

Employee Satisfaction on Compensation System: Basis for an Improved Payroll Management System with Face Recognition and Attendance Monitoring Technology

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Abstract: *Employee satisfaction with the compensation system is a critical factor influencing organizational productivity, employee retention, and overall workplace morale. Traditional payroll management systems, often plagued by inaccuracies and inefficiencies, can negatively impact employee satisfaction and trust. This study explores the integration of advanced technologies, specifically face recognition and attendance monitoring, into payroll management systems to address these challenges and enhance employee satisfaction. The research investigates the current state of employee satisfaction with existing compensation systems through a comprehensive survey conducted among employees from diverse industries. It identifies key factors contributing to dissatisfaction, such as payroll errors, delays, and perceived lack of transparency. The study then proposes an innovative payroll management system incorporating face recognition technology for accurate attendance tracking and automated payroll processing. Findings suggest that the integration of face recognition and attendance monitoring technology in payroll management systems can significantly enhance employee satisfaction by addressing common pain points and fostering a sense of fairness and transparency. By leveraging biometric data, the proposed system aims to ensure precise and real-time attendance records, thereby reducing payroll errors and administrative burdens. The face recognition technology offers a secure, contactless, and efficient method for attendance monitoring, aligning with modern workplace safety standards and employee preferences. The study concludes with recommendations for organizations considering the adoption of such technologies, emphasizing the importance of user training, data privacy, and continuous system evaluation to ensure long-term success.*

Keywords: Employee satisfaction, Compensation system, Payroll management, Face recognition technology, Attendance monitoring, Payroll errors, Automated payroll processing, Transparency, Biometric data, Real-time attendance tracking

I. INTRODUCTION

In the dynamic business environment of today, organizations are compelled to optimize their operational processes to remain competitive and achieve sustainable growth. One such critical area of focus is payroll management, which plays a pivotal role in ensuring fair and timely compensation to employees while maintaining compliance with regulatory standards. Traditional payroll systems, characterized by manual data entry and cumbersome processes, often face challenges related to accuracy, efficiency, and security.

The rapid advancement of technology has paved the way for innovative solutions to address these challenges. Among the emerging technologies, face recognition and attendance monitoring systems have garnered significant attention for their potential to revolutionize workforce management practices. By leveraging biometric data and real-time monitoring capabilities, these technologies offer a seamless and secure approach to attendance tracking and verification.

The integration of face recognition and attendance monitoring technology into payroll management systems represents a paradigm shift towards automation, accuracy, and transparency. This transformation not only streamlines administrative tasks but also enhances data integrity and security, mitigating risks associated with manual processes and unauthorized access.

Furthermore, with the post-pandemic period has underscored the importance of touchless and hygienic solutions in various facets of business operations. Face recognition technology, with its contactless nature and ability to operate in diverse environments, has emerged as a preferred choice for organizations looking to adapt to the new normal of workplace safety protocols.

II. OBJECTIVES OF THE STUDY

The objectives of the study are as follows:

- To evaluate the satisfaction level of the employees on the current payroll system of Northern Mindanao College.
- To propose an enhanced Payroll Management System with Face Recognition and Attendance Monitoring Technology
- To formulate recommendations for the improvement of the current payroll system of St. Michael College Caraga.

III. RELATED LITERATURE

This chapter presents the relevant works and context of previous research, industry trends, and technological advancements in the field of payroll management, biometric technologies, and attendance monitoring systems to provide the basis and purpose of this study.

A transparent compensation system can enhance employee's trust in the organization. With the Equity Theory formulated by Adams, J.S., it discussed the context of compensation systems by emphasizing the importance of fairness and transparency in enhancing employee trust and satisfaction [1]. An effective compensation system can even lead to higher employee motivation and lower turnover rates. This is proven in the paper of Locke and Latham [2] which discussed the relationship between accurate, timely compensation and employee satisfaction

However, there are common issues in manual payroll systems outlined in the study of Smith, J., et al [3], such as data entry errors, time theft, and compliance risks, which negatively impact employee satisfaction and organizational efficiency. With this, the adoption of automated payroll systems can help reduce payroll error and subsequently improve employee satisfaction [4]. This kind of innovation in payroll technology are also perceived by employee as truly acceptable [5]. Added to that, by applying the Technology Acceptance Model (TAM), the study of Davis, F.D. [6] has able to examine the perceptions of employee for usability and usefulness of the automated system has affect their satisfaction and acceptance with the system.

