

Prototype Of A Web-Based Human Capital Information System Using Scrum Method

Yumaika Nistia Aziza^{1,2}, Leon Andretti Abdillah^{1,2,3,4*}

¹ Information Systems Department, Universitas Bina Darma (UBD), Indonesia

² Enterprise Systems Group of Research (ES-GoR), Research Center of ICT Innovation Smart Systems & Data Science, UBD, Indonesia

³ Research Fellow, INTI International University, Malaysia

⁴ Research Fellow, Chung Hua University, Taiwan

^{1,2} Jalan Jenderal Ahmad Yani No. 3, Palembang, Indonesia

Sur-el : yumaika92@gmail.com¹, leon.abdillah@yahoo.com^{2*}

*Correspondence Author

Abstract: The Human Capital Information System (HCIS) is software that manages staff data, payroll, and other everyday duties in the Human Capital sector. The Human Resources Management System aims to increase performance and eliminate mistakes in business processes to aid operational operations in the human resources department, particularly in recruiting, personnel data management, wage calculations, and promotions. While the system construction pipeline follows an SCRUM strategy for pipeline planning, which includes storyboarding (product owner) based on features to be generated, a product backlog, sprints, daily SCRUM, and sprint reviews, we also utilize qualitative data collecting approaches. This IS is connected with employee attendance, the human resource management system may help gather data and information on employee attendance in an accurate and efficient manner, as well as speed up and reduce mistakes in computing employee wages.

Keywords: HCIS, Payroll, Promotion, Recruitment, SCRUM.

Abstrak: Human Capital Information System (HCIS) adalah perangkat lunak yang mengelola data staf, penggajian, dan tugas sehari-hari lainnya di sektor Human Capital. Sistem Manajemen Sumber Daya Manusia bertujuan untuk meningkatkan kinerja dan menghilangkan kesalahan dalam proses bisnis untuk membantu operasional operasional di departemen sumber daya manusia, khususnya dalam perekrutan, pengelolaan data kepegawaian, perhitungan gaji, dan promosi. Meskipun pipeline konstruksi sistem mengikuti strategi SCRUM untuk perencanaan pipeline, yang mencakup storyboard (pemilik produk) berdasarkan fitur yang akan dihasilkan, product backlog, sprint, SCRUM harian, dan tinjauan sprint, kami juga menggunakan pendekatan pengumpulan data kualitatif. IS ini dihubungkan dengan kehadiran pegawai, sistem manajemen sumber daya manusia dapat membantu mengumpulkan data dan informasi kehadiran pegawai secara akurat dan efisien, serta mempercepat dan mengurangi kesalahan dalam penghitungan gaji pegawai.

Kata kunci: HCIS, Penggajian, Promosi, Rekrutmen, SCRUM.

1. INTRODUCTION

Currently, information technology (IT) plays an important role in facilitating the dissemination of information. This is because almost every industry, including business, education, health, banking, government, and others, uses IT systems to assist and simplify

management systems for managing information. Especially in business, from data entry and management to data transmission and reception. Information systems are critical business enablers for success in competitive situations [1]. At this time, humans are presented with very sophisticated digital technology [2] facilities complete with automation in their daily lives.

Enterprise systems help organizations develop a more disciplined culture. Because business requires movers and executors, namely humans, the company can be defined as having these human resources [3]. One part of the company that plays an important role is the personnel sector [4]. Human resources (HR) operations manage, plan, coordinate, and oversee the day-to-day operations of any business. The initial HR was known as Human Resources or resources. Along with the development of organizations, technology and knowledge-based economies, the term has shifted to human capital [5]. Common practices in HCM [6] include selection and recruiting, performance review, and remuneration.

PT Muba Daya Pratama (MDP) is a company that operates in the power generation sector, namely a company that produces electrical energy using turbine engines with energy produced from gas as the main ingredient for power generation. Company PT MDP currently does not have its own portal that supports HC work, such as recruitment, payroll and promotion work which are still done manually. PT MDP struggle to successfully manage and optimize their human capital owing to the complexity of the components involved, such as recruitment, payroll, and promotion.

