



Development of the Proposed Human Resource Formation Management Information System (SIM-UFS) Surabaya State University

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Abstract. This study seeks to create a proposed information system for managing human resources. This research is crucial for the State University of Surabaya, a PTN-BH, as it aims to meet the growing demands for efficiency, transparency, and quality in human resource management. The system is intended to streamline and enhance all stages of the recruitment process, from submitting proposals to evaluating selection outcomes. By incorporating technology, the process is expected to become more efficient, accelerate decision-making, and minimize the risk of human error. The development process for this system begins with identifying needs, followed by project planning, system analysis, system design, software development, system testing, implementation, user training, evaluation and maintenance, as well as monitoring and improvement. The findings indicate that the newly developed Proposed Human Resource Formation Management Information System (SIM-UFS) at Surabaya State University operates and functions effectively.

Keywords: employee formation, human resources, information systems.

1 INTRODUCTION

The creation of a management information system proposed by new employees at the State University of Surabaya represents a forward-thinking initiative to address the need for greater efficiency, transparency, and quality in human resource management. This system aims to streamline and enhance the entire recruitment process, from submitting proposals to evaluating selection outcomes. By incorporating technology, the process is expected to become more efficient, accelerate decision-making, and minimize the likelihood of human error.

This system enhances transparency and accountability by automatically documenting and organizing all interactions and decisions associated with the recruitment process. This documentation facilitates the monitoring and evaluation of each step in the recruitment process, thereby supporting institutional accountability and adherence to relevant recruitment policies and standards.

This information system serves as an effective tool for managing new employee proposals and enables comprehensive data analysis. With the collected information, university management can assess recruitment policies, identify trends, and plan for future human resource needs. Additionally, its integration with existing personnel systems facilitates the automation of administrative tasks for new employees, such as generating decision letters, managing payroll, and handling health insurance.

The significance of this system also stems from the university's commitment to enhancing user experience. With an intuitive interface, everyone involved in the recruitment process—ranging from the employee submitting the proposal to the selection committee and the human resources department—can interact with the system more efficiently and effectively.

In addition to enhancing internal efficiency, the development of this information system is also forward-looking in addressing external factors, particularly the evolving regulations and recruitment standards. The continued use of this system aims to foster a human resource management environment that is more adaptive, efficient, and aligned with best practice standards..

Research by Ardiansyah et al. demonstrated that implementing a formation system streamlines the proposal process and speeds up verification and validation, thereby improving the overall efficiency of the formation issuance process [1]. Research by Desi et al. highlighted the inseparability of technological components from system implementation. The synergy between technology and its use by employees is evident in the system's workflow, which includes input, process, and output subsystems. The effectiveness of information systems depends on how well these inputs, processes, and outputs align with organizational needs [2].

By optimizing human resource management, improving efficiency, and ensuring regulatory compliance, the development of a new employee proposal management information system at the university is a strategic investment that supports sustainable growth and institutional progress in a better direction.

2 METHODS

The approach utilized in creating an online course as a learning management system in this research follows the waterfall model. As per Pressman [3], the waterfall development model is a methodical and traditional model. One advantage of the waterfall approach is the fixed and organized nature of its stages, making it easy to implement. It is particularly suitable for products with clearly defined initial needs to minimize errors. Furthermore, software developed using this approach generally yields high-quality results. The system development process adopts the waterfall model in the following manner.

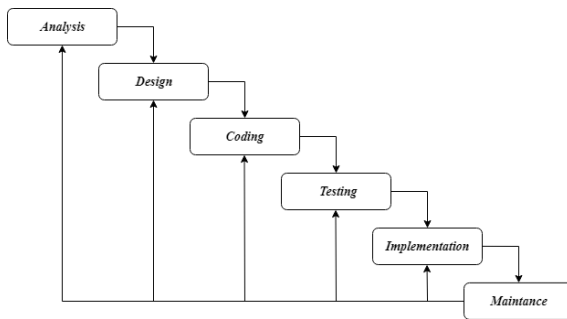


Fig. 1. Waterfall model.

