P-ISSN:2528-0260 E-ISSN: 2579-5392
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EVALUATION OF UNDERSTANDING OF SAFETY, HEALTH AND SAFETY (K3) USING THE METHOD CUMULATIVE VOTING (CASE STUDY OF PT. KENCAR SUKSES INVESTAMA)

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ABSTRACT

Every employee who works must understand safety in order to create a conducive work environment and Zero Accident. This study aims to create an Evaluation System for Understanding Safety, Health and Safety (K3) by using the Cumulative Voting Method so that it can optimize the quality of K3 in the company to be more effective and efficient. From the application trial results obtained the results of the validity test between manual data and application data have a difference in the results because the manual workmanship is calculated with a manual averagewithout any cumulativevalue of each item being tested. Application of K3 Comprehension Evaluation with Cumulative Voting Method can also prevent or minimize user input errors

Keywords : *Zero Accident, Cumulative Voting, K3 Understanding Evaluation*

1. INTRODUCTION

The company is one of the agencies that has used information technology in various aspects of activities, including in the evaluation and application of OSH. Every employee who works must understand about work safety in order to create a conducive work environment and zero accident. By utilizing technological advancements information expected to more provide an understanding of the importance of K3 culture to employees. Many things can be done so that employees can understand and understand about K3, for example by reading the manual, safety induction, as well as examinations or training by doing evaluations in order to realize a company that zero accident and ISO standard 9001. Cumulative Voting (CV) is one the easiest method to use in ranking software requirements, this has been investigated in terms of time consumption, scalability, accuracy, ease of use and ease of study, compared to AHP. This method also known as 100 points [1] . For could determine level employee understanding about K3. Party management does training starting from the material, practice and pretest. In everyday pretest data is often not controlled, not to mention the increasing number of employees who do not understand about K3, as a result the management has difficulty in determining the ranking understanding employees about K3. Therefore we need an application that can help the ranking process and facilitate counseling about K3. With is application Evaluation Understanding OSH with the Cumulative Voting Method is expected to help management in the process of K3 counseling. Considering how important K3 is in our scope is not only in the company but outside the company as well. so that it can optimize the quality of K3 in the company to be more effective and efficient.

DOI: https://doi.org/10.54732/jeecs.v5i1.107

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2. ANALYSIS AND SYSTEM DESIGN

In this thesis a K3 understanding evaluation application system will be built using the method *Cumulative Voting* Web-based. By utilizing the method *Cumulative Voting* multilevel in which there are questionnaires and observations. Then it is expected to help the management for knowing level employee understanding in K3 culture. To make this application requires some process data analysis is e xplained with a flowchart.

2.1 Old Model

The current system at PT. Kencar Sukses Investama in evaluating the level of evaluation of K3 understanding is still running manually, an assessment that is only based on training and evaluation data collected in HRD

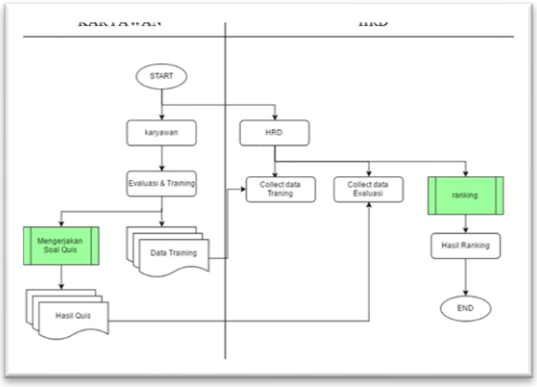

Figure 2.1 Old Model

2.2 New Model

Afteranalyzing the old evaluation system from PT. Kencar Sukses Investama then the next step is to analyzethenew system that will be created. This new system is more systematic and complex. The assessment is more objective because there is a supervisor's role who monitors every behavior of his subordinates. This more complex assessment is expected to meet the needs of company data in ISO 9001 standardization about quality management so that company PT. Kencar Sukses Investama can compete in the international market.

