page includes functions for adding, editing, deleting, and viewing marketer information such as name, telephone number, email address, and access level.

The simple tabular layout facilitates efficient user management.

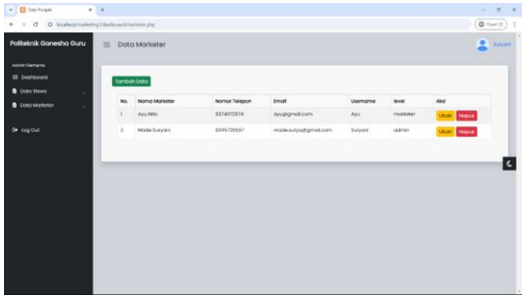

Figure 8. Marketing Personel Data Page

3.6. System Testing

The implementation of the proposed web-based Marketing Prospect Data Management Information System demonstrates that digital transformation can significantly improve the efficiency of student recruitment activities at Politeknik Ganesha Guru. Compared with the previous manual process, the developed system provides centralized data management, allowing prospect information to be stored, updated, and retrieved more efficiently.

The adoption of the Prototype development model proved to be appropriate because it facilitated continuous communication between developers and end users throughout the development process. User feedback obtained during each iteration enabled improvements to the system interface and functionality before final implementation, thereby increasing user acceptance and system usability.

Another significant contribution of the proposed system is the integration of prospect management, follow-up recording, progress monitoring, and user management into a single web-based platform. This integration minimizes data redundancy, improves information accuracy, and enables administrators to monitor marketing performance more effectively through real-time reporting.

Compared with previous studies that primarily focused on customer management or general information systems, this research specifically addresses the needs of higher education institutions by providing features tailored to prospective student recruitment. The implementation of role-based access control also enhances data security while ensuring that users access only information relevant to their responsibilities.

Although the system has demonstrated satisfactory functional performance through Black Box Testing, several limitations remain. The current implementation has not yet been integrated with external Customer Relationship Management (CRM) platforms, communication services such as WhatsApp or email automation, or advanced analytical tools for predicting prospective student behavior. These limitations provide opportunities for future research and system enhancement.

The development of the Web-Based Marketing Prospect Data Management Information System at Politeknik Ganesha Guru successfully addressed the need for a more structured and centralized approach to managing prospective student data and

marketing activities. The system integrates prospect data management, follow-up recording, marketer progress monitoring, and user management according to user roles, enabling marketing personnel to manage and monitor prospect information more systematically. Based on Black Box Testing, all tested cases achieved a 100% pass rate, indicating that the implemented functionalities operated according to the specified requirements. The main contribution of this research is the integration of these functions into a single web-based platform, which supports more organized prospect management and facilitates monitoring of marketing activities. Nevertheless, further development is recommended through integration with CRM platforms, enhanced analytical and reporting features, continuous user training, and improvements to the user interface.

4. Conclusion

This study successfully developed a Web-Based Marketing Prospect Data Management Information System for Politeknik Ganesha Guru using the Prototype software development methodology. The proposed system effectively supports marketing personnel in recording, managing, and monitoring prospective student data through a centralized web-based platform. Compared with the previous manual approach, the developed system improves data accessibility, reduces processing time, minimizes data redundancy, and enhances the overall efficiency of prospect management activities. The implementation of role-based access control enables administrators and marketing personnel to perform their respective responsibilities securely while maintaining data integrity. Furthermore, the dashboard and progress monitoring features provide comprehensive information that supports performance evaluation and strategic decision-making during the student recruitment process. The results of Black Box Testing indicate that all implemented system functions operate according to the specified functional requirements. Therefore, the proposed information system can be considered a reliable solution for improving the effectiveness and efficiency of marketing activities at Politeknik Ganesha Guru.

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