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Model Design of Electronic Based Managerial and Academic Supervision Applicaton (E-SUKMA) to Increase School Supervisor Performance at Education and Sports Department in Boalemo District

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Abstract
This study purpose was: 1) to describe the initial conditions of school supervisors performance in DIKPORA in Boalemo District, 2) to develop a more effective supervision model to improve the School Supervisor Performances in DIKPORA in Boalemo District, 3) to describe the school supervisor performance improvement level at DIKPORA in Boalemo District with E-Sukma implementation usage, 4) to describe the discipline level of school supervisors in DIKPORA in Boalemo District to do the main tasks at school. The research uses Research and Development (R & D) method. The steps used include: 1) determining the potential and problems, 2) data collection, 3) product design, 4) design validation, 5) design revisions, 6) product trials, 7) product revisions, 8) usage trials, 9) product revisions, and 10) mass production or final product. Product quality testing uses ISO 25010 quality standards for functional suitability, usability, and reliability. Functional suitability testing uses testing by expert software developers. Usability testing questionnaires was given to school supervisors, principals, and teachers. Reliability test uses stress testing with WAPT implementation. This study produced 5 findings. First, The School Supervisor Performance in initial conditions based on preliminary study was 68.81 with classification "Enough". Second, E-Sukma implementation uses ISO 25010 quality standards, namely functional suitability, usability, and reliability. Functional ability testing obtained the Compatibility Value 1 with category "Good". Usability testing obtained percentage of 97.83% with category "Very Good". Testing reliability obtained a level of error of 0% and a success rate of 100% with category "Good". Third, the School Supervisor Performances increased after using the implementation of E-Sukma from 68.81 to 89.55 or increased from Simple to Good classification. Forth, level of discipline or attendance to do tasks was 100%, but the timeliness only 60% of school supervisors on time and 40% late. Fifth, the impact of E-Sukma implementation for Principals and teachers was very good with Usability 98.30% and 94.80%.
Keywords: E-Sukma implementation, supervisor, principal, teacher, performance.

A. Introduction

The principal task of school supervisor is to conduct academic and managerial supervision. Academic and managerial supervision was included in supervision programs, implementation of supervision programs, and implementation results evaluation of supervision programs, guiding and training of professional teachers and/or principals. This was consistent with Permenpan and RB Number 21 year 2001 concerning School Supervisors and Credit Figures.

The implementation of academic and managerial supervision by school supervisors in an education was not optimal. It was evidenced by a preliminary study to show many aspects of school supervisors performance that have not been implemented properly. The programming aspect showed 85.42% of school supervisors made it, supervision instruments usage was 33.33%, teacher and principal development reports was 75%, monitoring reports for 8 SNPs was 12.50%, teacher and principal performance reports was 93.75%, the professional development of teachers and principals reports was 12.50%, and results of monitoring reports at the DIKPORA in Boalemo District program have only reached 58.33%.

This condition must be corrected immediately through innovative and creative work to improve the School Supervisor Performances. Performance was the result of work performance to do basic tasks for a certain period and can be measured as manoeuvres of motivation and abilities function (Gibson, Ivancevich, and Donnely 1997, and Golton and Simon 1997).

Barnawi and Arifin (2014: 28) said that principal duties of school supervisors are: (1) developing a school supervision program, monitoring the implementation of 8 SNPs, (2) assessing administration, academics and functionalities, and (3) conducting supervision in special areas. Furthermore, Barnawi and Arifin in Sudjana, et al. (2008) said that duties of school supervisors included (1) inspecting (supervising), (2) advising (3), (3) monitoring, (4) reporting, (5) coordinating, (6) performing leadership (leading to do the five tasks).

It can be concluded that principal task of school supervisor consists of academic supervision and managerial supervision. Academic supervision was directly related to management learning by teachers, while managerial supervision relates to administration and management development at schools. Therefore, in this study examine the School Supervisor Performances for the both tasks.