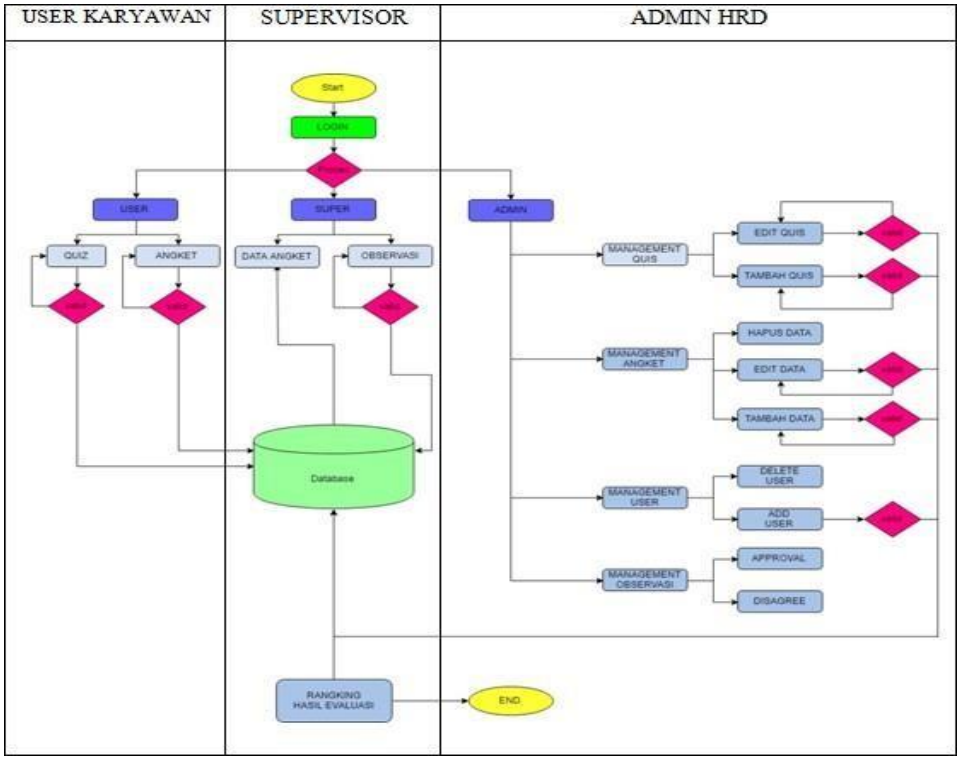

Figure 2.2 System Design Flowchart Will be created

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In the flowchart above there are 3 types of users namely employees, supervisors, and HRD each user has a different function. The employee can only do the test and questionnaire, while the supervisor does the observation task at field and admin or HRD do *maintanance* Data starts from adding data, editing data and deleting data. In this system, the admin can also add new users or new employees which if later registered, the employee has the right to attend training and questionnaires.

