

# Increased Effort and User's Expectation as Determinants of Resistance due to a Change in the Implementation of Educational Information System of Health Worker

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## Abstract

User resistance is one of the obstacles for implementation of MIS (management information systems). Therefore, we need a special handling of the determinants involvement, so that the problem can be addressed properly. The purpose of this study is to prove the speculation that either 'increased effort' or 'user expectance' is a direct determinant of resistance to the implementation of management information systems. The results showed that it had been proven that both these determinants were direct determinants of resistance to change from the implementation of the off-line into the on-line system. In order to overcome this problem, further research was needed in order to find other determinants, either direct determinants or indirect determinant. Hence, it could be conducted in a comprehensive treatment of the problems of resistance that occurred.

**Keywords:** information system, increased effort, user's expectation, resistance due to change

## I. INTRODUCTION

On the information era recently, information technology was very needed in order to reach the efficiency and effectivity of an organization (Wijaya, 2006). Therefore, the implementation of management information system in absolute information technology-based was needed for an organization. As an educational organization, Midwifery Department in Health Polytechnic of Surabaya in Magetan, Indonesia had implemented an educational information system (in Indonesian: SIAK = Sistem Informasi Akademik) that was an educational MIS which was web-based since the academic year of 2012/2013. This information system had operated; however, it was still found some obstacles, particularly regarding "user resistance". Based on the result of preliminary research through observation toward user attitude in implementing SIAK daily was found that there was laziness in doing SIAK, even there were some people who had not implemented SIAK at all. If it was referenced to resistance classification, the condition above was in easy category which was the level of apathetic behavior and passive resistance. Besides, there were still harder classifications which were active resistance and aggressive resistance (Cerom & Cregor, 2010). Although there was no any signs of resistance in hard category, this condition might not be permitted because basically, the resistance could hinder a change into better condition. According to the result of further preliminary research by indepth interview method with some SIAK users, it could be concluded that a work change from off-line into on-line had become a burden because it must take much time and much energy to try for controlling the systems. In addition, many structures and the functions of SIAK had not fulfilled the user's expectation. Therefore, the conclusion of indepth interview above was proper to be speculated as the factor of the occurrence of resistance toward implementing SIAK. Sacrifice of time and energy for controlling SIAK was identical with "increased effort", the structure and SIAK function that had not fulfilled expectation was identical with "user's expectation", meanwhile, laziness in doing SIAK was identical with "resistance due to change" (Salih, Hussin, & Dahlan, 2010). Therefore, the speculation above was considered important in order to be proved through scientific research.

### A. Purpose of Research

There were two purposes that will be reached through this research: 1) describing increased effort, user's expectation, and resistance due to change in the implementation of SIAK; 2) analysing the influence of increased effort and user's expectation toward resistance due to change in the implementation of SIAK.

## II. LITERATURE REVIEW

### A. Educational Management Information System

Basically, MIS was an activity in using computer based on information processing system that supported operation, management, and function of decision-making in organization or company (Gaol, 2010). In MIS, the computer had important role because the information system that was very complex could not operate well without any computers there (Supono, 2006). Of course, as an organization, educational institution also needed the implementation of MIS in computer-based so that it could realize its efficiency and effectivity as what Wijaya

(2006) had stated regarding the importance of applying information technology in MIS. Moreover, this information system was named as campus information system, which was information system that was used to support the activity of education in campus. The given information were such as course schedule, lecturer, students, building, marks, and other information regarding the activity of education (Marimin, Tanjung, & Prabowo, 2012).

### **B. Resistance toward Information System**

The implementation of information system was a change from manual system into on-line system. Regarding this, many writers (Lawrence, 1954; Maurer, 1996; Strebel, 1994; Waddell and Sohal 1998) strongly stated that the failure of initiation of change was occurred because there was a resistance toward the change. The resistance would cause the process of change was delayed and took much cost (Ansoff, 1990). Resistance was an information source that was used to learn how to develop the change process to be more success (Beer dan Eisenstat, 1996; Goldstein, 1988; Lawrence, 1954; Piderit, 2000; Waddell and Sohal, 1998). Doubtlessly, the resistance toward a change was main topic in the management of change and it must be considered seriously in order to help organization for reaching the advantages from the transformation. The resistance of user of information system was more specific than resistance toward change commonly. The resistance of user involved the interaction of user to the system during the system was implemented. An opposing attitude toward information system could develop before, during, or after the implementation and perhaps it was expressed once or many times (Klaus & Blanton, 2010).