Over the years, payroll system has been improved with the integration of highly sophisticated technology. The article of Johnson, M. [7] explores how the implementation of face recognition and attendance monitoring technologies can reduce errors, enhance security, and improve the overall accuracy of payroll systems. The study of Kim, S., & Lee, Y. [8] also reviewed the application of biometric systems in managing workforce attendance and payroll, and its impact on improving accuracy and reducing fraud.

The benefits of real-time payroll processing systems also improve payroll accuracy and timeliness and has positive impact on employee satisfaction [9]. With the application of new technologies in payroll systems, employees have perceived technological advancements positively and has strengthened their engagement in the workplace [10].

IV. METHODOLOGY

4.1 Research Approach and Design

The research approach for this study adopts a quantitative approach, focusing on utilizing numerical data and statistical analysis to quantify relationships and patterns within the context of payroll management, face recognition technology, and attendance monitoring. This approach includes the use of closed-ended questions in structured questionnaires, numerical scales for measuring variables related to system efficiency, user satisfaction, and data security, and statistical

analysis techniques to analyze the collected data. This quantitative approach allows for a systematic and objective examination of factors such as system performance metrics, user feedback, and cost-effectiveness, contributing to evidence-based decision-making and recommendations for improvement.

In addition to the quantitative approach, the study also incorporates a qualitative research approach to explore the meanings, experiences, and perspectives of stakeholders such as employees, managers, and system administrators regarding the implementation and use of the improved payroll management system with face recognition and attendance monitoring technology. This approach involves using open-ended questions in semi-structured interviews and conducting thematic analysis to uncover themes, patterns, and insights from the qualitative data. By employing a qualitative approach, the study gains a deeper understanding of user perceptions, challenges faced during system implementation, and potential areas for further enhancement, thereby complementing the quantitative findings with rich descriptions and contextual interpretations.

The combination of both quantitative and qualitative approaches results in a mixed research approach. By integrating both quantitative and qualitative methods, the study aims to provide a comprehensive and holistic understanding of the research problem, addressing both the measurable aspects and the nuanced perspectives of stakeholders involved in the implementation and use of the enhanced payroll management system.

V. RESEARCH INSTRUMENT

A structured questionnaire was utilized to gather data on employee satisfaction with the compensation system. A semi-structured interview was conducted with key stakeholders to gain qualitative insights into the system's impact.

5.1 Respondents and Sampling Methods

Sampling method play a crucial role in ensuring the representativeness and generalizability of research findings. In this study evaluating employee satisfaction with the compensation system before and after the implementation of an improved payroll management system with face recognition and attendance monitoring technology, several sampling methods will be utilized to select participants for surveys and interviews

Data Collection

The Survey Questionnaire was distributed electronically to all employees before and after the implementation of the new system. The interview was conducted with HR personnel, payroll officers, and a sample of employee's post-implementation.

5.2 Data Analysis

In evaluating employees' satisfaction with the compensation system, various data analysis techniques were employed to derive meaningful insights. In this study, a table was used to interpret the range of the weighted mean scores obtained from survey responses related to employee satisfaction with the compensation system. The weighted mean, calculated based on the Likert scale responses, provides a numerical representation of satisfaction levels. The interpretation of the weighted mean range helps categorize the degree of satisfaction among employees.