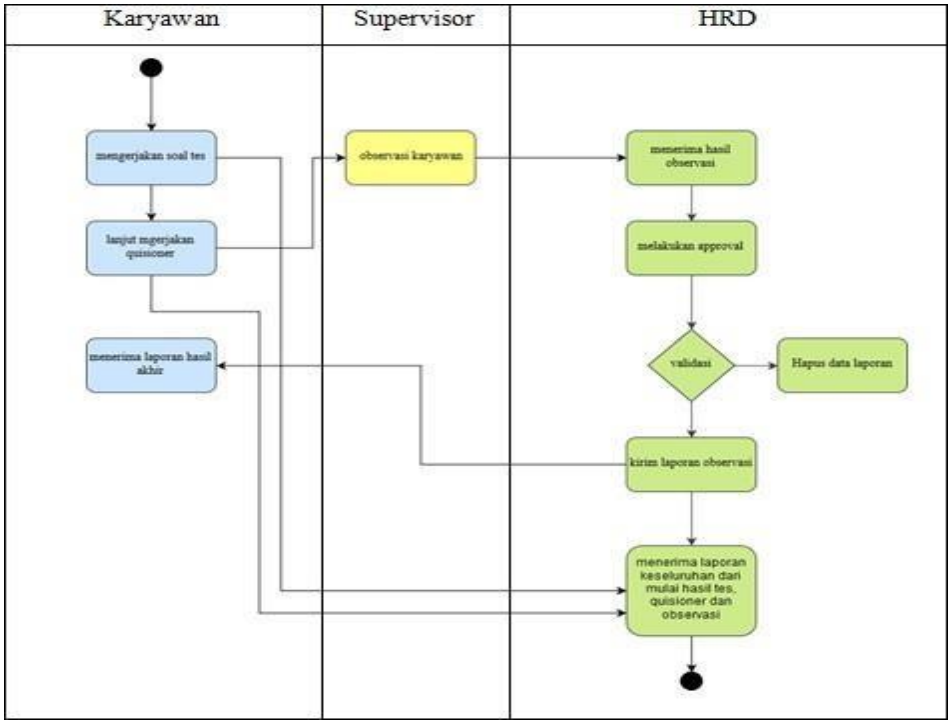

Figure 2.3 Activity Flow Chart Design System To be made

With the activity diagram above, it is expected to make it easier to analyze the flow of the evaluation system of the level of K3 understanding with methods *Cumulative Voting.*

2.3 Entiy Ralationship Diagram

Entiy Ralationship Diagram (ERD) The following is an ERD evaluation program for K3 Comprehension Level which will be made using the Method *Cumulative Voting.*

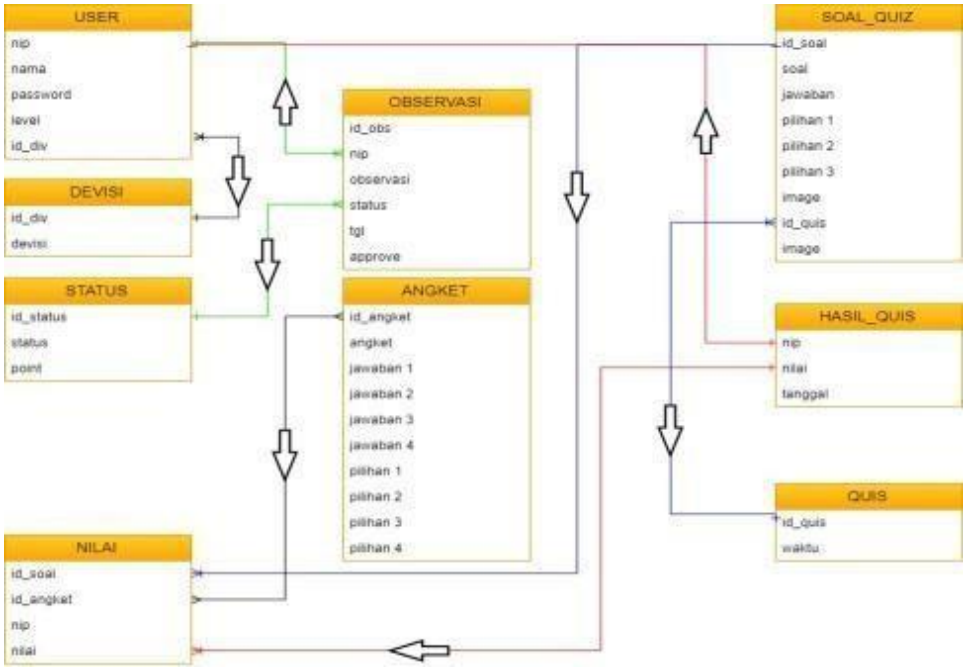

Figure 2.4 Entity Relationship Diagram (ERD) System Program Design

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From the ERD data above all tables have relations with each other, so that an information system is formed where the data are integrated with each other, so parties *management* or HRD has no difficulty in observation and analysis.

