Algorithm with SVD The Implementation of the Weight Product (WP) Method on the Best Employee Selection

The Decision Support System of the Best Employee Selection Implemented by Weight Product Method at PT. Autogrill Services Indonesia

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Abstract- PT. Autogrill Services Indonesia is a private company engaged in the food and beverages selling. There are 8 outlets and 379 employees. To achieve maximum performance within the company environment, PT Autogrill Services Indonesia gives an appreciation to employees in the form of the best rewards every month and year calculated based on certain criteria. PT AutoGrill Services Indonesia needs to have a decision support system to simplify the decision-making process. To meet these needs, a web-based decision support system for selecting the best employees was designed using the weight product (WP) method at PT Autogrill Services Indonesia. The design stage includes needs analysis, context diagrams, data flow diagrams, and designing database tables. This system is web-based, using the programming language PHP and MySQL as database storage. The main features contained in this system include processing user data, outlets, employees, criteria, periods, alternatives, scores, and the calculation of monthly and annual winners. Based on the test results, all system functionality components can run well and by expectations.

Index Terms— DSS, Decision, Reward, Weight Product

I. INTRODUCTION

Employees are one of the main assets for a company. The existence of employees plays an important role either in the implementation or operations in order to achieve business targets[1]. Therefore, companies should always maintain and improve employee performance by means of training, establishing the solid work team, career paths and fulfillment of employee rights and provide rewards or awards for superior employees. Reward is one of the strategies ran by organization or company to motivate its human resources to make more contributions to the company [2]. This is reinforced by the statement by Mangkunegara [3] formulates that performance belongs to inseparable two things namely ability and motivation. The point is in order to achieve optimal

performance quality, it takes not only about the ability, but also employee's motivation. Why? Because, if the company has quality resources, it can directly reach the predetermined target. Giving rewards for employees can be a very important factor because it can motivate employees to work harder and improve performance [4]. So far, most companies have given rewards to superior employees to maintain the best performance of employees, including those carried out by foreign private companies namely PT. Autogrill Services Indonesia.

PT. Autogrill Services Indonesia is a private company engaged in the hospitality sector and food and beverages selling, which is a branch of HMSHost International, headquartered in the Netherlands. PT. Autogrill Services Indonesia located at Ngurah Rai International Airport and has 379 employees as of 23 January 2020 consisting of 50 employees of back office management and 8 outlets/restaurants, which divided into: 37 employees of The Coffee Club Departure, 31 employees of Two Dragons, 58 employees of Two Tigers, 25 employees of La Place Landside, 97 employees of La Place Airside, 60 employees of House of Beans, 6 employees of Urban Food Market, and 15 employees of The Coffee Club Arrival. In order to give appreciation to superior employees, each outlet every month gives awards to the best employees (employee of the month). Winners from each monthly outlet will then be contested again to determine the best employee of the year.

The results of interviews and observations with managers and outlet leaders obtained information that the determination of the best employees so far is still subjective based on the manager's personal assessment and then stored them all in the manager's notebook. The limited capabilities possessed by human resources in this case pointed out on decision making, it became a problem when determining who will be the best employees because there are criteria and alternatives that must be counted. Then, there is no system which expected to manage criteria data and calculations in order to produce the best employee information, so that the employees who do not fulfil the requirement can possibly win to be the best employee and might raise the high intense of toxic work culture among the employees, instead of having difficulty of analysing the employees performance data review within year to year.

Based on the explanation above which have been described previously, a computerized decision support system (DSS) is needed in order to determine the best monthly and annual employees according to predetermined criteria and requirement. This system can be a tool to assist the companies in making decisions. DSS is a form of computer-based information system specifically developed to support problem solving [5]. DSS can also be interpreted as a computerized information system provides interactive support for business people during the decisionmaking process [6]. Another definition explains that DSS is a computer-based system that utilizes certain data and models to help on decision making and problem solving [7]. The aim of The DSS developing is not intended for the final and absolute decision making, but is built to evaluate an opportunity that might be taken through analysis using the available methods. [8].

Weight product is a method used and implemented on a computerized decision support system (DSS). It is a decision-making method with multi-criteria which used to solve the problem [9]. The selection of this method is based on being more efficient, because the time required for the calculation is relatively shorter [10][11] compared to other methods. This method is able to select alternatives and it is also has the advantages in weighting techniques so that it can be called the easiest method to design among other methods [12].

In addition, recent studies have also examined the effectiveness of the weight product (WP) method compared to other methods. Among them are research by Setyawan, Arini & Akhlis [13], which analyses the comparison of the WP and SAW methods in supporting the decision of the new employee recruitment process. The results showed that the WP method gave more accurate results than the SAW method. The same method was also examined by Purnomo & Rozi [14] with a different case study, namely the selection of the best graduates. This study uses two test indicators, namely testing based on the speed of access time and testing RSD (Relative Standard Deviation). The results of the test on the speed of access time and RSD testing, the WP method is more recommended because it is more optimal.