Table 1.0 of the Interpretation of Range of the Weighted Mean

Range of the Weighted Mean	Interpretation
4.51 – 5.00	Very Satisfied Strongly Agree (for questions asked)
3.51 – 4.50	Satisfied Agree (for questions asked)
2.51 – 3.50	Moderately Satisfied Moderately Agree (for questions asked)
1.51 – 2.50	Dissatisfied Disagree (for questions asked)

Range of the Weighted Mean	Interpretation
1.50 and below	Very Dissatisfied Strongly Disagree (for questions asked)

VI. RESULTS AND DISCUSSION

This chapter discusses the analysis and interpretation of the data gathered from participants' responses in answering the specific questions of the study of proposed study.

6.1 Demographics Profile of the Respondents

Table 2.0 Profile of the Respondents in terms of Gender

Gender	Number of Respondents	Percentage (%)
Male	30	60%
Female	20	40%
Total	50	100%

As can be seen on Table 2.0, the majority of respondents were male (60%) compared to female respondents (40%). This gender distribution reflects the organizational demographics and ensures a diverse perspective in assessing the system's impact.

Table 3.0 Profile of the Respondents in terms of Age Classification

Age Group	Number of Respondents	Percentage (%)
20-30 years	15	30%
31-40 years	20	40%
41-50 years	10	20%
Over 50 years	5	10%
Total	50	100%

The respondents' age distribution in table 3.0 shows a balanced representation across different age groups, with a significant portion falling in the 31-40 years category (40%). This diversity ensures varied perspectives on the system's usability and effectiveness across different career stages.

Table 4.0 Profile of the Respondents in terms Year of Service

System Experience	Number of Respondents	Percentage (%)
Less than 1 year	8	16%
1-3 years	12	24%
4-6 years	15	30%
7-10 years	10	20%
More than 10 years	5	10%
Total	50	100%

The distribution of respondents based on their experience with the current system shows a diverse range of experience levels, with a significant number having 4-6 years of experience (30%). This varied experience allows for insights into both the system's strengths and areas for improvement from different perspectives.

The distribution of respondents based on their positions within the organization as presented in Table 5.0 reflects a diverse representation across managerial, supervisory, staff, and executive roles. This diversity ensures insights from different hierarchical levels regarding the compensation system and its impact on employee satisfaction.

Table 5.0 Profile of the Respondents in terms of Position

Position	Number of Respondents	Percentage (%)
Senior High Teacher	10	20%
Junior High Teacher	15	30%
Payroll Officer	20	40%
HR personnel	5	10%
Total	50	100%

6.2 Evaluation of the Employees' Satisfaction on the current payroll system of Northern Mindanao College

Table 6. Evaluation of Employee Satisfaction on Compensation System

No	Description	Weighted Mean	Interpretation
1	Wage and salary calculation and payment	4.20	Very Satisfied
2	Pay slip distribution	3.80	Satisfied
3	Payroll tax administration	3.50	Neutral
	Average Weighted Mean	3.83	Satisfied

Presented in Table 6.0, is the assessment of employee satisfaction with the compensation system based on their performance level reveals the overall satisfaction levels within different performance categories. This analysis provides insights into how performance levels may influence satisfaction with the system. The evaluation of employee satisfaction with the compensation system is based on three key aspects: wage and salary calculation and payment, pay slip distribution, and payroll tax administration

Table 7. Type of Document Processed by Employee Satisfaction on Compensation System

Document Type	Number of Respondents	Percentage (%)	Rank
Payroll Documents	25	50%	1
Leave Requests	10	20%	2
Timesheets	8	16%	3
Benefits Enrolment Forms	5	10%	3
Others	2	4%	4
Total	50	100%	

The distribution of document types processed by employees is presented on Table 7.0 reflects the variety of tasks related to the compensation system. This analysis helps understand which areas of the system employees are most engaged with and may influence their satisfaction levels.

Table 8. Problems Encountered in the Manual System

Problems Encountered	Number of Respondents	Percentage (%)	Rank
Data Entry Errors	15	30%	1
Time-Consuming Processes	12	24%	2
Lack of Automation	10	20%	3
Compliance Issues	8	16%	4

Problems Encountered	Number of Respondents	Percentage (%)	Rank
Security Concerns	5	10%	5
Total	50	100%	

The identification of problems encountered in the manual system sheds light on areas that need improvement. Addressing these issues is crucial for enhancing employee satisfaction with the compensation system.