2.4 Data Flow Diagrams (DFD)

Following This is a DFD program Evaluation of Occupational Health and Safety (K3) level by using methods *Cumulative Voting.*

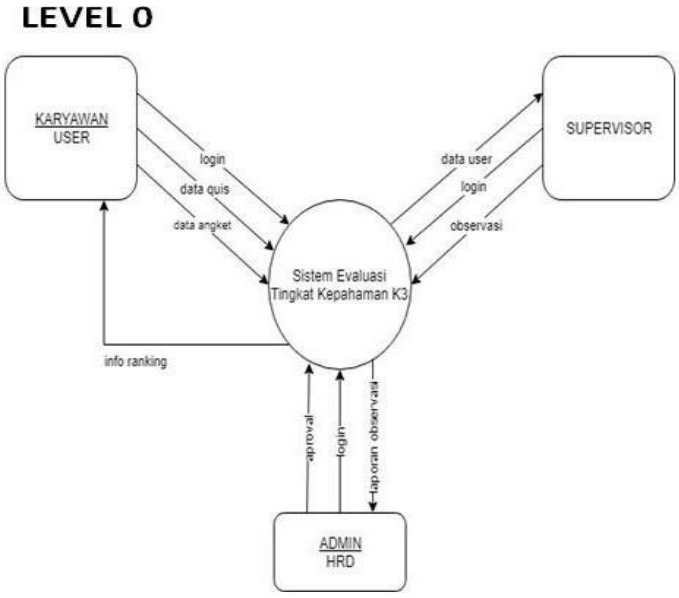

Figure 2.5 Data Flow Diagrams (DFD level 0)

From the level 0 DFD image above, the program flow is explained briefly, namely there are 3 types of users, Super and Admin. The end result of this application is the ranking info where the user knows his assessment of understanding K3, while the supervisor also has an important role in making observations in field against the employee. So all aspects starting from the theory and practice are valued and accumulated all the values that produce the final value in the form of employee ranking data.

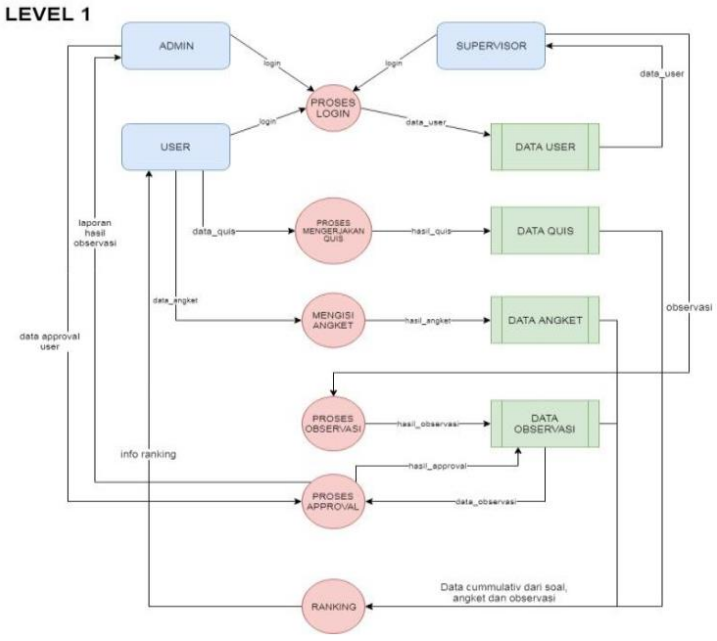

Figure 2.6 Data Flow Diagrams (DFD level 1) Program Design System

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From DFD Image level 1 above explain in more detail the processes running in the program starting from the user, admin and super. For the user the initial process that needs to be done is to log in by entering the NIP and *The password* then fill out the questionnaire followed by working on the questions Further more, super observes in the field related to employee behavior and discipline. For Admin users, namely a manager or HRD where there are facilities to add, change and delete questions tests and questionnaires as well to do *approval* the observations made by the supervisor.