Based on the explanation of the problems and support from related studies, a research was conduted entitled "Implementation of the Weight Product (WP) Method in the Selection of the Best Employees". The purpose of this research is to implement the WP method in a web-based computerized system that can help companies, in this case, PT. Autogrill Services Indonesia in selecting the best employees. The implementation of the weight product (WP) method is considered very relevant in case studies of selecting the best employees based on recent studies that also use the same method.

II. METHOD

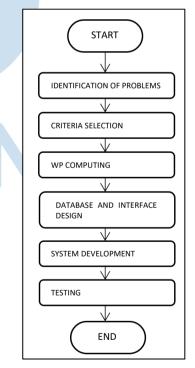
The method used in this research consists of several stages, namely:

A. Data Collection

Data collection was carried out in two techniques, namely primary data and secondary data. Primary data were obtained through direct observation and interviews with the outlet manager of PT. Autogrill Services Indonesia. While secondary data were obtained through documentation and literature from various media such as: internet, journals, and those related literature books.

B. Research Stage

The research steps begin with problem identification, criteria selection, weight product computation, database and interface design, system development, and testing (Figure 1).



Fugure 1. Research Stage

C. Determining the Problem and Selection of Criteria

This research departs from the problem of constrained processes in selecting the best employees. The assessment criteria and the weight of each criterion are shown in Table 1.

TABLE 1. CRITERIA AND WEIGHT ASSESSMENT

No.	KRITERIA	NILAI BOBOT
1	NEATNESS	2
2	SKILLS	3
3	Absence	4
4	LATENESS	4
5	COMPLAIN	5

D. Weight Product (WP) Computing

WP computing is carried out through the following stages:

1) Deteremine criteria

The criteria used as a reference in decision making and the nature of the criteria can be seen in Table 2.

TABLE 2. CRITERIA AND ITS TRAIT

CRITERIA	TRAIT
C1 : NEATNESS	Cost
NEATNESS STANDARDS ARE	REASON: JUDGING FROM
NEEDED AS A CHARACTERISTIC	THE QUANTITY OF
OF A COMPANY TO FOSTER	ATTRIBUTES USED OR NOT
CONSUMER CONFIDENCE IN THE	ACCORDING TO COMPANY
COMPANY.	RULES.
C2 : SKILL	Cost
Employee skills are very	REASON: JUDGED BY THE
IMPORTANT IN COMPLETING	QUANTITY OF DAMAGE OR
VARIOUS JOBS, BESIDES THAT	LOSS OF WORK
EMPLOYEE SKILLS ALSO AFFECT	EQUIPMENT.
THE BUSINESS PROCESS	
ACTIVITIES THAT ARE BEING	
UNDERTAKEN BY A COMPANY.	Com
C3 : Absence	Cost
THE ABSENCE OF EMPLOYEES IS	REASON: THE MORE
A DISADVANTAGE FOR THE	EMPLOYEES DO NOT COME
COMPANY, BECAUSE THE	TO WORK, THE LOWER THE
ABSENCE OF ONE OR MORE	PERFORMANCE
WORKERS WILL AFFECT THE	APPRAISAL.
PERFORMANCE OF THE TEAM IN	
GENERAL.	
C4 : DELAY	Cost
Employee tardiness is an	REASON: THE MORE
DISCIPLINARY ACTION THAT	OFTEN EMPLOYEES ARE
RESULTS IN DISRUPTION OF	LATE FOR WORK, THE
ACTIVITIES WHEN CHANGING	LOWER THE ASSESSMENT
WORK SHIFTS BETWEEN	SCORE WILL BE.
COMPANY EMPLOYEES. THIS	
CAN CAUSE A LOSS TO YOUR	
TEAMMATES.	
C5 : COMPLAINT	Cost
CUSTOMER COMPLAINTS	REASON: THE MORE
AGAINST EMPLOYEES ARE	COMPLAINTS CUSTOMERS
DETRIMENTAL FOR THE	GIVE TO EMPLOYEES, THE
COMPANY. BECAUSE	LOWER THE EMPLOYEE'S

CRITERIA	TRAIT
COMPLAINTS ARE THINGS	PERFORMANCE
WHICH SHOW THAT THE	APPRAISAL.
EMPLOYEE CANNOT WORK	
PROPERLY ACCORDING TO	
SERVICE STANDARDS THAT	
EXIST IN THE COMPANY.	

2) Weight Normalization

Normalization of weights is calculated by dividing the weight of each criterion by the sum of all the weights of the criteria. Normalization of weights using the equation:

$$Wj = \frac{W}{\Sigma Wj} \tag{1}$$

 Determining the value of the vector S The value of the vector S, is calculated using the following equation:

$$Si = \prod_{j=1}^{n} X_{ij}^{Wj} \tag{2}$$

 Determining the value of vektor V The vector value to be used calculates the preference (Vi) for ranking. Here is the equation:

$$Vi = \frac{\prod_{j=1}^{n} Xij^{wj}}{\prod_{j=1}^{n} Xj^{wj}}$$
(3)

5) Ranking the vector values V The next step is to rank the value of Vi from each alternative. The alternative with the highest Vi value is the best alternative in supporting the decision.