Resistance toward change could be expressed in various levels as followed:

- a. *Apathetic behavior, which was uninterested attitude and unwilling to implement a change,*
- b. *Passive resistance, which was slow taking action in implementing change and maintaining system slowly,*
- c. *Active resistance that was speculated as a constructive form, for example proposing different points of views, negotiating for consensus, and accommodation,*
- d. *Negative resistance, which was the user could become a threat, could boycott or do other actions in hindering the implementation of change.*

There were some reasons that could cause resistance of the users toward new technology, which were: 1) change in profession content, 2) loss of status, 3) change of interpersonal relation, 4) loss of power, 5) change in approaching decision-making, discomfort in working, and 6) uncertainty/ unfamiliarity/ misinformation (Jiang, Muhanna, & Klein, 2000).

Furthermore, other researchers stated that either direct determinants or indirect determinants which influenced toward resistance in the implementation of information system, were: 1) lack of user's education and training, 2) change in profession content, 3) lack of communication between the leader and the user, 4) lack of user involvement in the process of information system development, 5) ability issues of using and resistance toward technology, and 7) user's expectation toward information system (Salih, Hussin, & Dahlan, 2010). In case of the occurrence of resistance toward SIAK implementation in Midwifery Department, Magetan, there were two determinants which were strongly speculated to cause the occurrence of resistance (next, it was known as resistance due to change), which were increased effort to do a change and user's expectation toward SIAK. Afterwards, each construction was defined to point at definition that was stated by Salih, Hussin, & Dahlan (2010) as followed:

- a. *Increased effort was defined as how easy to implement the information system.*
- b. *User's expectation was defined as the user's role and what they would give to information system, and it was not communicated by organization.*
- c. *Resistance due to change was defined as user's refusing because they refused all changes. One of the explanations was because they ever had bad experience with implementation of other systems.*

### **III. METHOD**

This research utilized cross sectional design and it was conducted at Midwifery Department, Health Polytechnic of Surabaya in Magetan, Indonesia in 2014. The population of this research was all of the components of academicians in that campus (lecturers, staffs, and students who had obligation in using SIAK). The samples were 134 respondents who were chosen by utilizing proportionated sampling technique, which was taking sample proportionally among lecturers, staffs, and students. The process of taking sample for each group was conducted randomly with table of random number. The data was collected through filling the questionnaire based on Salih, Hussin, & Dahlan (2010) that had been modified. Then, it was conducted data analysis descriptively in order to describe increased effort, user's expectation, and resistance due to change in form of distribution values and center values. For the last stage, it was conducted hypothesis test by utilizing multiple linear regression test.

#### IV. RESULT

The result of data analysis in first stage was distribution values and center values as what it was provided in table 1 and table 2 below:

Table 1. Distribution Value from Variable

No	Variable	Minimum Value	Maximum Value
1	Increased effort	3	12
2	User's expectation	3	12
3	Resistance due to change	3	12

Table 2. Center Value from Variable

No	Variable	Mean	Mode
1	Increased effort	7,78	9
2	User's expectation	8,02	9
3	Resistance due to change	7,86	9

Based on the table 1, it was known that all variables had either similar minimum value or similar maximum values which were 3 and 12. Thus, the three had similar range, which were 9, had a wide range if they were compared with maximum range which were 12 (because the lowest value perhaps was 3 and the highest value perhaps was 15). The interesting thing from it was the mean and mode which the mean was in number nearly 8 and mode was in number 9 (Tabel 2). In range of 3-15, both numbers were in middle position. This showed that most of increased effort that must be conducted by users to operate SIAK as a change, was in medium level; some user expectance had not been able to be fulfilled by implementation of SIAK, and resistance due to change toward implementation of SIAK had not been in hard resistance category. Furthermore, this was relevant with the observation result on pre-research (preliminary research) phase that some of the users were lazy to use or had not used SIAK before, however, they had not showed opposing attitude either actively or aggressively. For the next step, the result of data analysis in second stage (multiple linear regression test) was explained sequentially from qualifying until conclusion of the result of hypothesis test. In addition, the result of classical speculation test as the requirement to be conducted analysis by utilizing multiple linear regression was provided in table 3 below:

Table 3. Result of Classical Assumption Test

Requirement	Indicator	Result	Conclusion
Residue from dependent variable must be distributed normal	Histogram that had shape of normal curve (inverted bell) and normal P-P Plot closed linear line of 45°	Histogram looked like inverted bell and P-P Plot closed linear line of 45°	Residue from dependent variable was distributed normal (qualified)
There was no multicollinearity (correlation inter-independent variables)	Variance inflation factor (VIF) was not more than 2	VIF = 1,721 (<2)	No multicollinearity effect (qualified)
There was no autocorrelation	Durbin-Watson = 1,65-2,35	1,874 (among the ranges)	No autocorrelation (qualified)
There was no heteroscedasticity	Chart of SdResidual and standardized predicted did not form certain pattern	The chart did not form certain pattern	No heteroscedasticity (qualified)

Result of classical assumption test (Table 3) showed that all four requirements had been qualified, thus, it could be conducted hypothesis test by utilizing multiple linear regression test. This test result was showed briefly as followed:

- Coefficient of determination mark (R-square) was 0.457. Hence, it could be stated that the user resistance toward implementation of SIAK, which was 45,7%, could be explained by the factor of increased effort and user's expectation; Meanwhile, more than that (54,3%) could be explained by other factors.
- Anova test resulted significant mark which was 0,000 (<0,05). Thus, it could be concluded that this regression model was significant.
- Significant mark of t-test was <0,05 (0,001 for constant, 0,000 for increased effort, and 0,002 for user's expectation). This showed that regression coefficient (B) was significant; hence, the regression equation could be arranged based on the coefficient marks.
- The regression coefficient mark was 1,937 for constants, 0,480 for increased effort, and 0,273 for user's expectation; hence, regression equation could be arranged as followed:

$$Y_{(\text{resistance})} = 1,937 + 0,480 \cdot \text{effort} + 0,273 \cdot \text{expectation}$$

## V. DISCUSSION

Based on the analysis above, resistance due to change in the implementation of SIAK in Midwifery Department in Magetan was influenced by two determinants that had been speculated before: 1) How hard the effort that must be done by the user for implementing SIAK as a change, and 2) It had not been fulfilled the user's expectation toward SIAK. Moreover, both determinants were direct determinant from user resistance. Thus, intensive handling toward both determinants was expected to be able to overcome the problem of user resistance in the implementation of SIAK. If it was analyzed further, perhaps it would have further questions, for example: what action that must be taken by the management of campus so that the users became easier in their effort in controlling SIAK? And how the campus should be so that the user's expectation toward SIAK could realize? Nevertheless, for answering all the questions, it must be criticized and searched more again of why the user's effort in implementing SIAK was felt hard enough? Perhaps, it was caused by minimum basic skill in operating computer or caused by other reasons such as radical change from off-line work into on-line one? Or there were other reasons that still had not been searched out at all?

In addition, other questions perhaps might be thought more when the campus side would try to improve the condition of both determinants above. Therefore, it needed to be learned further regarding direct determinant either from increased effort or user expectance, which both of them actually became indirect determinants from resistance due to change in the implementation of SIAK. Even, indirect determinant that was from increased effort and user expectance also could be investigated, hence, the root of the problem could be found to be solved. In order to be able to investigate it, of course, it was needed literature review toward similar research results which were conducted by Jiang, Muhanna, & Klein (2000), and Salih, Hussin, & Dahlan (2010) who stated that there were many either direct determinants or indirect determinants from resistance toward information system, such as: lack of user's education and training, change in profession content, lack of communication between the leader and the users, lack of user involvement in the process of information system development, ability issues of using and resistance toward technology, loss of status, change of interpersonal relation, loss of power, change in approaching decision-making, discomfort in working, and uncertainty/ unfamiliarity/ misinformation. Result of the literature review should be researched further, thus, it could be found other determinants which significantly had role as cause of the occurrence of user resistance in the implementation of SIAK in Midwifery Department, Magetan, East Java, Indonesia.

## VI. CONCLUSION & SUGGESTION

Based on the result of this research, it could be concluded that either increased effort or user's expectation was direct determinant from resistance due to change in the implementation of SIAK in Midwifery Department, Magetan. Therefore, for campus side, it should do effort as soon as possible for improving the condition of both determinants. In order to make the process of improvement could be well, it was needed to be known other determinants from the resistance either direct determinant or indirect determinant. Thus, it was needed further research that could cover up the weaknesses of this research.

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