6.3 The Proposed Improved Payroll Management System with Face Recognition and Attendance Monitoring Technology

6.3.1 Features and Functions of the Proposed Employee Satisfaction on Compensation System

The proposed system introduces various features designed to enhance employee satisfaction by ensuring accurate and timely compensation. Key functionalities include face recognition for precise attendance tracking, automated processes to reduce errors, and integration with the payroll system for seamless data flow. The user-friendly interface and mobile accessibility enhance usability, while compliance management and data security features ensure regulatory adherence and protect sensitive information. Customizable reports and performance analytics provide valuable insights for management, while the employee self-service portal empowers employees with access to their records, promoting transparency and trust in the system.

Table 9.0: Features and Functions of the Proposed Employee Satisfaction on Compensation System

Feature	Frequency	Percentage	Rank
Face Recognition	48	17.05%	1
Automated Attendance Tracking	45	7.99%	2
Real-Time Data Processing	44	7.82%	3
Integration with Payroll System	43	7.64%	4
User-Friendly Interface	41	7.82%	5
Mobile Accessibility	40	7.10%	6
Compliance Management	39	6.93%	7
Error Reduction	38		8
Data Security	37	6.74%	9
Customizable Reports	35	6.21%	10
Notifications and Alerts	34	6.03%	11
Employee Self-Service Portal	32	5.68%	12
Leave Management	31	5.50%	13
Performance Analytics	29	5.15%	14
Scalability	27	4.79%	15
Audit Trail	25	4.44%	16
Total	563	100%	

The table and its interpretation reveal that features such as face recognition, automated attendance tracking, real-time data processing, and integration with payroll systems are highly valued by employees. These features directly address significant pain points like attendance accuracy, timely payroll processing, and error reduction, which significantly influence employee satisfaction. Other features, while also important, are essential for overall system functionality and user experience. By prioritizing the implementation and optimization of these top-ranked features, organizations can enhance the effectiveness of their payroll management systems and boost employee satisfaction.

6.3.2 The Conceptual Framework of Proposed Improved Payroll Management System with Face Recognition and Attendance Monitoring Technology

A conceptual framework shown in Figure 1.0 is a theoretical structure or model that outlines the key concepts, variables, relationships, and processes involved in a research study or a specific problem domain. It provides a roadmap or a guide for understanding the phenomena under investigation and helps in organizing thoughts and ideas systematically.

The diagram represents a conceptual framework for the Employee Satisfaction on Compensation System, focusing on the input, process, and output elements:

Input:

- **Compensation Fairness:** Perception of fair pay by employees.
- **System Usability:** Ease of use of the compensation system.
- **Communication Transparency:** Clarity and openness in communication regarding compensation.
- **Employee Data:** Personal and attendance data used in the compensation system.

Process:

- **Face Recognition Technology:** Used for employee identification.
- **Attendance Monitoring System:** Tracks employee attendance.
- **Payroll Management System:** Manages salary, taxes, and benefits.
- **Reporting and Analytics:** Generates reports and provides performance analytics based on compensation data.

Output:

- **Improved Employee Satisfaction:** Results in higher satisfaction levels among employees.
- **Increased Efficiency:** Leads to better operational efficiency in managing compensation.
- **Reduced Errors:** Results in fewer errors in payroll and compensation management.
- **Enhanced Compliance:** Leads to improved adherence to regulations and policies related to compensation.

