Analysis Of Teachers' Satisfaction Level As Users Of The e-Rapor Application Using The PIECES Framework Method (Case Study: SMK Swasta Panca Budi Medan)

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ABSTRACT

The e-Rapor application is a web-based application for processing student learning outcomes. When using the e-Rapor application at SMK Swasta Panca Budi Medan, teachers often encounter several obstacles. So an evaluation stage is needed for the use of the e-Rapor application at SMK Swasta Panca Budi Medan. The method used to evaluate the use of the e-Rapor application is the PIECES Framework. The PIECES Framework method is a method used to evaluate systems consisting of performance , information, economics, control and security, efficiency, and the service to be analyzed. Data was taken from the results of questionnaires for users of the e-Rapor application, namely teachers at SMK Swasta Panca Budi Medan, 39 teachers from various subjects as respondents. The research results show that the level of user satisfaction is SATISFIED in using the e-Rapor application.

Keyword : User Satisfaction, e-Rapor, PIECES Framework

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1. INTRODUCTION

SMK Swasta Panca Budi Medan is a vocational school that has a vision as an educational institution that prepares skilled, productive, independent and devout personnel, along with technological development in the context of implementing national development. Which consists of study programs in Computer Network Engineering (TKJ), Motorcycle Engineering, Automotive Light Vehicle Engineering, Institutional Financial Accounting and Office Management and Business Services. In order to improve the quality of learning in vocational schools, especially the administration of assessments by students and educational units, the Directorate of SMK Development on 1 December 2016 launched a *client-server* based e-Rapor application for vocational schools. The e-Rapor application is an application for processing student learning outcomes with a variety of user access, including teachers and staff at SMK Swasta Panca Budi Medan. Since the launch until now there has been a lot of welcome and input from various parties. So the author is interested in seeing the level of satisfaction of e-Rapor users, especially teaching staff at SMK Swasta Panca Budi in Medan, using the PIECES Framework method.

2. RESEARCH METHOD

The research used the PIECES Framework method as a method to analyze the level of satisfaction of teachers as respondents in using the e-Rapor application at SMK Swasta Panca Budi Medan.
a) Sample Selection**,** This research used *a* sample of 39 teachers from various subjects at SMK Swasta Panca Budi Medan as users of the e-Rapor application.
b) Data Collection Method, The data collection method used was conducting interviews with teachers at SMK Swasta Panca Budi Medan as users of the e-Rapor application. Then distributed questionnaires to 39 respondents to teachers from various subjects . The questionnaire contains questions related to the e-Rapor application used by teachers and the results will be analyzed using the PIECES Framework method.

c) Measurement Method, The scale used to analyze the level of teacher satisfaction in using the e-Rapor application uses a Linkert scale. The following are the Linkert scale values from respondents that will be used in this research:

Table 1. Linkert Scale

Answer	Abbreviation	Score
Strongly agree	SS	5
Agree	S	4
Doubtful	RR	3
Don't agree	TS	2
Strongly Disagree	STS	1

d) **Data analysis,** to measure the level of teacher satisfaction as users of the e-Rapor application, the PIECES Framework method was used as an evaluation stage. The PIECES Framework method is a method used to evaluate systems consisting of *performance* , *information, economics, control and security, efficiency, and service.* The following are several variables contained in the PIECES Framework method, namely:

1) *Performance* is used to determine the performance of the system.
2) *Information* is used to determine the clarity of the information obtained in the system.
3) *Economic* is used to determine the quality of service according to the costs incurred in the system.
4) *Controls and Security* is used to determine the level of difficulty and security of the system.
5) *Efficiency* to find out whether the system used is efficient.
6) *Service* is used to determine service on the system if a disruption occurs to the system.

Then data was collected based on a questionnaire that had been distributed to 39 teachers at SMK Swasta Panca Budi Medan using a Linkert scale to determine the level of user satisfaction in

$$RK=JSK/JK$$

using the e-Rapor application so that an average level of satisfaction was obtained using the formula:

Where:
RK = average satisfaction
JSK = total questionnaire score
JK = number of questionnaires

To determine the level of teacher satisfaction with the e-Rapor application, the theory proposed by Kaplan and Norton in table 2 is used as follows:

Table 2. Assessment Characteristics

Range	Information
1 - 1.79	Very Dissatisfied
1.8 - 2.59	Not satisfied
2.6 – 3.39	Enough
3.4 – 4.91	Satisfied
4.92 – 5	Very satisfied

3. RESULTS AND DISCUSSIONS

The following are the results of questionnaire calculations based on the level of teacher satisfaction in using the e-Rapor application at SMK Swasta Panca Budi Medan according to the assessment characteristics of each variable from the PIECES Framework method:

3.1. Performance

Table 3. Performance Variable Questionnaire

Code	Statement
P1	The e-Rapor application is easy to access
P2	The e-Rapor application remains stable when used simultaneously
P3	The e-Rapor application has an attractive appearance
P4	The e-Rapor application has a display that is easy to understand
P5	The e-Rapor application quickly responds to cancellation orders and requests
P6	The e-Rapor application has a menu according to user needs
P7	The e-Rapor application has experienced errors when used

Table 4 Performance Variable Questionnaire Results

PERFORMANCE							
RESPONDENT	P1	P2	P3	P4	P5	P6	P7
R1	5	5	1	1	5	5	5
R2	5	5	5	5	5	5	5
R3	5	5	1	1	5	5	5
R4	5	5	1	1	5	5	5
R5	5	4	4	4	4	4	4
R6	5	4	4	4	4	4	4
R7	5	5	5	5	5	5	5
R8	5	5	1	1	5	4	4
R9	5	5	5	4	4	5	4
R10	5	5	5	5	5	5	5
R39	4	5	1	1	4	4	5
Total	189	179	112	114	176	174	176
Average	4.84	4.58	2.94	3	4.51	4.46	4.51

So:

RK = JSK / JK

$$= \frac{4.84 + 4.58 + 2.94 + 3 + 4.51 + 4.46 + 4.51}{7}$$

$$= \frac{28.84}{7}$$

$$= 4.12$$

Based on the calculation results of the e-Rapor application on the *performance variable* which obtained a value of 4.12, the e-Rapor application at SMK Swasta Panca Budi Medan is included in the SATISFIED category.

3.2. *Information*

Table 5. Information Variable Questionnaire

No.	Statement
I1	The information displayed by the e-Rapor Application is clear and precise
I2	The information presented by the e-Rapor Application is in accordance with needs
I3	The information presented by the e-Rapor Application is easy to understand
I4	The data presented by the e-Rapor Application is easy to access

Table 6. Information Questionnaire Results   Variable

INFORMATION				
RESPONDENT	I1	I2	I3	I4
R1	5	4	5	5
R2	5	5	5	5
R3	5	5	5	4
R4	4	4	4	5
R5	5	5	5	5
R6	4	4	5	5
R7	5	4	4	4
R8	4	5	5	5
R9	5	4	4	5
R10	4	4	5	4
R39	4	4	4	4
Total	170	171	118	178
Average	4.35	4.38	3.02	4.56

So:
RK = JSK / JK
= $\dfrac{4.35 + 4.38 + 3.02 + 4.56}{4}$
= $\dfrac{16.31}{4}$
= 4.08

Based on the calculation results of the e-Rapor application on the *information variable* , it obtained a value of 4.08, the e-Rapor application at SMK Swasta Panca Budi Medan is included in the SATISFIED category.

3.3. *Economics*

Table 8. Economic Variables Questionnaire

No.	Statement
E1	The e-Rapor application speeds up the processing of student learning outcomes

E2	The e-Rapor application reduces teacher costs in processing student learning outcomes.

Table 7. Economic Variables Questionnaire Results

ECONOMIC		
RESPONDENT	**E1**	**E2**
R1	5	5
R2	5	5
R3	5	5
R4	5	5
R5	5	5
R6	5	5
R7	5	5
R8	5	5
R9	5	5
R10	5	5
R39	5	5
TOTAL	191	176
Average	4.89	4.51

So:
RK = JSK / JK
= 4.89 + 4.51
    2
= 9.4
  2
= 4.7

Based on the calculation results of the e-Rapor application on the *economic variable* which obtained a value of 4.7, the e-Rapor application at SMK Swasta Panca Budi Medan is included in the SATISFIDE category.

3.4. *Control and Security*

Table 9. Control and Security Variable Questionnaire

No.	Statement
CS1	Each teacher has different access rights restrictions on the e-Rapor application
CS2	The e-Rapor application is gated and secure

So:
RK = JSK / JK
= 4.23 + 4.23
    2
= 8.46
  2
= 4.23

Based on the calculation results of the e-Rapor application for the *control and security variable* , it obtained a value of 4.23, the e-Report application at SMK Swasta Panca Budi Medan is included in the SATISFIED category.