2.5 Interface Implementation

Implementation of the interface is done with every display program that is built. The following is Implementation Expert System interface Diagnosis of Diseases in Apple Plants Using the Backward Chaining Method.

2.6 User Dashboard Menu

The dashboard menu is the firstform thatis run by the user after logging in.

Figure 2.7 User Dashboard Menu

2.7 Super Dashboard Menu

The dashboard menu is the first form that the Supervisor runs after logging in.

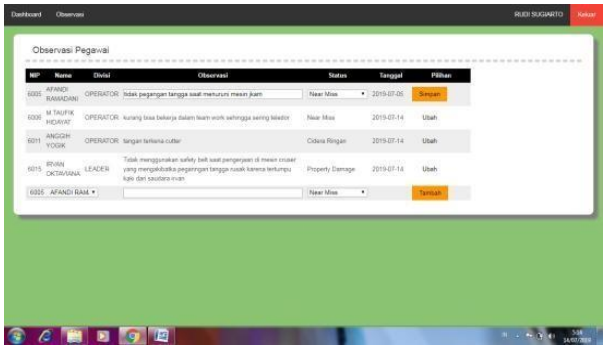

Figure 2.8 Super Dashboard Menu

2.8 Admin Dashboard Menu

The dashboard menu is the firstform thatisrun by Admin after logging in.

Figure 2.9 Admin Dashboard Menu

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3. TEST AND RESULT

Blackbox testing is a test carried out only observing the results of execution through test data and functional checking of software. So analogous to seeing a black box,can only see the outside appearance, without knowing what's behind the black wrapper. Same as testing *blackbox,* evaluate only from outside appearance (*interface)* and its functionality. Without find out what really happened in the detail process. Blackbox testing or also called Functional Testing focuses on behavior external of a software or various its components while looking at that object tested as a black box thus preventing the tester from viewing the contents on therein. Black-box testing verifies correct handling of functions external provided by software or whether the observed behavior fulfills user expectations or product specifications (2005.p 35) Tian (2005.p 25) argues form the simplest of the Black-Box Test (BBT) is to start running the software and make observations with easy hope to distinguish which outcome is expected and which one is not. This form is also known as "ad hoc testing ". After testing repeatedly and it was determined that the problems were due to the software and not because of hardware, then the information is conveyed to the party responsible for fix those problems. Shape another of the BBT is the use of the checklist a specific list of functions externally what there should be as well as some information regarding the expected performance or input - output pair.

3.1 Error Handling

An error handling (*error)* under various conditions in programming. Every time there is an error, then the program execution will not be stopped suddenly, but will be forwarded to the existing program line *the script* error handling. Is a part of *system testing* intended to test the suitability of functions or features contained in the application of the evaluation of K3 understanding by using methods *cumulative voting* according to user requirements.

3.2 User Login

In the Login form the user enters NIP and *The password* in order to enter the K3 Understanding Evaluation system using the Cumulative Voting method, and access the menus in the application. In order to prevent user input errors, this application is equipped with error handling handling. Here's a look when you enter your NIP and password incorrectly

Figure **3.0** Display Login Error

3.3 User List

In the registration form the user is provided with facilities to prevent input errors so that an empty NIP does not occur and prevents the existence of the same NIP.