A number of studies discussing human capital information systems are used as references in this research, including: 1) The Influence of Compensation and Information Technology on Permanent Lecturer Performance (KIDO) at Bina Darma University [7] offers a quantitative investigation on how remuneration

and information technology affect the performance of permanent instructors at Bina Darma University. The results show a favorable relationship between salary and performance, as well as information technology and performance. The study suggests that remuneration and information technology are critical variables in improving the performance of permanent professors, 2) Knowledge Management Systems Analysis and Planning for Employees Recruitment and Training [8] gives an insightful examination of the role of knowledge management systems in employee recruiting and training. The study focuses on the PT SCF (Limited) Palembang branch, which experiences difficulties in sharing and transferring information among coworkers. To solve these challenges, the authors propose developing a web-based knowledge management system (KMS). The KMS was created utilizing the object analysis and design process and the Unified Modeling Language (UML). The essay emphasizes the advantages of a well-designed KMS in enhancing employee performance in the HR department, notably in terms of employee recruiting and training. The study adds to the existing literature on knowledge management systems and their function in improving organizational performance, and 3) Human Resources Business Process Technical Skill Improvement [9] emphasizes the relevance of technical skills in HR procedures and offers suggestions for improving them. The authors suggest that HR practitioners must learn technological skills like data analysis and HR analytics in order to better understand employee

behavior and make educated decisions. They also emphasize the need of HR professionals remaining up to date on technological innovations and utilizing them to drive HR operations like as recruiting, training and development. The article focuses on the advantages of employing HR analytics to uncover trends and patterns in employee behavior, which may assist enhance employee engagement and retention. Overall, the essay gives great insights on the significance of technical skills for HR professionals and the role of technology in improving HR procedures, 4) Human Capital Management System Using the Scrum Method" is the work of students at the University of Muhammadiyah Jakarta in their research discussing the development of a human resources or human capital system design which includes recruitment features, employee data management, attendance and salary calculations [10]. None of these studies have discussed the topic of HCIS with a concentration on Recruitment, Payroll and Promotion.

Based on the background above, the author carried out research entitled "Design and Development of a Website-Based Recruitment, Payroll and Promotion Information System at PT Muba Daya Pratama Using the SCRUM Method". This research can improve human resource management (HR) at PT MDP.

2. RESEARCH METHODOLOGY

Research methodology section that discusses: 1) Time and Place of Research, 2)

Data Collection Methods, and 3) System Development Methods.

2.1 Research Time and Location

The time period used by researchers to carry out this research was eleven months (February to January). The location for this implementation was PT Muba Daya Pratama which is located at Jalan Raya Palembang - Sekayu (Talang Duku), Taja Jaya Indah, Betung District, Banyuasin Regency, South Sumatra 30958.

2.2 Data Collection

The data collection technique uses qualitative methods with the aim of obtaining appropriate data so that each problem can be solved. The author collected 2 (two) types of data, primary data and secondary data [11]: 1) Primary Data: data received directly from the study object; this data is gathered via observations and interviews with respondents, and 2) Secondary data refers to previously available information from other sources. Secondary data included in this study includes research literature, journals, and e-books.

2.3 Systems Development

The system development method used in designing the system in this research uses the SCRUM method [12] as a framework that can help generate value through adaptive solutions to complex problems. Scrum is a prominent agile software development methodology created by Jeff Sutherland and his development team in the early 1990s [13]. The Scrum method is a

methodology included in agile software development [14]. Scrum is considered to be able to produce good quality software according to user wishes, can be used in large and small projects, and is easy to adopt changes [15].



Figure 1. SCRUM Process

The stages used in the SCRUM method are 6 components, namely as follows: 1) Product Backlog, 2) Sprint Planning, 3) Sprint Backlog, 4) Daily Scrum, 5) Sprint Review, and 6) Sprint Retrospective.