E. Database and Interface Design

I

In designing the table structure, this decision support system consists of: tb_alternatif, tb_pemenang, tb_vector, tb_karyawan, tb_outlet, tb_normalisasi_bobot, tb_perhitungan, tb_kriteria, tb_user, tb_temp_skor, tb_skor, dan. The relationship between tables is described as follows:

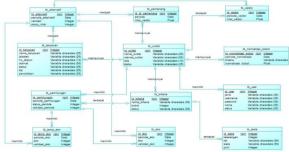


Figure 2. Conceptual Data Model

The system interface consists of the main page, login page, profile page, outlet manager page,

alternative data page, criteria data page, calculation process page, monthly winner list page, annual winner list page, outlet data page and user data page. The designed interface will display information that can be accessed by outlet managers, operational managers and employees of PT. Autogrill Services Indonesia.



Figure 3. Interface Design

F. Testing

Testing this decision support system using the black box testing method. This method is used to evaluate software without having to pay attention to details and only checks the output value based on the input value [17]. Blackbox testing is carried out to find several errors, namely: (1) there are missing or even incorrect functions; (2) interface design errors; (3) errors in the data structure or database; (4) faults in terms of performance; and (5) termination and initialization errors [18].

III. RESULTS AND DISCUSSION

The initial stage in the study was observation and interviews. Observations were made by coming directly to PT. Autogrill Services Indonesia to observe and find out further the information about problems and solutions to these problems. The next data collection is to conduct an interview with Ahyat Yatendra as the outlet manager of PT. Autogrill Services Indonesia. From all data collection techniques, information is obtained about the best prospective employee data, and what criteria are needed in determining the best prospective employee.

To determine whether or not an employee is eligible to win the best employee competition at PT. Autogrill Services Indonesia then determined 5 criteria that must be met by employees, which later these criteria will be used as a reference for the company in making decisions.

TABLE 3. CRITERIA

No	CRITERIA
1	NEATNESS
2	SKILLS
3	Absence
4	LATENESS
5	Complaint

From the provisions of these criteria, then the weight of each criterion is determined which determines the level of importance.

No	CRITERIA	WEIGHT VALUE	STATUS
1	NEATNESS	2	Cost
2	SKILLS	3	Cost
3	ABSENCE	4	Cost
4	LATENESS	4	Cost
5	Complaint	5	Cost

After determining the criteria and the weights of these criteria, the next step is to describe the definition and weighting of the rating scale of these criteria.

A. Neatness

Neatness is needed as a characteristic of a company to foster consumer confidence in the company.

TABLE 5. NINETY ASSESSMENT SCALE

SCALE	DESCRIPTION
1	NOT WEARING ATTRIBUTES ACCORDING TO COMPANY RULES MORE THAN 8 TIMES
2	NOT WEARING ATTRIBUTES ACCORDING TO COMPANY RULES AS MUCH 6 – 8 TIMES
3	NOT WEARING ATTRIBUTES ACCORDING TO COMPANY RULES AS MUCH 3 – 5 TIMES
4	Not wearing attributes according to company rules as much $1-2$ times
5	ALWAYS WEAR ATTRIBUTES ACCORDING TO THE RULES

B. Skills

Employee skills are an important indicator in completing various jobs, besides that employee skills also affect the business process activities that are being undertaken by a company.

SCALE	DESCRIPTION	
1	DAMAGE OR LOSE EQUIPMENT MORE THAN 8 TIMES	
2	DAMAGE OR LOSE EQUIPMENT 6 -8 TIMES	
3	DAMAGE OR LOSE EQUIPMENT 3 -5 TIMES	
4	DAMAGE OR LOSE EQUIPMENT 1-2 TIMES	
5	NEVER DAMAGE EQUIPMENT OR REMOVE IT ALTOGETHER.	

C. Absence

Employee absence is a disadvantage for the company because the absence of one or more workers will affect team performance.

TABLE 7. ATTENDANCE ASSESSMENT SCALE

SCALE	DESCRIPTION
1	ABSENT MORE THAN 8 TIMES
2	Absent 6-8 times
3	Absent 3-5 times
4	Absent 1-5 times
5	NEVER ABSENT AT ALL

D. Lateness

Delays can result in disruption of activities when changing work shifts between company employees.

TABLE 8. LATE ASSESSMENT SCALE

SCALE	DESCRIPTION
1	LATE MORE THAN 8 TIMES
2	LATE 6 - 8 TIMES
3	LATE 3 – 5 TIMES
4	LATE 1 – 2 TIMES
5	NEVER LATE AT ALL

E. Complaint

Complaints are things that show that the employee cannot work properly according to service standards that exist in the company.