The stages of system development in this study are described as follows.

a) Analysis

Analysis was conducted to produce a draft of the information system model to be developed. Literature studies and field studies were carried out through questionnaires and interviews with respondents consisting of lecturers and education staff in the field of personnel around the State University of Surabaya. The results of the study were then analyzed for system needs so that a draft of the proposed management information system model for the formation of Unesa human resources was obtained.

b) Design

During this phase, the system design phase is conducted based on the findings of the system requirements analysis. The objective of system design is to present a comprehensive overview of the necessary tasks. It also assists developers in configuring the hardware and creating the overall software system architecture. Tools such as data flow diagrams, entity relationship diagrams, and data structure and discussion are utilized for system modeling. System design enhances the focused and organized nature of the system development process. Additionally, it is employed to outline how the business logic identified in the analysis will be technically implemented.

c) Coding

In the coding phase, programs are developed according to the system design that has been created.

d) Testing

The purpose of system testing is to verify that the system is operating correctly and performing as anticipated. The system's capabilities and efficacy will be assessed to identify any shortcomings and inadequacies, which can then be addressed to enhance the system.

e) Implementation

At this stage, the system is ready to be implemented in accordance with the leadership's policy.

f) Maintenance

Once testing has been conducted and the system has been deemed to have passed the test, the system can be put into use. Maintenance is required during the system implementation to ensure its continued functionality.

3 RESULTS AND DISCUSSION

The design of the Proposed Human Resource Formation Management Information System (SIM-UFS) of Surabaya State University consists of several stages, namely:

3.1 Analysis

Interviews and questionnaires were conducted to analyze system requirements. At this stage, several system requirements are obtained which are shown in Table 1.

Table 1. SIM-UFS Unesa requirements

No	Requirements	Information
1	Proposed Formation Period	Add, edit, delete, view proposed formation period
2	Bezetting Lecturer to Student Ratio	Add, edit, view lecturer and student ratio
3	Proposed Formation	Add, edit, delete, view proposed formation data
4	Rekap Occupation	Bezetting recap data available
5	Recap of Proposed Formation	Recap data of the proposed formation is available

3.2 Design

SIM-UFS Unesa which is designed is divided into 2 types of users, namely: Central Manager and Unit/Faculty Manager shown in Figure 2.

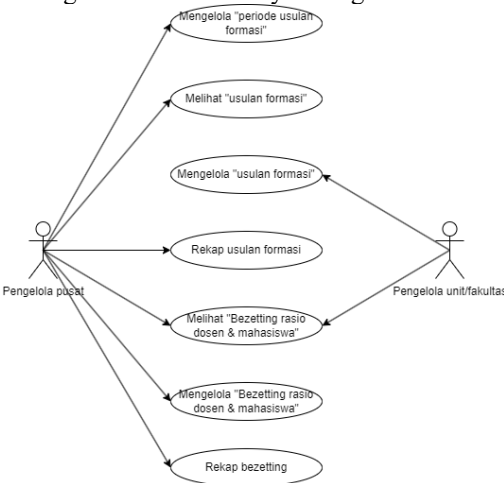


Fig. 2. Use Case Diagram

3.3 Coding

3.3.1 Menu of the proposed formation period

It is a menu used to view, add, edit and delete the proposed formation period that can be accessed by the central manager. The menu display of the proposed formation period is as shown in Fig 3.

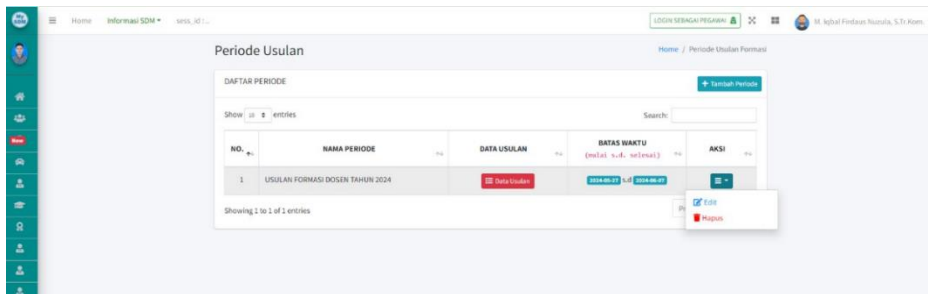


Fig. 3. Display of the "proposed formation period" menu

3.3.2 Menu of proposed formation

This is a menu used to add, edit and delete formation proposals for central organizers. Meanwhile, for the center manager, this menu is useful for seeing the proposed formation proposed by the unit/faculty manager. The display of the proposed formation menu for the central manager as shown in Fig 4.