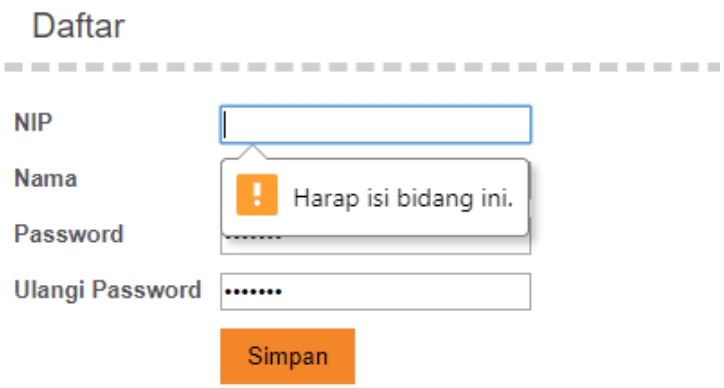

Figure 3.1 Error Display When Incorrect NIP Input

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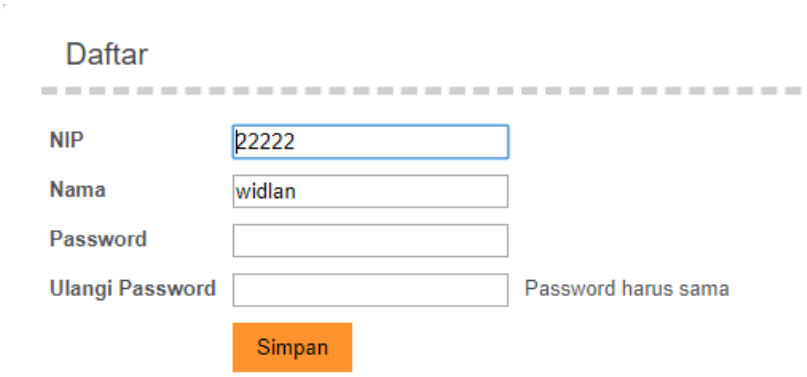

Figure 3.2 Error Display When Incorrect Input Password

3.4 Test Questions

When the user is going to work on the test, a notification appears that a test opportunity can be performed by the user.

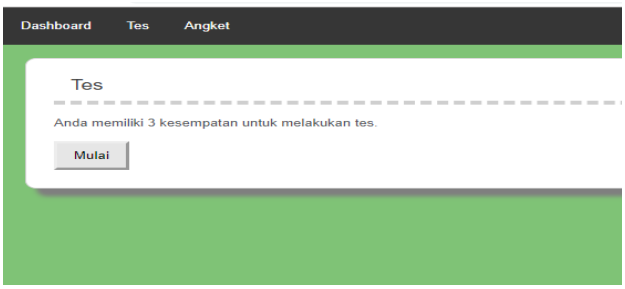

Figure 3.3 Test Notification Display

After the above display appears immediately click start to work on the problem, then to prevent wrong input then when working on the problem when the user presses the finish button or the process on the problem, a confirmation window will appear as follows:

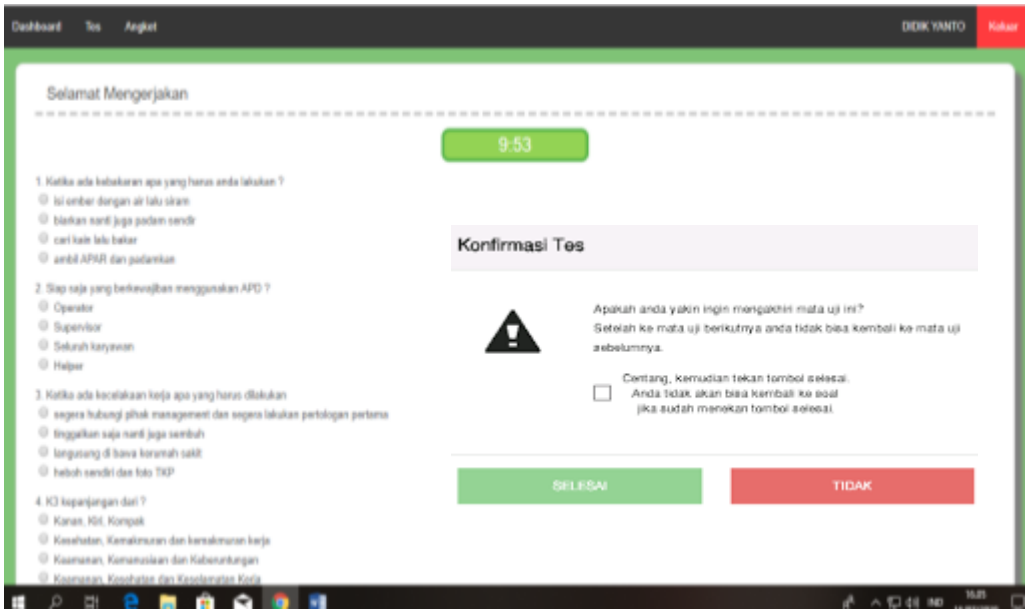

Figure 3.4 Display Problem Confirmation Window Test and questionnair

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3.5 *Dashboard* Supervisor

This user supervisor is the user to make observations every employee who does violations and discrepancies at work.

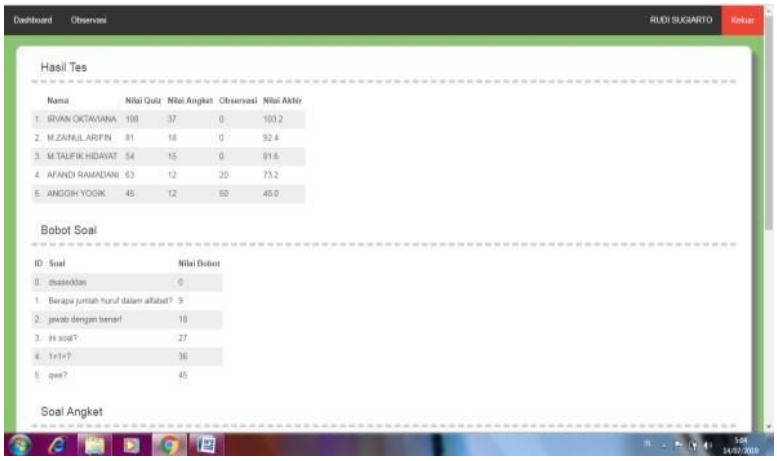

Figure 3.5 Supervisor Dashboard Display

3.6 Supervisor Observations

On this menu you can access the supervisor

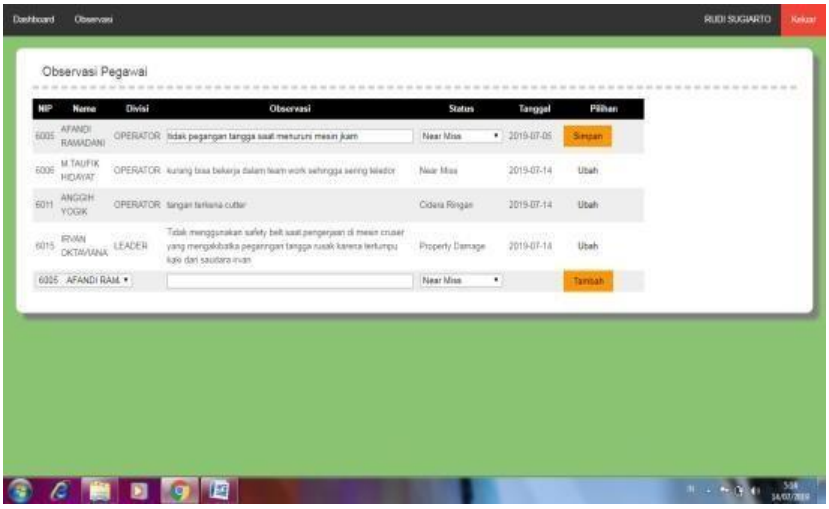

Figure 3.6 Observation Page Views

From testing error handling above is the application of K3 Comprehension Evaluation with Method Cumualtive voting this can prevent or minimize user input errors, and more display friendly which is easily used by all employees in all fields.