TABLE 9. COMPLAIN RATING SCALE

SCALE	DESCRIPTION	
1	1 MORE THAN 8 COMPLAINTS FROM CUSTOMERS	
2	COMPLAINTS 6-8 TIMES FROM CUSTOMERS	
3	COMPLAINTS 3-5 TIMES FROM CUSTOMERS	
4	COMPLAINTS 1-2 TIMES FROM CUSTOMERS	
5	NEVER GOT ANY COMPLAINTS FROM CUSTOMERS	

Calculation

Examples of data from employees who will be selected to be the best employees are with 3 employees as follows:

TABLE 10. EMPLOYEE DATA	
-------------------------	--

Criteria	NAUFAL	DWI	WAWAN
NEATNESS	1	2	3
Skills	2	1	4
Absence	1	2	3
LATENESS	1	2	2
COMPLAINT	2	3	1

TABLE 11. EMPLOYEE VALUE DATA WITH SCALE

Criteria	NAUFAL	DWI	WAWAN
NEATNESS	2	2	3
Skills	2	2	3
Absence	2	2	3
LATENESS	2	2	2
COMPLAINT	2	3	2

Score = \sum (criteria weight *x* rating scale value) TABLE 12. EMPLOYEE FINAL VALUE DATA

Criteria	NAUFAL	DWI	WAWAN
NEATNESS	4	4	6
Skills	6	6	9
Absence	8	8	12
LATENESS	8	8	8
COMPLAINT	10	15	10

The steps for calculating the Weight Product (WP) method from the above case examples are as follows:

1) Find an alternative

In the example calculation method, there are 3 alternative data that will be ranked.

TABLE 13. ALTERNATIVE DATA

No	EMPLOYEE NAME
1	NAUFAL
2	Dwi
3	WAWAN

 Then calculate the normalization of weights, calculate vectors and rank. The previous preference weights are:

$$W = (2,3,4,4,5)$$

Wj is the W index to j. So for W1 is 2, W2 is 3 and so on.

 Σ wj is the sum of W is 2+3+4+4+5. So to fix the W1 weights it becomes:

$$W1 = \frac{2}{2+3+4+4+5} = -0.11111$$

$$W2 = \frac{3}{2+3+4+4+5} = -0.16667$$

$$W3 = \frac{4}{2+3+4+4+5} = -0.22222$$

$$W4 = \frac{4}{2+3+4+4+5} = -0.22222$$

$$W5 = \frac{5}{2+3+4+4+5} = -0.27778$$

Using the equations described previously, the vector values for each criterion are obtained as follows:

$$S1 = (4^{-0.11111}) (6^{-0.16667}) (8^{-0.22222}) (8^{-0.22222}) (10^{-0.27778}) = 1.133126$$

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$$S2 = (4^{-0.11111}) (6^{-0.16667}) (8^{-0.22222}) (8^{-0.22222}) (15^{-0.27778}) = 1.118945$$

$$S3 = (6^{-0.11111}) (9^{-0.16667}) (12^{-0.22222}) (8^{-0.22222}) (10^{-0.27778}) = 1.108697$$

Calculating Preference (Vi) for ranking, the results are as follows:

$$V1 = \frac{1.133126}{1.133126 + 1.118954 + 1.108697} = 0.369007$$

$$V2 = \frac{1.118954}{1.133126 + 1.118954 + 1.108697} = 0.329701$$

$$V3 = \frac{1.108697}{1.133126 + 1.118954 + 1.108697} = 0.301293$$

From the calculation results above, the highest value is obtained by V1. In other words, V1 is an alternative that can be chosen as the best employee according to the criteria and weights set by the decision maker.

System Implementation

The main system page can be seen in Figure 4. On this page there are several main menus, namely homepage, company profile and login.



Login Page

User access rights to enter the system are divided into four levels, namely: admin, outlet manager, operations manager, and employees.



Admin Dashboard Page

The admin dashboard page is the main display of admin user access rights when successfully logged into

the system. There is information on the number of users who have registered in the system.

SPR PEMILIHAN KAR	YAWAN TERBAIK
Admin	Selamat Datang admin Admin
 Dashboard Data User 	Bur and DPA Anto Del Bernaro Bal
ලි SprOx	
	Figure 6. Admin Dashboard Page
	Figure 0. Admin Dashboard Fage

User Data Page

On this page, the admin can view user data information. Admin can also make changes to user data if an error occurs, and search user data.

LUTOGRIT	AWAN TERBAIK	ta User					
Admin	Show 12	erities				Search	
de Data Usar	No II	M User	Uversame	Password	Junia Lavel	Status 21	Aksi
() Sign Out	1	023	admin	1234	Admin	Akdv	Of Lines
	2	U26	abyat	1234	Manugor Outlet	AkSv	of Louis
	3	027	pande	1234	Manager Operasional	Aktiv	(film)
	4	U28	dana	1234	Manager Outlet	Aktiv	(Charles
	5	025	eaulal	1234	Karyavan	Aktiv	Of Lines
	6	030	navan	1254	Karyanan	Aktiv	of the

Figure 7. User Data Page

Add User Data Page

Admin can add new user data, by filling out a form consisting of name, username, password, type, outlet, and status. The condition for adding user data is that all fields cannot be empty. If it is empty, the system will give a warning that there is data that has not been filled in.

OPK PEMILIHAN KARYA	WAN TERBAIK			
	Tambah Data User			
UTOGRIL	Nama			
Admin	Username			
Deshboard	Password			
Data User	Jeris	Manager Operasional	÷	
9) Sign Out	Outlet		~	
	Status	Aktiv	÷	
		Detal Tambah		
	E		dd Usen Data	

Figure 8. Page Add User Data

Outlet Manager Dashboard page

This page is the main display of the outlet manager when successfully logged into the system. Managers can view active employee data information that has been registered in the system. On this page there is a dashboard menu, employee data, criteria data, period, alternative data, score data, calculation process and calculation results.