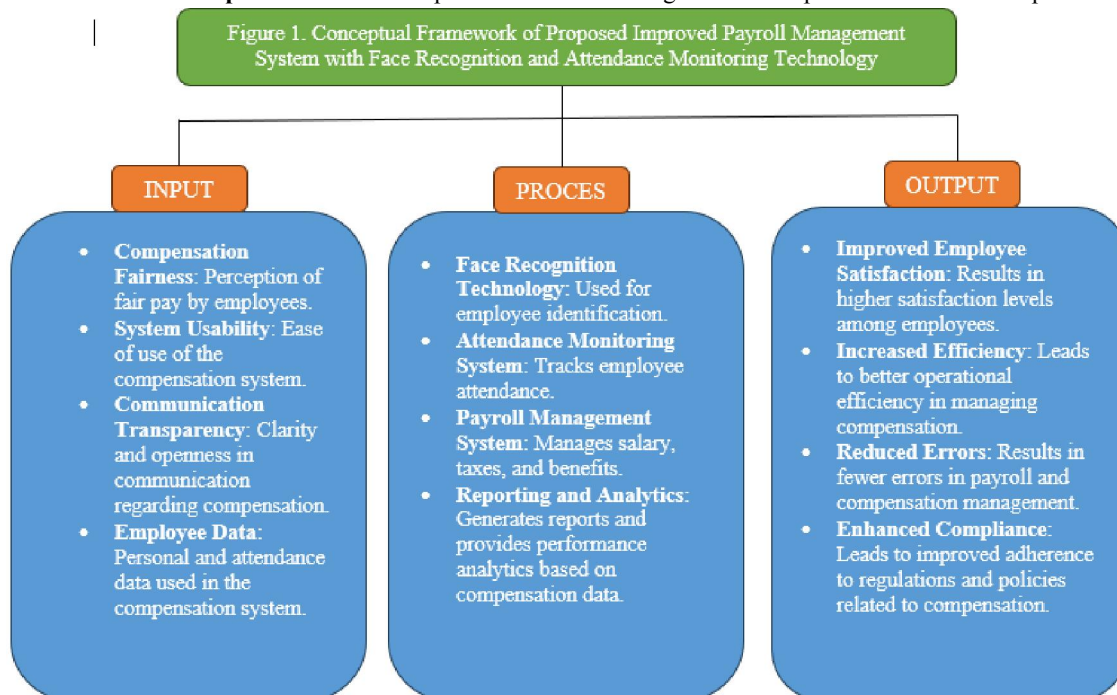


Figure 1.0 The Conceptual Framework of Proposed Improved Payroll Management System with Face Recognition and Attendance Monitoring Technology

6.3.3 The Development Architecture of the Proposed Improved Payroll Management System with Face Recognition and Attendance Monitoring Technology

This diagram in Figure 2.0, illustrates the development architecture of the system, organized into several layers:

User Interface (UI) Layer: Provides interfaces for employees to view attendance, payroll details, and manage leave requests.

- Application Logic Layer: Implements core functionalities such as attendance monitoring, payroll management, and reporting/analytics.
- Data Management Layer: Manages databases containing employee records, attendance logs, and payroll data, with security measures.
- Integration Layer: Handles integration with other systems like HR, financial, and compliance systems through APIs.