The Product Backlog is an evolving, organized list of what is required to improve the product. The Scrum Team relies only on this supply of labor.

Sprints are the core of Scrum, where ideas are transformed into value [12].

Sprint Planning kicks off the Sprint by outlining the tasks that will be completed throughout it. The whole Scrum Team collaborated to build the resultant strategy.

The Sprint Backlog consists of the Sprint Goal (why), the Product Backlog items chosen for the Sprint (what), and an executable strategy for delivering the Increment (how).

The Daily Scrum is used to assess progress toward the Sprint Goal and alter the Sprint Backlog as needed, changing impending planned tasks. Daily Scrums boost communication, identify barriers, encourage

speedy decision-making, and thereby avoid the need for further meetings. Developers are not just permitted to make changes to their plans at the Daily Scrum. They frequently convene throughout the day for in-depth conversations regarding adjusting or rescheduling the remainder of the Sprint's work.

The Sprint Review's objective is to examine the Sprint's outcome and provide recommendations for future changes. The Scrum Team reports on their work to key stakeholders, and progress toward the Product Goal is addressed. The Sprint Review is the Sprint's second-to-last event, with a time limit of four hours for a one-month sprint. For shorter Sprints, the event is generally smaller.

The Sprint Retrospective is intended to create strategies for improving quality and effectiveness. The Sprint Retrospective finishes the Sprint. A one-month Sprint has a maximum time limit of three hours. For shorter Sprints, the event is generally smaller.

3. RESULTS AND DISCUSSION

The outcome of this research was the prototype of a Human Capital Information Systems (HCIS) website that included numerous completed SCRUM methodology sprint evaluations. A prototype website is also developed and will be presented during the sprint review stage. We sometimes visit the website to see what fresh advancements are taking place. and determine if the product under development satisfies demands. If everything has been

completed, the website can be operated effectively.

3.1 HCIS Homepage

The home display (Figure 2.1) at the admin login can be seen from the home display image, there are four menus which have sub menus, namely recruitment with a job description menu, list of candidates and payroll with a sub menu for attendance, salary list, pay slip, and promotion with a sub menu for salary list and appraisal. employees while more with the news sub menu and log out.

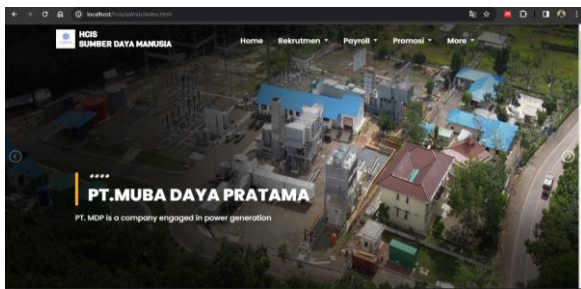


Figure 2.1 Job Description

Meanwhile, the home display on the employee login (Figure 2.2) has five menus without sub menus, namely the home menu, absences, salary, personal data and news.

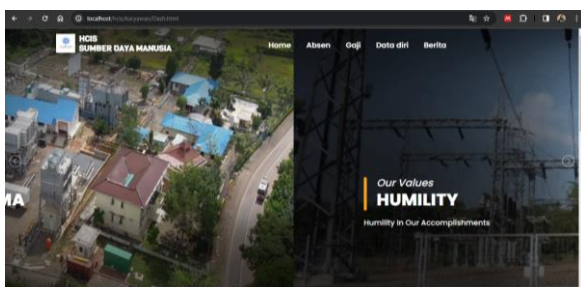


Figure 2.2 Job Description

3.2 Recruitment

Recruitment is a crucial process in every firm that involves identifying, evaluating, and selecting competent individuals for job openings.