Figure 9. Dashboard Manager Outlet Halaman page

Employee Data Page

On the employee data page, there is a display of employee data information that has been registered in the system. On this page there are also add, change and search textbox buttons that can be accessed by the outlet manager.

Managar Cutled		Data Karyawar	1					
Deshboard	_	v attis					Search.	
Data Karyanan	No Il	ld Karyawan	Nama Karyawan	Jabatan	No Hp	Outlet	Status	Akal
Data Kriteria Periode	1	P17	Naufal	Kasir	085752177225	House Of Bean	Aktiv	Of Lines
Data Alternatif	2	P18	David	Kasir	0819990716121	House Of Bean	Aktiv	Of Liters
nput Skor Prosos Pathitungan	3	P19	Vieven	Kasir	06199902711	House Of Bean	Alley	Of Users
tasil Pahitungan	4.	P26	Kayta	Kask	0817776622	House Of Bean	Aller	Of them
	5	P27	Susart	Waiter	08123456666	House Of Bean	Nev	Gf (Bark
Sign Out	6	P28	Halkal Hannan	Watter	00199933344	House Of Bean	Aktiv	Of Usen

Figure 10. Employee Data Page

Add Employee Data Page

On the add employee data page, there is a form that must be filled out completely and correctly by the outlet manager to add new employee data to be stored in the system by clicking the add button.

	Tambah Data Karyaw	30				
UTOGRU	Anal Outlet	House Of Bean	~	Nama		
Manager Outlet	Alamat			Нр		
C Deshboard						
 Data Karyawan 	KTP			Pendidikan		
 Data Kitteria 	Jabatan	Kasir	~	Status	Aktiv	~
Periode		Detal Tambah				
Data Altenatif						
🛊 Input Skor						
Proses Perhitungan						
🝸 Hasil Perhitungan						
fð Sign Out						

Figure 11. Add Employee Data Page

Change Employee Data Page

On the change employee data page, there is a form that must be completed with complete and correct data according to the new data that will be changed by the outlet manager then the manager clicks the edit button to save the new data into the system.

UTOGRIL	Ubah Data Karyawan Asal Outlet	House Of Bean	~	Nama	Navfal	
Manager Outlet	Alamat	Ji Polonia Tuban		Hp	085792077226	
Deshboard	KIP	5170001011		Pendidikan	Sarjana	
Data Kanyawan Data Kitterla	Jabatan	Kasir	~	Status	Aktiv	v
Periode		East Usak				
P Data Attenutif						
Proses Perhitungen						
Hasil Perhitungan						

Figure 12. Change Employee Data Page

Criteria Data Page

On this criteria data page, there is information on criteria data that has been set by the company. On this page there are buttons add, change, delete, and a search textbox.

SPR PEMILIHAN KARYAWAN TERBAIK									
NDTOGRIL	Data Kri	teria							
Manager Outlet	Tambah								
Dashboard	Show 10 v entries			s	earch:				
 Data Karyawan Data Kaharia 	No	Nama Kriteria	Bobot	Status	Aksi				
Periode	1	Katidakhadiran	3	Cost	🕼 Ubah 📲 Hapen				
Deta Alternatil	2	Katerlambatan	4	Cost	🕼 Ubah 📲 Hapes				
★ Input Skor ₽ Proses Perhitungan	3	Kampiain	6	Cost	Ef Ubah 📲 Hapes				
T Hasil Perhitungan	4	Kerapian	3	Cost	🗹 Ubah 📲 Hapes				
	5	Pujian	6	Benefit	(2) Utub E Hapen				
Sign Out	Showing 1 to 5 of 5 entries				Previous 1 Not				

Figure 13. Criteria Data Page

Add Criteria Data Page

On the add criteria data page, the outlet manager can fill out the form on this page completely and correctly to add new criteria data to the system. The level manager can select the add button to save the criteria data into the system.

Tambah Data Kriteria			
-	Nama Kriteria	Pujian	
Manager Outlet	Bobot	5	
Dashbourd	Keterangan	Mendapat Pujian Dari Pelanggan	
Data Karyanan		Earall	~
Data Kitoria	State 1	0	
Periode 🖉	State 2	102	
kput Skor	Skela 3	3 -= 5	
Proses Petitungen	Shala 4	8	
Hasl Pohlungan			
	Skale 5	>=\$	
Sign Out		Ratal Tandate	

Figure 14. Add Criteria Data page

Period Data Page

On the data page of this period, there is information that displays the data for the period that is currently running on the system. On this page there is an add button to add period data and a save button to save period data.

