

# Development of Leave Management Information System

SHEILA MAE S. PAGAYONAN

*Institute of Information and Computing Studies, Northern Iloilo State University,  
Main Campus, Estancia, Iloilo, Philippines*

---

## **Abstract**

Information technology has altered human life by making things easier. Digitalization has been introduced to complement the services provided by various organizations. In this context, the researcher designed and developed a Leave Management Information System that aims to integrate a number of procedures and address a few issues in employee management, such as the need for employee data, leave requests, and leave grant management to be automated and simplified, which will assist the higher education institution in achieving its goal of providing quality and frontline services to its clientele. A developmental-descriptive research design was used in this study. Its usability and performance were evaluated by a total of 193 participants. The information was acquired using the PSSUQ instrument for usability and a researcher-created survey questionnaire for performance efficiency based on the ISO/EIC 9126 standards. Moreover, Rapid Application Development was used as software development cycle model. The results revealed that the functionality of the system product, the level of usability as well as its performance were all interpreted as "Very Good". This significant result indicated that the produced system features impressed the respondents. It is suggested that the LMIS must be fully implemented in all campuses in the university.

**Keywords:** Leave Management, Rapid Application Development, Higher Education Institution, Organizational Performance, Information System

---

Date of Submission: 26-05-2022

Date of acceptance: 08-06-2022

---

## I. INTRODUCTION

Leave is generally defined as a right granted to officials and employees not to report for work with or without pay as maybe provided by law and as the rules prescribe [1]. Leave plays an important role in attaining organizational performance [2]. Employees' use of their leave rights has a favourable and considerable impact on organizational performance [3] and it strengthens family resilience in general. Family is the most important social group in Filipino culture; it is "the center of their universe" [4]. Filipino identity is typically and strongly defined by close-knit family ties [5][6]. Spending time even for a short parental leave can affect father engagement in childcare and home chores in the long run [7].

Centralization is a recurring theme in the organizational structure of modern higher education institutions (HEI) [8]. It is hard to imagine a well-functioning higher education institution without a well-functioning administration [9]. Benefits of leave for employee and organizational performance achievement will not be achieved optimally when leave management is not going well. Poor leave management affects intention to leave and a low prevalence of burnout [10]. This demonstrates how good leave management can improve productivity in terms of physical, mental, and emotional health.

Employee satisfaction can be maintained by effective leave management [11]. With this implementation, employee performance can be improved by using management information systems in the workplace [12]. One of the organizational units in HEI is the Human Resource Office. At present, employees' data, requesting for leave, checking leave balances and gaining approval is done manually. This method is time-consuming, error-prone, requires additional paperwork, and is difficult to maintain.

## Quality Assurance and Management

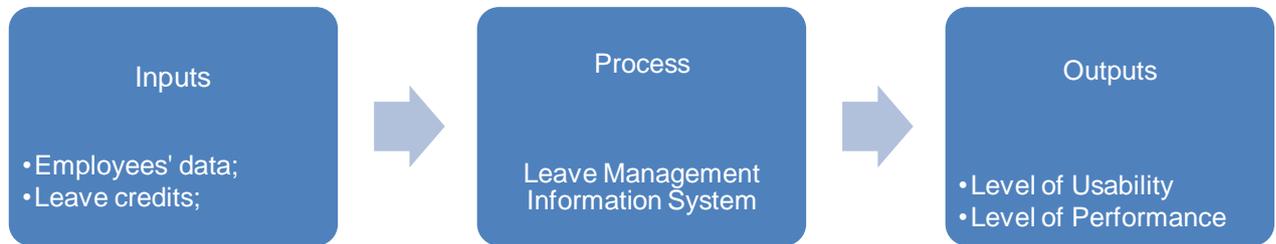
142

In this context, this study is aimed at developing a web-based leave management information system which would take advantage of advances in information technology to manage employees' data, leave requests, and leave grant management. It also sought to determine the level of functionality and usability of the proposed features as regarded by user groups and to assess their performance in terms of information reliability and time efficiency as viewed by target users.

**1.1 Conceptual Framework of the Study**

Figure 1 presented the conceptual framework of the study. The inputs were the essential part of the system in order to produce relevant output of reports such as the following: employees' data and leave credits. The data inputs were securely processed and managed by the Leave Management Information System for a better output. The system's outputs included organized electronic records of employees' data, quick retrieval of relevant papers, and a methodical approach to leave management request and approval.