Supervision implies to supervise someone and a group of people related to activities to supervise the implementation of tasks or work done by someone to ensure the task or work was done correctly. Other experts said that supervision contains continuous coaching activities, developing professional personnel capabilities, improving teaching and learning situations with ultimate goal to achieve educational goals and personal growth of students. Supervision was also interpreted as a service with character of guiding, facilitating and evaluating teachers in implementation of learning and professional development effectively (Ahmad Badowi, et al, 2015, Mulyasa, 2014, Masaong, 2013)

School supervisors should understand the principles of learning supervision implementation. Mulyasa (2014), Masaong (2013), and Rivai (1981) suggested that supervision implementation in education should be based on cooperation, participation and collaboration, without coercion. The principles of supervision done by school supervisor are: (1) scientific principles with systematic, objective elements, and using tools/instruments, (2) democratic, (3) cooperative, (4) constructive and creative.

In addition to understanding the principles of supervision, school supervisors also have main duties to apply appropriate supervision models to conditions and potential of supervision location. Masaong (2013: 49) stated that supervision models contained five elements. First, Cooperative professional development model, it was a model of supervising professional development cooperation in supervising teachers. The entry points of this model were KKG and MGMP. Second, individualized professional development models, this model was intended for professional teachers with high commitment. This model emphasizes the awareness of teacher to develop his profession and teacher works to assume the responsibility his profession development through further study, research, and following other scientific activities. Third, the clinical supervision model was the convergence between scientific approaches and artistic approaches in supervision. This model aims to create a positive or friendly climate between teachers and school supervisors. Forth, informal supervision models was done spontaneously and not programmed, it was more informal by principals/school supervisors. Fifth, the supportive supervision model was one system by means of supervisors and teachers working together to measure and maximize teacher performance.

The objective conditions in education unit indicate that there were many obstacles in supervision implementation, including the lack of certainty that school supervisor in school according to a predetermined schedule. The school supervisor implementation cannot be identified, and monitoring report was not be accessed quickly.

This problem raises the idea for researchers to develop a new model in implementation of educational supervision as an effective solution to these problems. The name is electronic-based supervision (IT) model. It was an academic and managerial supervision model in education developed by utilizing internet and digital mobile technology through the implementation of E-Sukma (electronic and managerial supervision based on electronics). The E-Sukma implementation can provide attendance information to education unit, while the implementation can read how long it takes to supervise and what supervisor does in education unit.

B. Research Methods

This was Research and Development (R&D) method. Research and development was a process used to validate and develop products. The steps in this process show a form of repetition or cycle based on research findings that will be developed into a product. Product development based on findings of this preliminary study was tested in a situation and revised until finally a model (product) was obtained that could be used to improve output.

This study used the development research steps based on Sugiono (2015: 409). The research steps used include; 1) determine potential and problems, 2) data collection, 3) product design, 4) design validation, 5) design revisions, 6) product trials, 7) product revisions, 8) usage trials, 9) product revisions, 10) mass production or final product. Product quality testing uses ISO 25010 quality standards with functional suitability, usability, and reliability. Functional suitability testing is done by expert software developers. Usability testing uses questionnaires with school supervisors, principals, and teachers. Reliability testing uses stress testing with WAPT implementation.

C. Research Results and Discussion

1. School Supervisor Performance of DIKPORA in Boalemo District

The performance of supervisor of DIKPORA in Boalemo District School before research was illustrated in a preliminary study for 9-13 April 2018 by taking performance aspects consistent with 2017 School Supervisory Workbook published by Ministry of Education and Culture of Indonesia Republic. The school supervisor performance data was presented in table 1 and figure 1.