ATTOORY.	Dat	a Periode		
Manager Outlet	Tankak			
D Dashboard	No	Pariode	Kebaria	Status
Data Karyawan Data Kriteria	1	2120-05-28	Katidakhadiran	Codeh Diserv
Periode	2	2129-05-38	Katerlambatan	Castah Disawe
P Data Alternatil Input Skor	3	2125-05-28	Komplain	Sudah Cisawe
Proses Pethilungan	4	2125-05-28	Kerapian	Dudah Disawi
Hasil Perhitungan	6	2020-05-28	Pujan	Sodah Diseve
				Sadah Salasi Mengid Kiberle 7 Mit Sann I

Figure 15. Period Data Page

Alternative Data Page

On the alternative data page, there is information that displays alternative data that has been saved into the system. On this page there are buttons add, delete, validate and textbox search.

ИТОСКИ	Ť,	Data Altern	atif						
Manager Outlet	Tanta								
Dashboard	Show 1	e entries							Search
Data Karyawan Data Kelteria	No 13	Kode Alternatif	Periode	Id Karyawan	Nama Karyawan	Jabatan	Notio	Outlet	Akul
Pariode	1	A109	2020-5	P19	Waxan	Kasir	08199982711	House Of Bean	🖉 Maldani 📲 Hapan
Data Atlenatif	2	A100	2120-5	P18	David	Kasir	0019998716121	House Of Bean	without Thepat
Input Skor Proses Pethitungen	3	A107	2020-5	P17	Naufal	Kasir	005792077226	House Of Bean	🛩 Valideni 📲 Hapus
Hasil Perhitungan	Showing	to 3 of 3 ontries							Previous 1 No
Sign Out									

Figure 16. Alternative Data Page

Score Data Page

On the score data page, there is information that displays the score data that has been stored in the running system. On this page there is an add button, and a search textbox.

Manager Outlet Dealboard. Show to viettles				
			Search	
Data Kayawan No Periode M Alternatif.	1d Karyewan	Nama Karyawan	Kritoria	Shor
Periode 1 2120-05-28 A109	P19	Wawath	Pujan	1
Data Abenatif 2 2120-05-26 A109	P19	Wasium	Karapian	4
3 2020-05-28 A103	P19	Wawan	Komplain	4
4 2020-05-28 A109	P19	Wawam	Kelarlanbalan	
5 2020-05-20 A109	P19	Wawan	Katidakhadiran	4
Hasil Pehlungan 6 2020-05-28 A108	P18	David	Pujian	2
7 2020-05-20 A100	P10	Devid	Kerapian	3
Sign Out 8 2020-05-28 A108	PfB	David	Keterlambatan	- 3
9 2020-05-20 A100	P18	David	Komplain	6
	P18	David	Katidasha firan	3

Calculation Process Page

On this page, before performing the calculation process the user is asked to select the calculation period according to the user's wishes. After that, you can proceed by selecting the calculation process button.

LUTOGET.	Proses Perh	lungan	
Manager Outlet	Periode	2020-05-28 v Protest Partitiongen	
Deshboard			
Data Karyawan			
Data Kitherla			
Pariode			
 Data Alternatil 			
hput Skor			
Preses Patritangen			
Hasil Perhitungan			
ற் Sign Out			

Figure 18. Calculation Process Page

Calculation Results Page

On the calculation results page, there is information that displays the results of the score calculation which has been completed by the outlet manager. On this page, you can also see information on the calculation results based on the month of the period selected by the outlet manager.

	Devid	3			3		5	1		2
Δ	Wavan	4			6		4	4		1
UTOGRIL										
Manager Outlet										
Deshboard	Norm	alisasi Bobot								
Data Karyawan	Ketklak	Nadiran		Ketorlambata		Komplair		Korapian	P	ijan
Data Kriteria	.0 1570			.0.210526		.0.263150		.0.105263		263158
Periode										
Data Altenati?										
Input Skor	Haal	Perhitungan Ver	tor							
Proses Pehilungan		, en la								
Hasil Pethitungan	No	Id Alternatif	МК	aryawan	Nama Karyawa	n	Asal Outlet		Nilai Vector	
	1	A107	P17		Naufal		House Of Be	an	0.5444095259	5937
Sign Out	2	A108	P18		David		House Of Be		0.2751850490	
	3	A109	P19		Wawan		House Of Be	en	0.1803454249	5669

Figure 19. Calculation Results Page

Operations Manager Dashboard Page

This dashboard page displays data outlets that have been created by the previous operational manager. On this page there is a dashboard menu, data outlets, annual DSS and annual calculation results.

SPR PEMILIHAN KARYAW	AN TERBAIK
Manager Operational	Selamat Datang Pande Manager Operasional Auto Grill Bali
 Dashboard Data Outlet Spik Tahunan 	4 Teal One (3) 77 Auto Get Service (3) 4
₫ Sign Out	
F	Figure 20. Operational Manager Dashboard page

Outlet Data Page

On the outlet data page, there is information that displays outlet data that has been previously stored by the operational manager. On this page there are add, change, and search textboxes.