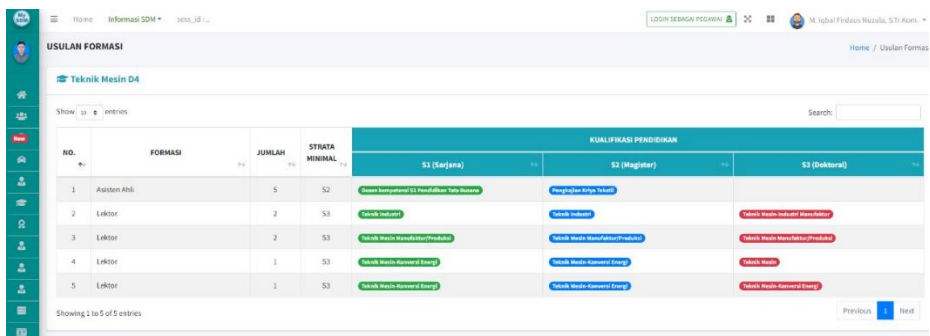
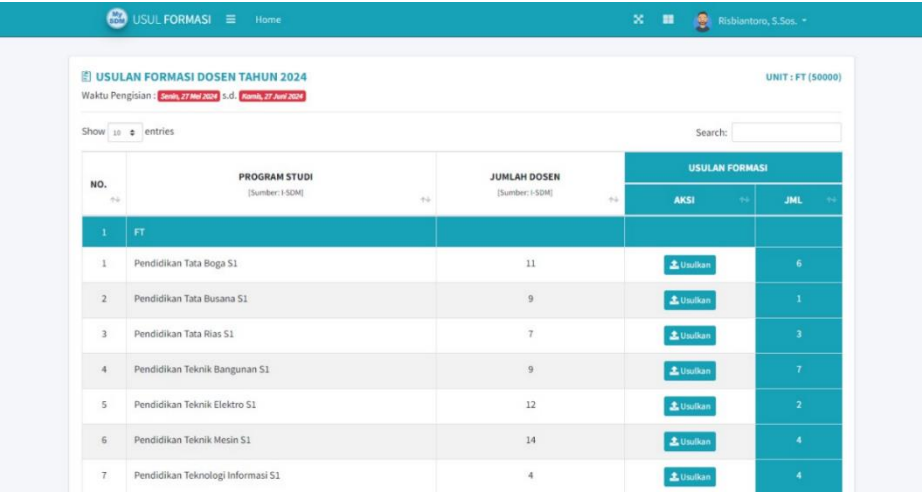


Fig. 4. Display of the "proposed formation" menu of the center manager

Meanwhile, the display of the formation proposal menu for unit/faculty managers as shown in Fig 5.