Recruitment is critical for selecting the proper personnel to work on the project. Recruitment is an effort to search for a certain number of prospective employees who meet the requirements so that from them the company can select the most appropriate people to fill existing job vacancies [16]. Some of the requirements needed when recruiting human resources or workforce [17] include: Job specifications and Government Regulations.

3.2.1 Job Description

The job description display (Figure 3) is a form that includes information on the employee's name, position, and responsibilities, as well as instructions on how to execute the assignment and the requirements for doing so.

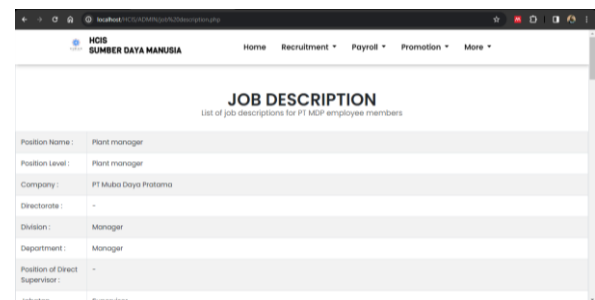


Figure 3. Job Description

3.2.2 List of Candidates

The candidate list display (Figure 4) includes a list of candidates who are applying for positions at PT Muba Daya Pratama.

Nama	E-mail	Nomor telepon	Pengalaman	Pendidikan terakhir	Posisi lamaran	Doc pendukung
Rako Anggwa	rako52@gmail.com	082398784534	5 tahun	SI	Operator	unduh
Joddy	joddy0@gmail.com	082395780923	8 tahun	SMK	Operator	unduh
Irfan	Irfan_76@gmail.com	082398784534	4 Tahun	D3	Maintenance	unduh
Winggi	winggi9@gmail.com	082398784534	4 tahun	SI	Maintenance	unduh
Ade ray	Ray_22@gmail.com	082398784534	6 tahun	SMA	Driver	unduh

Figure 4. Applicants Data

3.3 Payroll

Payroll is a crucial component of every organization's HR management system. It entails the computation, processing, and distribution of employee salaries and wages. Payroll plays a critical function in ensuring that employees are paid correctly and timely.

3.3.1 Presence

Employee attendance is an important aspect in determining payroll. Employee attendance may be recorded in a website-based human capital information system utilizing the Scrum process in a variety of ways, including online via a website or handwritten time sheets.

This Presence display (Figure 5) summarizes employee attendance data collected from accounts that are absent from work, home from work, ill, on leave, or on leave.

MDP	Tanggal	Jam Masuk	Jam Keluar	Keterangan	Lokasi
MDP-700002	01 Februari 2024	08:00	17:00	Kerja Penuh	Laki
MDP-700003	2 Februari 2024	08:30	16:30	Kerja Penuh	Takut kijing
MDP-700007	01 Februari 2024	08:00	16:00	Kerja Penuh	Isaia B
MDP-700029	2 Februari 2024	08:30	16:30	Kerja Penuh	Isatong duku

Figure 5. Presence Recapitulation (Admin)

Meanwhile, Figure 6 shows a display of employee Presences from the employee login, where employees may be absent through the internet, making it easier for employees to take Presences.

ABSENCE FORM
Please fill in the form

Tanggal: 19/03/2024

Jam Masuk: 07:42:24

Jam Keluar: [input field]

Jam Lembur Masuk: [input field]

Jam Lembur Pulang: [input field]

Tipe Absen: [dropdown menu]

ID Karyawan: [input field]

[Simpul]

Figure 6. Presence Input (Employee)

3.3.2 Payroll Computation

Payroll computation is the process of establishing the total amount of earnings and salaries that will be given to employees based on their hours worked, grades, and other criteria. Payroll computation may be automated in a website-based human capital information system that follows the Scrum methodology to assure accuracy and efficiency.

The list of employee wages below calculates salaries automatically (Figure 7) without the need for input; however, if additional workers are added, you must still provide their names, IDs, positions, and status.