**Figure 1. The Conceptual Framework of the Study**



**1.2 Objectives of the Study**

The main objective of the study is to design and develop a web-system that is simple and complete for the convenience of Human Resource Management Officer (HRMO) and employees of Northern Iloilo State University, Estancia, Iloilo in pursuit in achieving high and quality organizational performance,

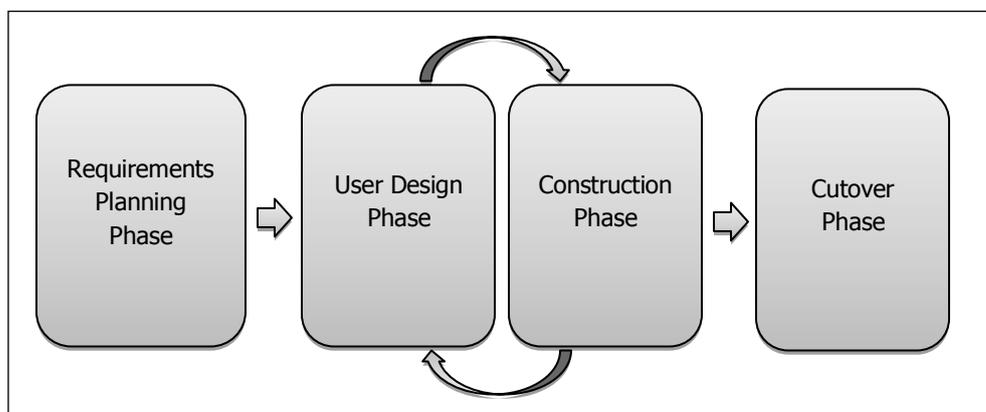
The researcher also determines the level of functionality, usability and performance of the Leave Management Information System.

**II. METHODOLOGY**

**2.1 Software Development Life Cycle Model**

For the software development activities, the study used the Rapid Application Development (RAD) paradigm as the software development life cycle. Prototypes are used in the RAD model as a working model that is integrated into the final product [13]. Prototyping and iterative development are required. The planning required for building the product is included in the process of writing the program. A prototype is an essentially equivalent functioning model of a product component [14]. Users are given the prototype to test and provide feedback, after which it is re-analyzed and changed, and a second prototype is created. The cycle repeats itself until users and developers agree on a final system [15].

The RAD model consisted of four phases namely requirements planning phase, user design phase, rapid construction phase and cutover phase [16]. At each phase, the researcher performs specific activities leading to the phase's deliverable. Figure 2 shows the RAD model.



**Figure 2. The Rapid Application Model**

**2.2 Physical Network Topology**

The physical network topology visualized the communication schemes of physical networks and its arrangement. The physical network topology illustrates the placement of the components in the network. It

showed the configuration of cables, computers, and other devices. Since the system was a web-based system. It can run on one or more computer in a network and can be accessed via a web browser using an assigned Internet Protocol (IP) Address of the server where the program and manipulation of data were stored. Figure 3 shows the physical network topology of the system.



**Figure 3. Physical Network Topology of the System.**

### **2.3 Application Architecture Model**

The application architecture model describes the recommended layouts for the core functions. The diagram depicted the hierarchy of the proposed system's primary logical components. Logical architecture identifies the software components required to implement a solution, displays their interdependencies, and distributes them along logical levels. The physical distribution of components and functions on servers, computers, networks, and remote sites was the focus of tiers. The N-tier architecture was used in this research. Client-server architecture divides the system's functionality into services, each of which is offered by a separate server. Clients are those who use these services and must connect to servers in order to do so [17]. It consists of four layers namely the presentation layer, the application and logic layers also known as the business layer, the data manipulation layer, and the database layer.

The presentation layer, often known as the graphical user interface (GUI), integrated the functionalities that allowed the user to interact with the system. The display layer was executed at the web browser via local hosting in the server version of Leave Management Information System. The business layer enclosed the required business logic and implemented the system's principal functionality. The suggested system's data manipulation layer implemented the procedures involving the maintenance of records. The database, tables, and records were all handled by the My Structured Query Language (MySQL) database server.