Table 10. Results of the Control and Security Variable Questionnaire

CONTROL AND SECURITY		
RESPONDENT	CS1	CS2
R1	4	4
R2	4	4
R3	4	4
R4	4	4
R5	4	4
R6	4	4
R7	4	4
R8	4	4
R9	4	4
R10	4	4
R39	4	4
Total	165	165
Average	4.23	4.23

3.5. *efficiency*

Table 11. Efficiency Variable Questionnaire

No.	Statement
E1	The e-Rapor application provides benefits to teachers
E2	The e-Rapor application saves operational costs
E3	The e-Rapor application makes it easier for teachers to process student learning outcomes

Table 12. Results of the Efficiency Variable Questionnaire Results

EFFICIENCY			
RESPONDENT	E1	E2	E3
R1	5	5	5
R2	5	5	5
R3	5	5	5
R4	5	5	5

R5	5	5	5
R6	5	5	5
R7	5	5	5
R8	5	5	5
R9	5	5	5
R10	5	5	5
R39	5	5	5
Total	195	195	184
Average	5	5	4,71

So:
RK = JSK / JK
= 5 + 5 + 4,71
      3
= 14,71
   3
= 4,9

Based on the calculation results of the e-Rapor application on the *efficiency variable* which obtained a value of 5, the e-Rapor application at SMK Swasta Panca Budi Medan is included in the SATISFIED category.

3.6. *Service*

Table 13. Service Variable Questionnaire

No.	Statement
S1	The e-Rapor application provides services according to teacher needs
S2	The e-Rapor application provides reliable information
S3	The e-Rapor application is easy for teachers to use

Table 14. Service Variable Questionnaire Results

SERVICE			
RESPONDENT	**S1**	**S2**	**S3**
R1	4	4	1
R2	5	5	1
R3	5	5	5
R4	4	4	4
R5	5	5	1
R6	5	5	1
R7	4	5	1
R8	5	5	4
R9	5	4	5
R10	5	4	5
R39	4	4	3
Total	178	170	124

Average	4.56	4.35	3.17

So:

RK = JSK / JK

= 4.56 + 4.35 + 3.17
　　　　　3

= 12.08
　　3

= 4.02

Based on the calculation results of the e-Report application on the *service variable* which obtained a value of 4.02, the e-Rapor application at SMK Swasta Panca Budi Medan is included in the SATISFIED category.

4.   CONCLUSION

Based on the results of calculating the average teacher satisfaction in using the e-Rapor application at the SMK Swasta Panca Budi Medan using the PIECES Framework method, the calculation results obtained for the *performance variable* are 4.12, which is declared **SATISFIED** according to the assessment characteristics, the *information variable* is 4.08, which is declared **SATISFIED.** according to the assessment characteristics, the *economic variable* with a value of 4.7 is declared **SATISFIED** according to the assessment characteristics, the *control and security variable* with a value of 4.23 is declared **SATISFIED** according to the assessment characteristics, the *efficiency variable* with a value of 5 is declared **SATISFIED** according to the assessment characteristics and the *service variable* is valued at 4.02 declared **SATISFIED** according to the assessment characteristics. So it can be concluded that the e-Rapor application at SMK Swasta Panca Budi Medan is used well, effectively and efficiently by teachers.

REFERENCES

W. Erika, "Analisis Tingkat Kepuasan Mahasiswa Terhadap Penggunaan Sistem Informasi Akademik Menggunakan Metode PIECES Framework (Studi Kasus: Universitas Pembangunan Panca Budi)," *Jurnal Mahajana Informasi,* vol. 8 No.1, pp. 1-7, 2023.

S. Nurhayat, N. Sucahyo and Selawati. , "Penerapan Metode PIECES Dalam Pengembangan Sistem E-Commerce Penjualan Produk Komputer," *Jurnal Rekayasa Informasi Swadharma,* vol. 01 No.01, pp. 34-39, 2021.

"Penerapan Metode PIECES Framework Sebagai Analisis Tingkat Kepuasan Mahasiswa Dalam Penggunaan Sistem Informasi Akademik," *Adopsi Teknologi Informasi dan Sistem Informasi,* vol. 2 No.1, pp. 59-70, 2023.

A. A. Zulfahm, N. Willis, S. Budi and R. Prasasti, "Analisis Penerimaan Aplikasi e-Presensi Menggunakan PIECES Framework," *SITEKIN: Jurnal Sains, Teknologi dan Industri,* vol. 19 No.1, pp. 129-135, 2021.

I. Indrawati, P. . L. L. Belluano, H. Harlinda, F. A. Tuasamu and L. Lantara, "ANALISIS TINGKAT KEPUASAN PENGGUNA SISTEM INFORMASI PERPUSTAKAAN MENGGUNAKAN PIECES FRAMEWORK," *ILKOM Jurnal Ilmiah,* vol. 11 No.2, pp. 118-128, 2019.