Table 1. Early School Supervisor Performances

No	Supervision Report Type	Score
1	Discipline	62.20
2	Teacher Development	84.24
3	School Principals Guidance	83.19
4	8 SNP Monitoring	45.60
Average		68.81

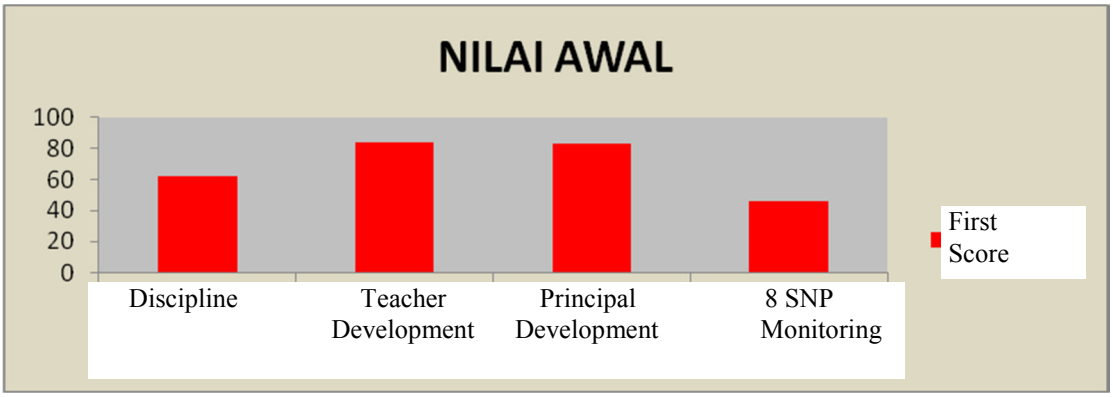

Figure 1: Early School Supervisor Performances

Table 1 and figure 1 show that School Supervisor Performance to do the main tasks was 68.81. This performance value was included in classification "Enough", consistent with 2017 Supervisory Workbook published by Ministry of Education and Culture of Indonesia Republic.

2. Effectiveness of E-Sukma Implementation Model

a. Functional Suitability

The functional suitability test results to measure E-Sukma implementation

E-Sukma show that scores of Feature Completeness (X) was 1. Archarya dan Sinha (2013) interpreted the Feature Completeness as X value near 1 indicates that almost all designed feature has been implemented. The functional suitability characteristic was good if the X score near 1. Therefore, X=1 for functional suitability test for E-Sukma implementation indicate that all designed feature can be implemented with 'good' category.

E-Sukma implementation both in small groups and large groups requires revisions and input from IT Expert Team. The first revision concerning the skills of school supervisors to use information technology by researchers by providing additional information to school supervisors on how to use Win-Zip uploaded from playstore to upload photos of activities without changing the authenticity of photos (photos not edited). Photos edited or sent via whatsapp, email or messenger cannot be read because the authenticity of photos has changed and timing of surveillance activities cannot be accessed. The second revision concerns the capacity of photos uploaded into implementation to a maximum of 5MB, while there were Android phones with a camera exceeding 5MB. The answer was to give instructions to school supervisor to compress photos of activities by not changing the authenticity of photos. The third revision was the less attractive appearance of E-Sukma implementation page. Initially there was only a login page without any other accessories. The solution was to add various photos of activities to make it look more attractive.

b. Usability

The results of reliability test to measure the practicality of E-Sukma implementation was done, probability of corruption was 97.83%. According to interpretation of scorecard (Sudaryono et al., 2015: 112), testing reliability in a percentage of 97.83% was "Very Good" category. These results indicate the level of effectiveness, efficiency, and user satisfaction with use of E-Sukma implementation products.

c. Reliability

Testing reliability level of E-Suma implementation produces 0% level of error. Lisitsyn (2011) said that 0%error level indicates a success rate of more than 99% and has been categorized as "Good". This shows that Reliability as expressed by Wagner (2013: 62) was the performance ability in a system, products or components under certain conditions, in this case the E-Sukma implementation products meet the standards and were feasible to use.

3. E-Sukma implementation to improve the School Supervisor Performances

This study results show the implementation of E-Sukma as an innovative product developed to improve the School Supervisor Performances to do their main tasks in education unit. The E-Sukma implementation can be accessed via the http // www.e-sukma.boalemokab.go.id or http//www.e-sukma.gorontalosmartcity.net. The following was the front page view of E-Sukma implementation.