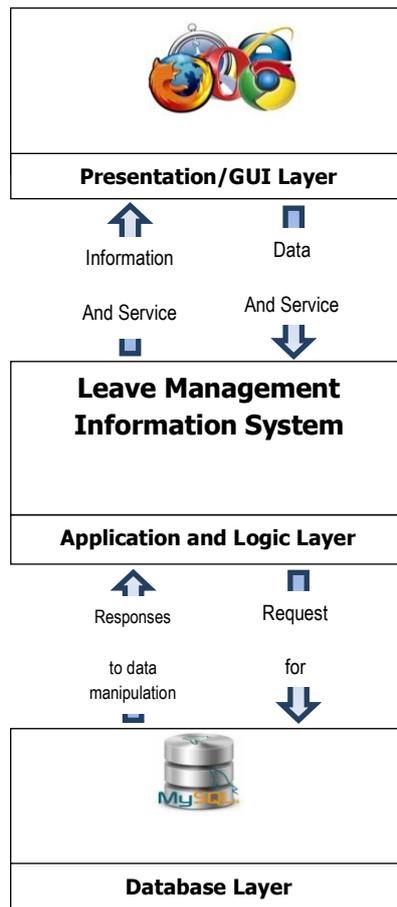


Figure 4. Application Architecture Model of the System.

### III. RESULTS AND DISCUSSION

The results obtained are as discussed below:

#### 3.1 Functionality of the System Product

The table below shows the result of the respondent’s feedback on the functionality of the system product in terms of functional appropriateness, functional correctness, and functional completeness. On the extent of designing the system product to end-users, the functional appropriateness (M= 4.52), functional correctness (M=4.65) and functional completeness (M=4.70) were described as “Very Good”.

These findings simply suggested that with the system product when implemented, the recording of employees’ data, as well as leave credits earned, leave grants approval to target end-users, had a high level of suitability. The recording and retrieving of employees’ records in electronic format were provided in a fast and efficient way. As needed by the users, the system product should enhance the day to day transactions being provided to the clientele. Table 1 shows the results.

Table 1. Respondents’ Feedbacks on the Functionality of the System Product.

Implementation Indicators	Mean	Verbal Interpretation
a. functional appropriateness	4.52	Very Good
b. functional correctness	4.65	Very Good
c. functional completeness	4.70	Very Good

Legend: 1.00-1.80 (Poor); 1.81-2.60 (Fair); 2.61-3.40 (Average); 3.41-4.20 (Good); 4.21-5.00 (Very Good);

#### 3.2 Level of Usability

Usability features is the ability of the system product to be understood, learned, operated, accessed and provides visual appearance, under specified settings of the system. The level of usability of the system was evaluated in terms of understandability, learnability, operability, accessibility, and user interface aesthetics. The respondents’ feedbacks for the level of usability in terms of understandability (M=4.62), learnability (M=4.74), operability (M=4.72), accessibility (M=4.61), and user interface aesthetics (M=4.59) were all interpreted as

“Very Good”. Findings revealed that the system product, when utilized, possessed a high level of usability wherein end-users were able to easily understand due to its simple design and features. Table 2 shows the result.

**Table 2. Respondents’ Feedbacks on the Usability of the System Product.**

Implementation Indicators	Mean	Verbal Interpretation
a. understandability	4.62	Very Good
b. learnability	4.74	Very Good
c. operability	4.72	Very Good
d. accessibility	4.61	Very Good
e. user interface aesthetics	4.59	Very Good

*Legend: 1.00-1.80 (Poor); 1.81-2.60 (Fair); 2.61-3.40 (Average); 3.41-4.20 (Good); 4.21-5.00 (Very Good);*

### 3.3 Performance Evaluation of the System Product

Performance is the capability of the system product to provide total effectiveness in relation to the utilization of resources. The performance of the system was evaluated in terms of reliability and efficiency. The results showed that the performance of the system product in terms of reliability (M=4.71) and time efficiency (M=4.68) were all interpreted as “Very Good”.

Findings revealed that the system product upon evaluation was able to manage employees ‘data and leave management in the day to day transactions of the Human Resource Office. The respondents believed that the throughput procedure and response time were outstanding. The system product was able to deliver actual results and capable of assisting in the day to day transactions of the office. The most important transactions such as, leave credits monitoring of NISU employees and updating of employees’ data primarily catered the daily activities of Human Resource Office. Table 3 shows the performance evaluation of the system product.

**Table 3. The Performance Evaluation of the System Product.**

Implementation Indicators	Mean	Verbal Interpretation
a. reliability	4.71	Very Good
b. time efficiency	4.68	Very Good

*Legend: 1.00-1.80 (Poor); 1.81-2.60 (Fair); 2.61-3.40 (Average); 3.41-4.20 (Good); 4.21-5.00 (Very Good);*

## IV. CONCLUSION

In view of the results of the study, the following conclusions were arrived:

The Leave Management Information System was able to handle daily transactions concerning employees’ data, leave credits monitoring, and leave request and approval which was an important aspect of the university’s quality management system in providing excellent services to its employees.