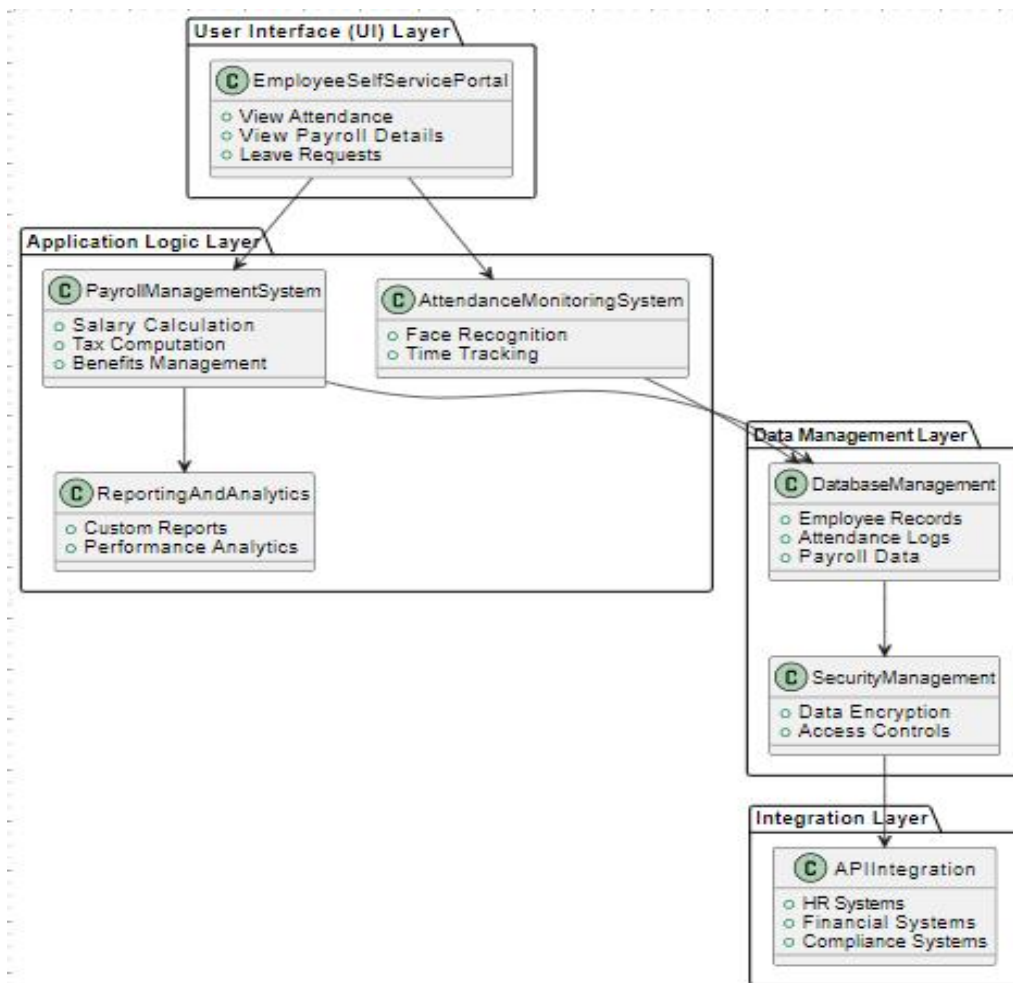


Figure 2. UML Development Architecture of Proposed Payroll System

VII. CONCLUSIONS AND RECOMMENDATIONS

The study on employee satisfaction with the compensation system and the impact of integrating face recognition and attendance monitoring technology into payroll management has provided valuable insights. The evaluation revealed varying degrees of satisfaction among employees, emphasizing the need for improvements in fairness and accuracy. The integration of face recognition and attendance monitoring technology showed promise in enhancing payroll accuracy, reducing errors, and improving overall efficiency. Common challenges in traditional payroll systems, such as

data entry errors and time theft, were addressed with the new technology, leading to increased satisfaction among employees.

Based on the findings, the following recommendations are proposed:

- **Compensation System Enhancement:** Conduct a thorough review of the compensation system to ensure fairness and accuracy, addressing disparities and implementing performance-based incentives.
- **Technology Training and Communication:** Provide comprehensive training and clear communication about the new face recognition and attendance monitoring technology to all employees, addressing any concerns and highlighting benefits.
- **Continuous Feedback Mechanisms:** Establish regular feedback mechanisms to monitor employee satisfaction with the revised compensation system and technology, using surveys and interviews to gather insights for continuous improvement.
- **Data Security and Compliance:** Prioritize data security and compliance with regulations when handling employee data through face recognition and attendance monitoring technology, ensuring privacy and transparency.
- **Monitoring and Evaluation:** Implement a robust monitoring and evaluation framework to track the effectiveness of the new payroll management system, analyzing metrics like payroll accuracy and employee feedback.
- **Empowerment and Engagement:** Foster a culture of empowerment and engagement by involving employees in decision-making processes related to changes in payroll management and technology upgrades, promoting transparency and trust.

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