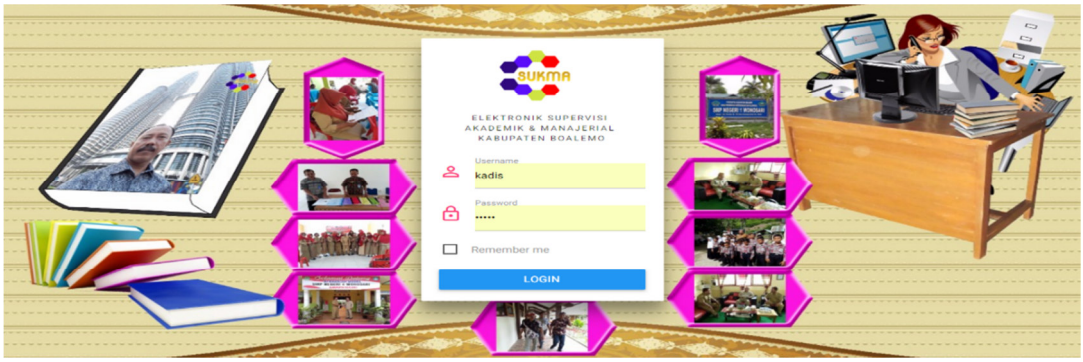

Figure 2. The front page view of E-Sukma implementation

The improvement of School Supervisor Performances through the E-Sukma implementation was shown in following table 2 and figure 3.

Table 2 Final School Supervisor Performances after E-Sukma Implementation

No	Supervision Report Type	Score	Classification
1	Discipline	100.00	A
2	Teacher Development	87.73	B
3	School Principals Guidance	87.15	B
4	8 SNP Monitoring	83.33	B
Average		89.55	B

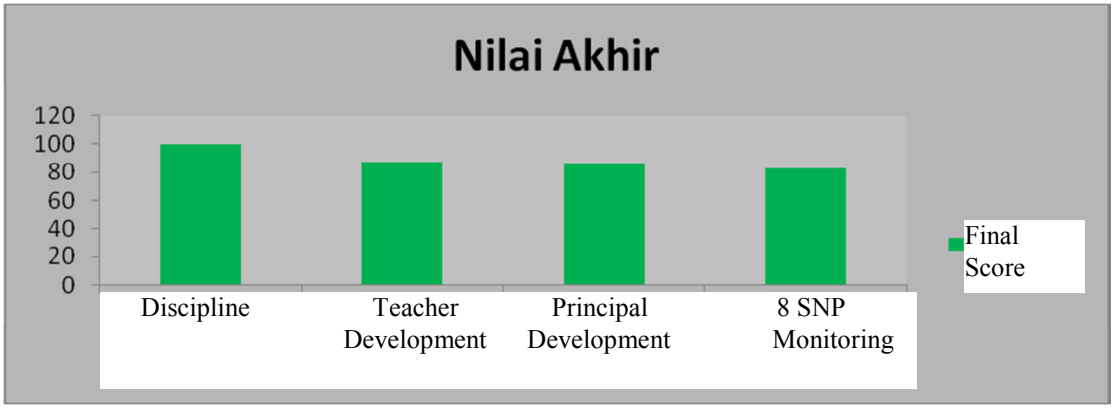

Figure 3. Final Score of School Supervisor Performance

The table 2 and diagram above shows that School Supervisor Performance after E-Sukma implementation was 89.55 with classification "Good". The results of school supervisor's performance data after E-Sukma implementation compared with preliminary data of school supervisor's performance was 68.81 with classification "Enough". It can be concluded that School Supervisor Performances after E-Sukma implementation increased from 68.81 becomes 89.55 or from classification simply becomes a Good classification. This was presented in table 3 and figure 4.