Furthermore, due to its straightforward design and features that are simple to comprehend, access, and apply, the Leave Management Information System proved to be user-friendly.

Leave Management Information System was made conveniently and rapidly available for use by the individual in need, which was an excellent organizational practice.

In terms of accuracy and timeliness of information given to clients, the system met the expectations of the HRMO and the Faculty and Staff of NISU Estancia, Iloilo, Philippines.

## V. RECOMMENDATIONS

From the findings and conclusions of the study, the following recommendations were strongly suggested:

1. Since automation and computerization were adapted and used in most offices and schools, it may be suggested that the Leave Management Information System shall be implemented and used by Northern Iloilo State University to help the HRMO in managing records of employees and leave management as good practice in the performance of an organization.
2. The university may continue to update the system which may help to maximize its potential and improve its functionalities, usability, and efficiency.
3. A similar study should be made with the integration of Short Messaging Systems (SMS) Technology for notifications of leave request and approval.
4. Since NISU is composed of seven campuses, it is highly recommended that the University replicates the system for better practice of the organization.
5. Furthermore, it is suggested that another study shall be conducted to modernize the LMIS and put it online for centralized leave management and effective method of tracking leave request.

## REFERENCES

- [1] Civil Service Commission. (n.d.). *Amendments to the Omnibus Leave Rules*. Civil Service Commission - The Official Website of the Philippines Civil Service Commission. <https://www.csc.gov.ph/phocadownload/MC1998/me41s1998.pdf>
- [2] S. I. Wahjono, *Manajemen Sumber Daya Manusia*, 1st ed. Jakarta: Salemba Empat, 2015.
- [3] M. O. J. Yurchisin, Park, Jihye, "Effects of ideal image congruence and organizational commitment on employee intention to leave.," *J. Retail. Consum. Serv.*, Vol. 17, No. 5, Pp. 4064-14, 2010. <https://doi.org/10.1016/j.jretconser.2010.04.002>
- [4] Jocano FL. (1970). Maternal and child care among the Tagalogs in Bay, Laguna, Philippines. *Asian Studies*. 8:277-300.
- [5] Medina B. (2001) *The Filipino family*. 2nd ed. University of the Philippines Press; Diliman.
- [6] Wolf D. (1997) Family secrets: Transnational struggles among children of Filipino immigrants. *Sociological Perspectives*. 40:457-482.
- [7] M. Tamm, "Fathers' parental leave-taking, childcare involvement and labor market participation," *Labour Econ.*, Vol. 59, Pp. 184-197, 2019. <https://doi.org/10.1016/j.labeco.2019.04.007>
- [8] Rytberg, M., Geschwind, L. Organising professional support staff at higher education institutions: a multidimensional, continuous balancing act. *Tert Educ Manag* **27**, 47-58 (2021). <https://doi.org/10.1007/s11233-020-09064-y>
- [9] Olsen, J. P. (2007). *University dynamics and European integration* (pp. 25-54). Dordrecht: Springer.10.1007/978-1-4020-5971-1
- [10] D. V. P. Vermeir, S. Blot, S. Degroote, D. Vandijck, "Communication satisfaction and job satisfaction among critical care nurses and their impact on burnout and intention to leave: A questionnaire study," *Intensive Crit. Care Nursing*, Vol. 48, Pp. 21-27, 2018. <https://doi.org/10.1016/j.iccn.2018.07.001>
- [11] Z. Stacho and K. Stachová, "Outplacement as Part of Human Resource Management," *Procedia Econ. Financ.*, Vol. 34, No. 15, Pp. 19-26, 2015. [https://doi.org/10.1016/S2212-5671\(15\)01596-8](https://doi.org/10.1016/S2212-5671(15)01596-8)
- [12] J. Rusjiana, "Pengaruh Sistem Informasi Sdm Terhadap Kinerja Stuctural Equation Modeling SEM-PLS.," *J. Comput. Bisnis*, Vol. 10, No. 1, Pp. 21-29, 2016.
- [13] Mulder, P. (2017). Rapid Application Development (RAD). Retrieved from ToolsHero: <https://www.toolshero.com/information-technology/rapid-application-development/> on July 10, 2016.
- [14] Ali, K. (2017). A Study of Software Development Life Cycle Process Models. *International Journal of Advanced Research in Computer Science*, 8(1).
- [15] Dennis, A., Wixom, B. *Systems Analysis and Design*, Ch.1 p. 8-14
- [16] Somerville, I. *Software Engineering*, 9th ed.
- [17] Somerville, I. *Software Engineering*, 9th ed.