Manager Operasional	Da	ta Outlet					
Dashboard	Show ut	v atths				Search	
Date Outlet	No. II	Id Outlet	Nama Outlet	Alamat	No Hp	Status	Absi
Spk Tahunan	1	08	Heuse Of Beam	Koborangkatan internetional	0361 111 211	Alter	Of Loss
ት Sign Out	2	09	The Coffe Olyb	Keberangkatan International	0361 849 1919	Aldir	Of Lines
	3	013	LaPlace	International Ball	0812992833	Aktiv	(State)
	4	011	Two Dragons	ngurah nal aliport	0361 334222	Aktiv	St Charl
	Showing 1 to 4	of 4 onlines				Previous	1 Next
	Showing 1 to 4	of 4 ordina				Previous	1 No

Figure 21. Data Outlet Page

Annual Participant Page

On the annual participant page, there is information on employee data for the best employee candidates from representatives of each outlet. On this page there is an assessment form that is filled out by the operational manager completely and correctly.

A	Tahun	2021 •	
Manager Operasional	2	<u>گ</u>	<u> </u>
Centore .	House Of Bean	The Coffee Club	LaPlace
Cella-Culter	Name Analy The Uncertainty	Name Jane	mana naja
Present laterate	Basel Degraft	The Presence	Tana Canada C
Penelong Solution	Surger Despert	Burnerica Burlin Edward I	Index Deput 1
h siye Cur	٤	<u> 온</u>	
	Two Dragons	Urban Food Market	
	New Index (Jacob) Mar Mexican Devices Devices Constant National Televices	Nones, Solor Rad Theorem (and Rad Theorem (and Rad Theorem (and Rad Theore	

Figure 22. Annual Participant Page

Annual Winner Results Page

On this page, the operations manager can see the results of the annual winning scores based on the year selected by the operations manager.

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Manager Operasional	Tahun			2019	- 1444		
antinaet In Cultur							
er la lattar en	there is	* 199810					fearth
wara teran	Tatur .	Ranking	il Gryanan	Nana Karyawan	ALL DATE	Sear Watersons	Kimartar
e Del	2020		69C	Nashe	Fixing CE (wart	34	(Rok Bagos, Hecago on the Helafoelian)
	2029	2	101	Haras Tanaki Kop	Two Tragonsi Lafface	25	Rodel terestakan it side namus leptengue itil senja nego Polen post terak tamak keta kala, suso kurang teras
	200	4	423	Jam.	The Caller Call		with 210
	2025	1	425	Autorian International	Lation Flair Maker	45	Representation for the testing relation of the second of t
	Showing 1 to	b of 5 writes					Pandate
	page 4						

Figure 23. Annual Winner Results Page

Employee Dashboard Page

On the employee dashboard page there is a dashboard menu, monthly calculation results, and annual calculation results that can be accessed by employees to see the results of the assessment from the outlet manager and operational manager based on the period to be selected.



Monthly Calculation Results Page

On the monthly calculation results page, employees can see the assessment results from the outlet manager based on the selected period, but employees cannot change the results of calculations that have been made by the outlet manager, to prevent data manipulation.

SPK PEMILIHAN KARYAWAN	TERD/	лк								
	David	3		3		5		1		2
UUTOGRIL	Wavan	4		5		4		4		1
UTOGRIU										
Karyawan										
Dashboard	Normalisasi Bobot									
Hasil Perhitungan Bulanan	Kotidak	hadiran		Keterlambatan		Komplain		Korapian		Pujian
Hasil Perhitungan Tahunan	-0.157895		-0.210526		-0.263158	-0.263158 -0.105263			0.263158	
Sign Out										
	Hasil	Perhitungan Ve	ctor							
	No	Id Alternatif	ld Ka	ryawan	Nama Karyawan		Asel Outlet		Nilal Vecto	ĸ
	1	A107	P17		Noufal		House Of Be	an	0.5444695	2595937
	2	A108	P18		David		House Of Be	an .	0.2751850	4908394
	3	A129	P19		Warren		House Of Be	an	0.1803454	2455669

Figure 25. Monthly Calculation Results Page

Annual Calculation Results Page

On the annual calculation results page, employees can see the results of the assessment from the operational manager based on the selected year, but employees cannot change the results of calculations that have been made by the operational manager, to prevent data manipulation.



Figure 26. Annual Calculation Results Page

Testing

The test method used is black box. In this test, all system functionality will be tested based on a predesigned scenario.

TABLE 14. SYSTEM TEST RESULT

Scenario	TEST RESULT	INFOR MATIO N
ENTER USERNAME AND PASSWORD CORRECTLY	THE SYSTEM ACCEPTS LOGIN ACCESS AND DISPLAYS THE MESSAGE "LOGIN SUCCESSFUL"	Valid
WRONGLY FILL IN USERNAME AND PASSWORD	THE SYSTEM REFUSES LOGIN ACCESS AND DISPLAYS THE MESSAGE "LOGIN FAILED" Waf Typinge of broken to be needed of	Valid
EMPTY ONE OF THE TEXT-FIELDS ON THE ADD USER FORM	THE SYSTEM DISPLAYS A MESSAGE THAT THE FIELD CANNOT BE EMPTY Name Vienname Passwert 1204 Passwert 1204 Water Untui Food Market v Bases Akt	Valid
FILL IN ALL TEXT- FIELDS ON THE FORM ADD POSITION DATA	THE SYSTEM DISPLAYS A MESSAGE THAT THE DATA WAS SUCCESSFULLY ADDED BERHASIL	Valid
FILL IN THE FORM TO CHANGE USER DATA CORRECTLY	THE SYSTEM DISPLAYS A MESSAGE THAT THE DATA WAS SUCCESSFULLY CHANGED	Valid