Table 3 Average Increase in School Supervisor Performance

No	**Supervisor Report Type**	**Early Value**	**Final Value**	**Increase**
1	Discipline	62.20	100.00	37.80
2	Teacher Development	84.24	87.73	3.49
3	School Principals Guidance	83.19	87.15	3.96
4	8 SNP Monitoring	45.60	83.33	37.73
Average		68.81	89.55	20.74

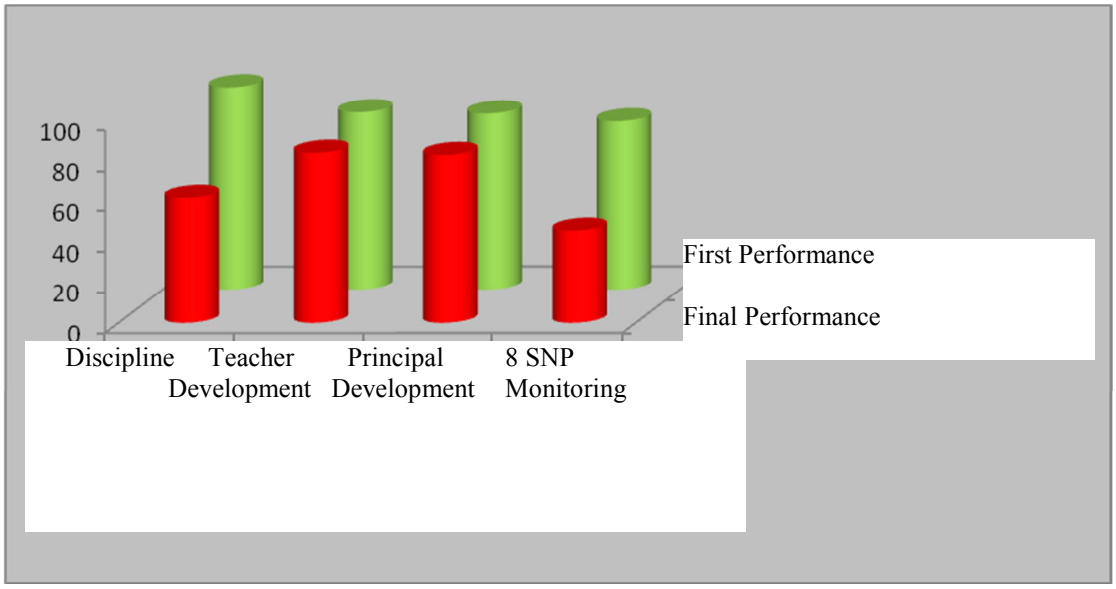

Figure 4. Average Increase in School Supervisor Performance

4. Discipline Level of School Supervisors

The presence or discipline of school supervisors in school can be found through the E-Sukma implementation. This means that stakeholders can access whether school supervisors were present at school, how long they were doing the assignments, and what school supervisors do at school. The results of study show that all school supervisors (100%) who have been scheduled through the E-Sukma implementation do tasks in education unit. The figure 5 shows tasks based on E-Sukma implementation.