3.7 Validity Testing

Apart from functional testing as well testing with comparison data validation Testing the K3 understanding evaluation application with cumulative voting method. Implementation will done based on manual calculation data from the HRD to be tested how accurate the calculations are manual with existing calculations in the program application. The following form will be the data from HRD

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Tabel 1 Test Question Score Result Form

NIP	Nama Karyawan	Hasil Tes Soal
6005	Afandi Ramadhani	46
6006	Taufik Hidayat	54
6011	Anggih Yogik	97
6012	Joko Setyo. B	78
6015	Irvan Oktaviana	65
6017	Noki Giritama	61
6018	Heru. N	79
6035	Mukiarso	46
6036	M. Romli	15
6038	Nur Rahmad	57

Then the HRD prepared the sheet questionnaire questionnaire and conduct trials manually.

Tabel 2 Questionnaire Results Form

NIP	Nama Karyawan	Hasil Kuesioner
6005	Afandi Ramadhani	80
6006	Taufik Hidayat	50
6011	Anggih Yogik	88
6012	Joko Setyo. B	66
6015	Irvan Oktaviana	68
6017	Noki Giritama	50
6018	Heru. N	83
6035	Mukiarso	33
6036	M. Romli	26
6038	Nur Rahmad	53

Then the Supervisor is tested to make observations manually in the field with the following form:

Table 3. Observation Results Form

NIP	Nama Karyawan	Devisi	Hasil Kuesioner
6005	Afandi. R	Leader	80
6006	Taufik Hidayat	Leader	70
6011	Anggih Yogik	Leader	100
6012	Joko Setyo. B	Leader	50
6015	Irvan .O	Leader	80
6017	Noki Giritama	Leader	70
6018	Heru. N	Leader	70
6035	Mukiarso	Leader	100
6036	M. Romli	Leader	80
6038	Nur Rahmad	Leader	100

The following is the recap of data from the system K3 Understanding Level Evaluation Application with the Cumulative Voting method

Hasil Tes

	Nama	Nilai Quiz	Nilai Angket	Observasi	Nilai Akhir
1.	AFANDI RAMADANI	46	80	80	69.8
2.	M.TAUFIK HIDAYAT	42	50	70	57.6
3.	ANGGIH YOGIK	97	88	100	96.7
4.	JOKO SETYO. B	78	66	50	61.6
5.	IRVAN OKTAVIANA	65	68	80	73.1
6.	NOKI GIRITAMA	61	50	70	63.3
7.	HERU.N	79	83	70	75.3
8.	MUKTIARSO	46	33	100	70.4
9.	M.ROMLI	15	26	80	49.7
10.	NUR RAHMAD	57	53	100	77.7

Figure 3.7 Display of Ranking Report Results Employees

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Then the next step is to compare the results of data recap from the manual system with the system application

Table 4 Comparison of Manual and System Results

NIP	Nama Karyawan	NA manual	NA sistem	selisih
6005	Afandi. R	70	69,8	0,2
6006	Taufik Hidayat	61	61,2	0,2
6011	Anggih Yogik	97	96,7	0,3
6012	Joko Setyo. B	62	61,6	0,4
6015	Irvan .O	73	73,1	0,1
6017	Noki Giritama	63	63,3	0,3
6018	Heru. N	75	75,3	0,3
6035	Mukiarso	70	70,4	0,4
6036	M. Romli	50	49,7	0,3
6038	Nur Rahmad	77	77,7	0,7
Total Selisih				3,2

Based on the results of the test table above determines that out of 10 employees has the difference the result is a total of 3,2 points. This is the result because the HRD manual count only calculate the average of each item tested. Whereas in the application there are additional weights and cumulative for each item tested.

4. CONCLUSION

Based on the problems built on K3 Understanding Evaluation System with Using the Cumulative Voting Method we can take following conclusions :

1. In the K3 Comprehension Evaluation Application by Method Cumulative Voting this can be used to help party management in evaluating employee understanding of K3 culture in the company.
2. From testing error handling above application Evaluation of OHS Understanding by Methods Cumulative Voting this can prevent or minimize user input errors, and more display friendly which is easily used by all employees in all fields.
3. Based on the results of the validity test between data manual and application data have differences in results because manual work is calculated with the manual average without any cumulative value of each item being tested.

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