PAYROLL
List of PT MDP employee salaries for the period

MDP	Nama	Jabatan	gaji	lembur	tanjangan	Uang Makan	Transportasi	BPJS	JHT	Pensiun	PKH	Slip keasalahan
MDP-700002	agus	Senior Operator	854000	50000	50000	450000	300000	26000	13000	13000	13000	906000
MDP-700007	andhe	Operator	854000	50000	50000	450000	300000	26000	13000	13000	13000	906000
MDP-700022	aulia	Operator	854000	50000	50000	450000	300000	26000	13000	13000	13000	906000
MDP-700020	supriatni	Operator	854000	50000	50000	450000	300000	26000	13000	13000	13000	906000
MDP-700030	espal	Operator	854000	50000	50000	450000	300000	26000	13000	13000	13000	906000

Figure 7. Payroll Calculation (Admin)

3.3.3 Salary Slip

A salary slip is a document that contains a complete breakdown of an employee's pay, including deductions, allowances, and other components. Salary slips (Figure 8) may be created automatically and made available to employees using a website-based human capital information system built on the Scrum methodology.

SALARY SLIP
PT Muba Daya Pratama employee salary slips (period)

PT MDP

Nama: [input field] No ID: [input field] Jabatan: [input field] Status: [input field]

Income

Payroll: [input field]

Allowance: [input field]

Overtime: [input field]

Meal allowance: [input field]

BPJS: [input field]

JHT: [input field]

Pensiun: [input field]

PKH: [input field]

Figure 8. Pay Slips (Admin and Employee)

The pay slip (Figure 7) display on both the admin and employee login sites is the same, and the contents of the pay slip do not need to be entered because they are already filled in automatically from the employee payroll.

3.4 Promotion

Promotion is an important part of employee development and career growth in any firm. Performance appraisal [18] is one of the important activities in an organization. Assessments are used to make personal decisions, these assessments are very helpful in providing information about promotions, transfers or employee dismissals.

Promotion is critical in ensuring that individuals are recognized, evaluated, and promoted based on their performance and potential. Position promotion is the transfer of an employee from one position to another higher position and is followed by duties, responsibilities and authority that are higher than the position previously held [19]. Promotion is a dream or goal of employees because if an employee gets a promotion, it means he or she gets compensation given by the agency or company for the performance they have done [20].

3.4.1 Employee Data

Employee data is critical for promotion choices. Employee data may be gathered, saved, and evaluated via a website-based human capital information system that employs the SCRUM methodology to discover possible promotion candidates.

This information (Figure 9) may include performance indicators, talents, education, and work history.

Employee name	Place and date of birth	LIP	NIP	Address	Position	Religion	Blood group	Last education	Employee status	Status	KTP	NPWP	Phone number	Edit
B. SHARITONG T	BAU, 12 OCTOBER 1988	MCP	0710001	BAU	Plant Manager	Islam	O	S2 Teknik	KOTAK	memilih	*****2087	*****05400	*****9692	
YANUAR EFFENDI	PASURUAN, 10 JANUARI 1974	MCP	0710004	Pasuruan	Supervisor mekanik	Islam	A	D3	KOTAK	memilih	*****0888	*****34578	*****3475	
WAKAB	GRESIK, 09 DESEMBER 1971	MCP	0710005	Gresik	Supervisor Teknikal	Islam	O	SMA	KOTAK	memilih	*****00787	*****34588	*****9045	
AGUS ANBAR	PEKANBARU, 31 AGUSTUS 1982	MCP	0710006	Pekanbaru	Senior Operator	Islam	A	S1 Teknik informatika	KOTAK	memilih	*****08427	*****08798	*****0740	
YUSMA NISTA-AZZA	LAMPUNG, 29 MEI 2000	MCP	7100011	LAMPUNG	Administrasi	Islam	B	SMAK	KOTAK	belum memilih	*****9992	*****38789	*****9771	
M. REZKY	PALEMBANG, 10 SEPTEMBER 1997	MCP	7100012	PALEMBANG	Operator	Islam	A	S1	KOTAK	memilih	*****00877	*****54895	*****0771	

Figure 9. Employee Data

The employee data display includes information such as the number, employee name, place, date of birth, gender, ID number, address, position, religion, blood group, last education, employee status, status, KTP, NPWP, and cellphone number.