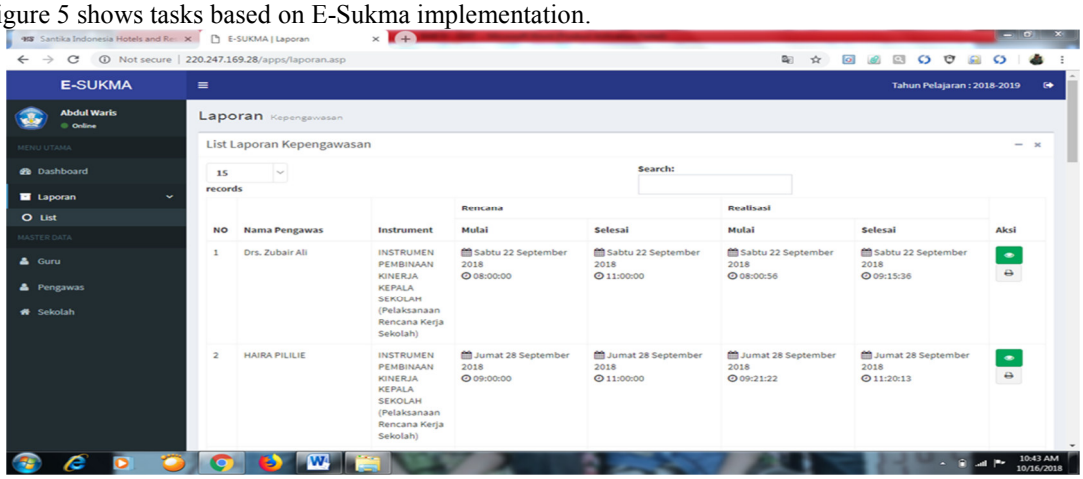

Figure 5. Implementation of Monitoring Schedule

Figure 5 shows the condition supervision done by school supervisor. An example was the supervisor on behalf of Drs. Zubair Ali was scheduled for 08.00 at 08.00. 56. This means 56 seconds late. Dra. Haira Pililie was scheduled for 09.00 but arrived at school at 09.21.22. She late 21 minutes 22 seconds. In condition of real time, seconds can be ignored and most important thing was that school supervisors actually do tasks in education unit and can be accessed in real time by policy makers. The school supervisor activity at education unit can be known with certainty.

In general, monitoring schedule in E-Sukma implementation shows that out of 20 school supervisors who do supervisory duties there were 12 (60%) school supervisors who were on time to do tasks in education unit according to specified schedule (schedule takes into account the school location), but there were 8 (40%) of 20 school supervisors who arrived late at school. Monitoring scheduling was conducted every week (every Monday) and determines the supervision type that will be done by school supervisor consistent with established work supervision program. The supervision was adjusted to location of target schools, considering that Boalemo district was one of districts in Indonesia which was a special area, so it takes several hours to reach the school.

The E-Sukma implementation has four advantages. First, it increase the discipline of school supervisors to do the main tasks, it can be shown to stakeholders at DIKPORA in Boalemo District. Second, the main tasks done by school supervisor in education unit and in school can be known at any time. Third, the report on supervision results can be known in real time, faster, easier and more practical. Nevertheless, this implementation also has three weaknesses. First, E-Sukma implementation uses an internet network so

sometimes there was slow network connection. Second, the use of E-Sukma implementation requires an Android cellphone/digital camera to do tasks. Third, the school supervisor must be skilled and master computer usage. Forth, not all aspects of supervisory performance can be done due to limited time and research costs.

5. Impact of E-Sukma Implementation

The E-Sukma implementation by school supervisors has a positive impact as described below.

a. Headmaster

The usability research results (effectiveness, practicality, usefulness, convenience, and satisfaction) show that E-Sukma implementations for Principal respondents were shown in table 4.

Table 4 E-Sukma Results for School Principals

Score	Number	Score	Number x Score
Very Agree (SS)	367	5	1.8354
Agree (S)	32	4	128
Netral (R)	1	3	3
Not Agree (TS)	0	2	0
Very Not Agree (STS)	0	1	0
Total Score			1.966
Value xMaMaksimal			2.000

The usability test results were then calculated as percentage below.

$$\text{Percentage Score} = \frac{1.966}{2.000} \text{ X } 100\ \% = 98{,}30\%$$

The calculation of usability test score percentage of 98.30% with "Very Good" criteria.

b. Teacher

Usability research results (effectiveness, practicality, usefulness, convenience, and satisfaction) of E-Sukma implementations for teacher respondents were as shown table 5.

Table 5: Results of Testing Reliability for Teachers

Score	Number	Score	Number x Score
Very Agree (SS)	76	5	380
Agree (S)	22	4	88
Netral (R)	2	3	6
Not Agree (TS)	0	2	0
Very Not Agree (STS)	0	1	0
Total Score			474
Value xMaMaksimal			500

The usability test results were then calculated as percentage below.

$$\text{Percentage Score} = \frac{474}{500} \text{ X } 100\ \% = 94.80\%$$

The calculation of usability test score percentage of 94.80% with "Very Good" criteria.