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SCENARIO	TEST RESULT	INFOR MATIO N	SCENARIO	TEST RESULT	INFOR MATIO N
	Selanat Data law finana Di Jujak				
SEARCH USER DATA BY KEYWORD	THE SYSTEM DISPLAYS DATA BASED ON THE SEARCHED KEYWORD	Valid	FILL IN THE FORM TO CHANGE EMPLOYEE DATA CORRECTLY	THE SYSTEM DISPLAYS A MESSAGE THAT THE DATA WAS SUCCESSFULLY CHANGED	Valid
EMPTY ONE OF THE TEXT-FIELDS ON THE FORM ADD JOB DATA	THE SYSTEM DISPLAYS A MESSAGE THAT THE FIELD CANNOT BE EMPTY Rest Office reg Galletons Rest Office reg Lines	Valid	SEARCH EMPLOYEE DATA BY KEYWORD	THE SYSTEM DISPLAYS DATA BASED ON THE SEARCHED KEYWORD	Valid
FILL IN ALL THE TEXT-FIELDS ON THE ADD DATA OUTLET FORM	THE SYSTEM DISPLAYS A MESSAGE THAT THE DATA WAS SUCCESSFULLY ADDED BERHASIL	Valid	EMPTY ONE OF THE TEXT-FIELDS ON THE FORM ADD CRITERIA DATA	THE SYSTEM DISPLAYS A MESSAGE THAT THE FIELD CANNOT BE EMPTY	Valid
FILL OUT THE CORRECT OUTLET DATA CHANGE FORM	THE SYSTEM DISPLAYS A MESSAGE THAT THE DATA WAS SUCCESSFULLY CHANGED	VALID	FILL IN ALL TEXT- FIELDS ON THE FORM ADD CRITERIA DATA	THE SYSTEM DISPLAYS A MESSAGE THAT THE DATA WAS SUCCESSFULLY ADDED	Valid
SEARCH OUTLET DATA BY KEYWORD	THE SYSTEM DISPLAYS DATA BASED ON THE KEYWORDS YOU ARE LOOKING FOR	Valid	FILL IN THE FORM TO CHANGE THE CRITERIA DATA CORRECTLY	THE SYSTEM DISPLAYS A MESSAGE THAT THE DATA WAS SUCCESSFULLY CHANGED	Valid
EMPTY ONE OF THE TEXT-FIELDS ON THE ADD EMPLOYEE DATA FORM	THE SYSTEM DISPLAYS A MESSAGE THAT THE FIELD CANNOT BE EMPTY	Valid	SEARCH CRITERIA DATA BASED ON KEYWORDS	THE SYSTEM DISPLAYS DATA BASED ON THE SEARCHED KEYWORD	Valid
FILL IN ALL TEXT- FIELDS ON THE FORM ADD EMPLOYEE DATA FORM	THE SYSTEM DISPLAYS A MESSAGE THAT THE DATA WAS SUCCESSFULLY ADDED BERHASIL	Valid			

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SCENARIO	TEST RESULT	INFOR MATIO N
CONFIRM VALIDATION ADD ALTERNATIVE DATA	THE SYSTEM DISPLAYS A MESSAGE THAT THE VALIDATED DATA CANNOT BE CHANGED ANYMORE	Valid
FILL IN THE FORM ADD ALTERNATIV E DATA CORRECTLY	THE SYSTEM DISPLAYS A MESSAGE THAT THE DATA WAS SUCCESSFULLY ADDED	Valid
PRESSING THE ALTERNATE DATA CLEAR BUTTON CORRECTLY	THE SYSTEM DISPLAYS A MESSAGE THAT THE DATA WAS DELETED SUCCESSFULLY	Valid
FIND ALTERNATIV E DATA BASED ON KEYWORDS	THE SYSTEM DISPLAYS DATA BASED ON THE SEARCHED KEYWORD	VALID
FILL IN ALL SCORE DATA BASED ON CRITERIA AND EMPLOYEE ID	IF ONE EMPLOYEE HAS FINISHED INPUTTING HIS SCORE, THE SYSTEM WILL CONTINUE TO INPUT THE NEXT EMPLOYEE'S SCORE AUTOMATICALLY	VALID
SEARCH SCORE DATA BY KEYWORD	THE SYSTEM DISPLAYS DATA BASED ON THE SEARCHED KEYWORD	Valid

Based on the test results, all system functionality can run well and in accordance with the design results.

IV.CONCLUSION

Based on the discussion and analysis of the results of system testing, it can be concluded that, the Implementation of the Weight Product (WP) Method on the Best Employee Selection at PT. Autogrill Services Indonesia has been successfully applied through a series of stages such as data collection, analysis, design, implementation and evaluation in building the system. This system functionality has been running well and the output results are in accordance with the design results.

The suggestions for development in further research include: adding backup and import database features on a regular basis as well as adding features for managers so that managers can input daily log data into the system.

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