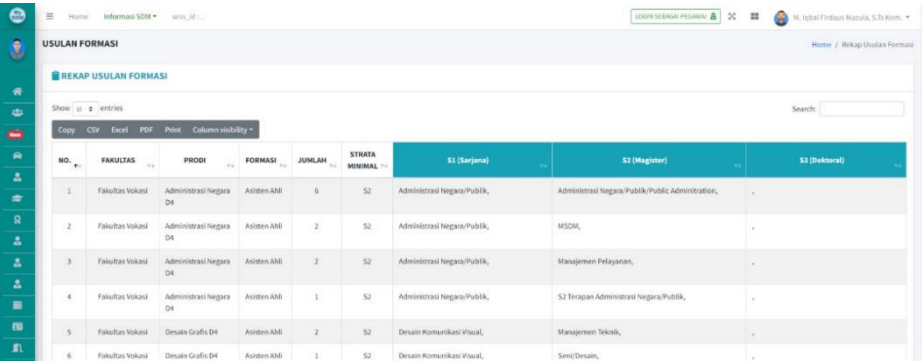


NO.	PROGRAM STUDI	JUMLAH DOSEN	USULAN FORMASI	
			ARSI	JML
1	FT			
1	Pendidikan Tata Boga S1	11	Usulkan	6
2	Pendidikan Tata Busana S1	9	Usulkan	1
3	Pendidikan Tata Rias S1	7	Usulkan	3
4	Pendidikan Teknik Bangunan S1	9	Usulkan	7
5	Pendidikan Teknik Elektro S1	12	Usulkan	2
6	Pendidikan Teknik Mesin S1	14	Usulkan	4
7	Pendidikan Teknologi Informasi S1	4	Usulkan	4

Fig. 5. Display of the "proposed formation" menu for unit/faculty managers

3.3.3 Menu of proposed formation recap

It is a menu used to view and download the recap data of the formation proposals submitted by unit/faculty managers which can be accessed by the central manager. The display of the proposed formation recap menu is as shown in Fig 6.



NO.	FAKULTAS	PRODI	FORMASI	JUMLAH	STRATA MINIMAL	S1 (Sarjana)	S2 (Magister)	S3 (Doktoral)
1	Fakultas Vokasi	Administrasi Negara D4	Aristem ABB	6	S2	Administrasi Negara/Publik,	Administrasi Negara/Publik/Public Administration,	-
2	Fakultas Vokasi	Administrasi Negara D4	Aristem ABB	2	S2	Administrasi Negara/Publik,	MISDM,	-
3	Fakultas Vokasi	Administrasi Negara D4	Aristem ABB	2	S2	Administrasi Negara/Publik,	Manajemen Pelayanan,	-
4	Fakultas Vokasi	Administrasi Negara D4	Aristem ABB	1	S2	Administrasi Negara/Publik,	S2 Terapan Administrasi Negara/Publik,	-
5	Fakultas Vokasi	Desain Grafis D4	Aristem ABB	2	S2	Desain Komunikasi Visual,	Manajemen Teknik,	-
6	Fakultas Vokasi	Desain Grafis D4	Aristem ABB	1	S2	Desain Komunikasi Visual,	Seni/Desain,	-

Fig. 6. Display of the "proposed formation recap" menu

3.3.4 Menu of Bezetting for lecturer and student ratio

It is a menu used for data on the ratio of the number of lecturers and students. The display of the bezetting menu as in Fig 7.

The screenshot displays a web application interface for 'BEZETTING DOSEN DAN MAHASISWA'. It features a sidebar with navigation icons and a main content area with a table titled 'USULAN FORMASI DOSEN TAHUN 2024'. The table has columns for 'NO.', 'PROGRAM STUDI', 'DOSEN (AKTIF & TB)', 'MAHASISWA', 'RASIO (DOSEN/MAHS)', and 'USULAN FORMASI'. The 'DOSEN' section includes 'DOSEN S-DOK', 'DOSEN BARU', and 'TOTAL DOSEN'. The 'MAHASISWA' section includes 'MAHS (SARAFUS)', 'MAHS BARU', and 'TOTAL MAHS'. The 'RASIO' section includes 'KONDISI UNESA', 'STANDART BAN-PT', and 'PERBUTUHAN DOSEN'. The 'USULAN FORMASI' section includes 'JML' and 'AKSI'.

NO.	PROGRAM STUDI	DOSEN (AKTIF & TB)			MAHASISWA			RASIO (DOSEN/MAHS)			USULAN FORMASI	
		DOSEN S-DOK	DOSEN BARU	TOTAL DOSEN	MAHS (SARAFUS)	MAHS BARU	TOTAL MAHS	KONDISI UNESA	STANDART BAN-PT	PERBUTUHAN DOSEN	JML	AKSI
1	PIP	143	12	155	5799	0	5799				34	
1	Bimbingan Dan Konseling S1	12	2	14	604	0	604	1:45.9	1:40	-4	4	10
2	Bimbingan Dan Konseling S2	5	0	5	39	0	39	1:7.8	1:20	+3.1		10
3	Manajemen Pendidikan S1	13	0	13	635	0	635	1:48.8	1:40	-3	4	10
4	Manajemen Pendidikan S2	5	0	5	152	0	152	1:30.4	1:20	-3		10
5	Manajemen Pendidikan S3	5	0	5	78	0	78	1:15.6	1:10	-3		10
6	Pendidikan Anak Usia Dini S2	5	0	5	54	0	54	1:10.8	1:20	+2.3		10
7	Pendidikan Dasar S2	5	0	5	123	0	123	1:24.6	1:20	-2		10
8	Pendidikan Dasar S3	5	0	5	45	0	45	1:9	1:10	+0.5		10