The results of calculation of usability test score percentage of 94.80% with "Very Good". This shows that implementation of electronic-based supervision models has a very good impact on teachers. The following was a graph the impact of E-Sukma implementation on principals and teachers.

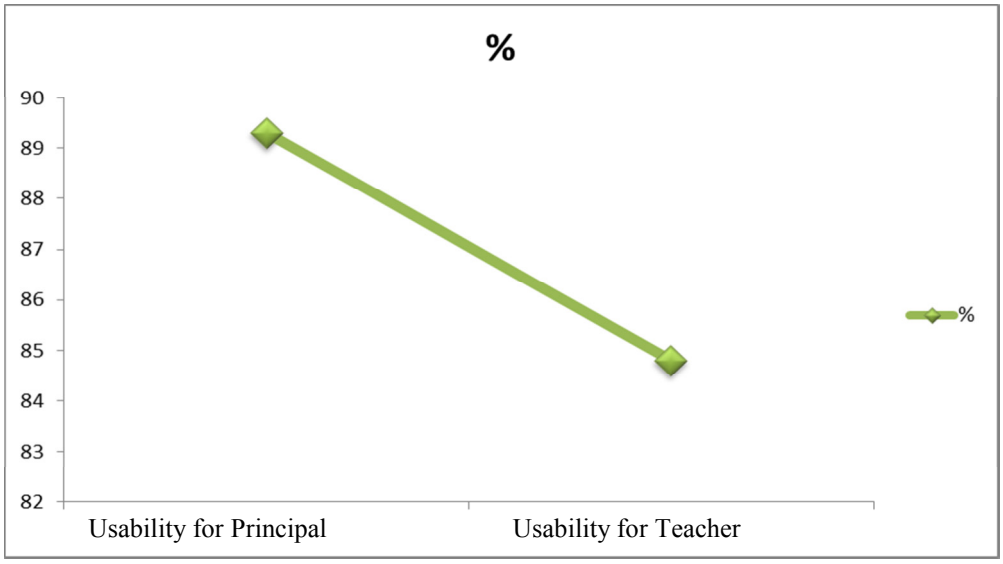

Figure 6. Impact of E-Sukma Implementation

The figure 6 shows that effectiveness, benefit efficiency, convenience, and satisfaction (usability) of E-Sukma implementations was greater for principals (98.30%) than teachers (84.80%). This happens because school principals have higher frequency to interact in coaching and editing with school supervisors compared to teachers.

D. Conclusion

The conclusions of this research can be presented as follows. First, the School Supervisor Performances at DIKPORA in Boalemo District in initial conditions of tasks implementation for discipline or attendance, teacher guidance reports, guidance reports for school principals, and monitoring reports based on 8 National Standards for Education was 68.81 with "Enough" classification. Second, E-Sukma implementations using ISO 25010 quality standards were used for functional suitability, usability, and reliability. Functional testing to measure the validity of system that was developed to get the value of Nature Completeness by 1 with category "Good". Usability testing shows 97.83% with category "Very Good". Reliability test shows error level of 0% and a success rate of 100% with category "Good". Third, .there was an increase in School Supervisor Performances after E-Sukma implementation from 68.81 to 89.55 or increase from Simply to Good classification. Forth, the discipline of school supervisors to do first duties after E-Sukma implementation was 100%. This means that all school supervisors do their duties. However, only 12 (60%) of 20 school supervisors were on time. While 8 (40%) other school supervisors arrived late at school. Fifth, other effects of E-Sukma implementations for effectiveness, practicality, usefulness, convenience, and satisfaction (usability) are expressed by principal and teacher. Study results show that reusability for principals and teachers respectively 98.30% and 94.80% with "very good" criteria.

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