3.4.2 Employee Assessment

Employee evaluation is the process of determining an employee's performance and potential for future positions and responsibilities. Employee evaluations (Figure 10) can be automated in a web-based human capital information system that employs the SCRUM methodology to assure fairness and impartiality. Performance evaluations, 360-degree feedback, and skill tests may all be part of this assessment.

NO	ASSESSMENT ASPECTS	ASSESSMENT SCORE			
		A 16-20	B 11-15	C 6-10	D 0-5
1. TECHNICAL ASPECTS OF THE JOB					
1.	Work effectiveness and efficiency				
2.	Timeliness in completing tasks				
3.	Ability to achieve company targets/standards				
2. NON-TECHNICAL ASPECTS					
1.	Good administration				
2.	Initiative				
3.	Collaboration & interdepartmental				
3. PERSONALITY ASPECTS					

Figure 10. Employee Assessment (Admin)

The employee evaluation (Figure 9) display below includes an assessment form where HRD may fill in the columns in the score table based on the employee's value.

3.5 Discussions

Discussion is a crucial component of any project, particularly when establishing a website-based human capital information system utilizing the Scrum methodology. In this post, we will look at the system's recruiting, payroll, and promotion processes.

Recruitment is the process of locating, analyzing, and choosing candidates for open positions. Recruitment is critical in ensuring that the correct applicants are picked for a website-based human capital information system built utilizing the Scrum methodology. The project's job description is likely to include criteria such as website development expertise, understanding of Scrum technique, and good problem-solving abilities. The recruiting process would include publicizing the job opening, reviewing applicants, holding interviews, and issuing employment offers.

Payroll is a crucial component of every organization's HR management system. It entails the computation, processing, and distribution of employee salaries and wages. In a website-based human capital information system employing Scrum approach, payroll may be automated to assure accuracy and efficiency. Employee attendance may be recorded using a variety of ways, including biometric attendance systems, time-tracking software, and handwritten time sheets. Payroll calculations might be based on

hours worked, grades, and other criteria. Salary slips may be created automatically and distributed to employees via the system.

Promotion is an important part of employee development and career growth in any firm. Promotion choices may be made utilizing personnel data and assessments in a website-based human capital information system built on the Scrum methodology. Employee data might contain performance indicators, skills, education, and work history. Employee evaluations might include performance appraisals, 360-degree feedback, and competence assessments. Promotion decisions can be automated to maintain impartiality and objectivity.

4. CONCLUSION

The author's study has led to the creation of a website termed HCIS. As a result, the author comes to various conclusions, including: 1) This job description was created using a qualitative approach, using interviews, observations, and data analysis. The goal is to maximize and simplify staff execution, as well as to make it easy for superiors to analyze employee performance levels, and 2) Implementing the Scrum method at PT Muba Daya Pratam has improved the author's competencies as an HRM implementer. This includes User Story/Product Owner, Product backlog, Sprint Planning, Daily Scrum, and Sprint, leading to increased confidence during competency testing.

Based on the findings, the author suggests that PT Muba Daya Pratama: 1) Apply the website design, which aims to improve staff and

employee experience, and 2) Future research aims to add skill enhancement and HRD-related features, as well as a mobile app to facilitate worker access to HRM management data. Human resource management and employee performance evaluations.

ACKNOWLEDGMENT

The author would like to thank the Enterprise Systems Group of Research (ES-GoR) from the Research Center (RC) for ICT Innovation, Smart Systems, and Data Science, which has greatly helped and facilitated this research process.

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