Fig. 7. Display of the "bezetting lecturer and student ratio" menu

3.3.5 Menu of Bezetting for lecturer and student ratio recap

It is a menu used to view and download bezetting recap data on the ratio of lecturers and students. Display of the proposed formation recap menu as shown in Fig 8.

The screenshot displays a web application interface for 'BEZETTING DOSEN DAN MAHASISWA'. It features a sidebar with navigation icons and a main content area with a table titled 'USULAN FORMASI DOSEN TAHUN 2024'. The table has columns for 'NO.', 'PROGRAM STUDI', 'DOSEN (AKTIF & TB)', 'MAHASISWA', 'RASIO (DOSEN/MAHS)', and 'USULAN FORMASI'. The 'DOSEN' section includes 'DOSEN S-DOK', 'DOSEN BARU', and 'TOTAL DOSEN'. The 'MAHASISWA' section includes 'MAHS (SARAFUS)', 'MAHS BARU', and 'TOTAL MAHS'. The 'RASIO' section includes 'KONDISI UNESA', 'STANDART BAN-PT', and 'PERBUTUHAN DOSEN'. The 'USULAN FORMASI' section includes 'JML FORMASI'.

NO.	PROGRAM STUDI	DOSEN (AKTIF & TB)			MAHASISWA			RASIO (DOSEN/MAHS)			JML FORMASI
		DOSEN S-DOK	DOSEN BARU	TOTAL DOSEN	MAHS (SARAFUS)	MAHS BARU	TOTAL MAHS	KONDISI UNESA	STANDART BAN-PT	PERBUTUHAN DOSEN	
1	PIP	143	12	155	5799	0	5799				34
2	Bimbingan Dan Konseling S1	12	2	14	604	0	604	1:45.9	1:40	-4	4
3	Bimbingan Dan Konseling S2	5	0	5	39	0	39	1:7.8	1:20	+3.1	
4	Manajemen Pendidikan S1	13	0	13	635	0	635	1:48.8	1:40	-3	4
5	Manajemen Pendidikan S2	5	0	5	152	0	152	1:30.4	1:20	-3	
6	Manajemen Pendidikan S3	5	0	5	78	0	78	1:15.6	1:10	-3	

Fig. 8. Display of the "Bezetting for lecturer and student ratio recap" menu

3.4 Testing

The testing phase is carried out to test whether the information system is running in accordance with its function. Testing is done by testing each menu that has been developed. The test results are shown in Table 2.

Table 2. System test results

No	Requirements	Information	Result
1	Proposed Formation Pe- riod	Add, edit, delete, view proposed for- mation period	Success
2	Bezetting Lecturer to Stu- dent Ratio	Add, edit, view lecturer and student ra- tio	Success

3	Proposed Formation	Add, edit, delete, view proposed formation data	Success
4	Rekap Occupation	Bezetting recap data available	Success
5	Recap of Proposed Formation	Recap data of the proposed formation is available	Success

3.5 Implementation

Based on the results of the system test, it shows that SIM-UFS Unesa is ready to be implemented in the Staff section based on the leadership policy.

3.6 Maintenance

To improve the quality of the system and meet the needs of users, it is necessary to carry out maintenance at all times on the Unesa SIM-UFS system.

4 CONCLUSION

SIM-UFS Unesa has been designed, built, and can run and function as needed. To improve effective and efficient services, it is necessary to conduct user evaluations and improve the system based on evaluations.

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