

Evaluation of E-Learning System Implementation using Hot Fit Evaluation Model (Case Study of Papua University)

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Article Information	ABSTRACT
Article History Received : February 11, 2025 Revised : February 23, 2025 Published : April 04, 2025	The advancement of information technology has significantly impacted education, particularly in the implementation of e-learning. Universitas Papua has adopted this system to enhance learning flexibility and efficiency. However, effectiveness depends on user adaptation and acceptance. This study evaluates the implementation of the e-learning system at UNIPA using the HOT-Fit evaluation model, which assesses Human, Organization, and Technology aspects. The research employs surveys and interviews with students and lecturers to measure user satisfaction, institutional support, and system quality. Findings indicate that technology, service, and information quality positively influence system usage and user satisfaction, ultimately contributing to system benefits. However, challenges remain, including infrastructure limitations and user adaptation issues that need improvement. This study provides valuable insights into the effectiveness of e-learning at UNIPA and offers recommendations for future system development. A comprehensive evaluation is essential to maximize benefits for students and institutions, ensuring accessible and high-quality education in the digital era.
Keywords: <i>E-learning; HOT-FIT System; University Of Papua</i>	

INTRODUCTION

The advancement of information technology has significantly impacted education, particularly through the implementation of e-learning. Many universities in Indonesia, including Universitas Papua, have adopted this system to enable more flexible and efficient learning. E-learning allows students and lecturers to interact beyond space and time constraints, improving accessibility and effectiveness. However, its success depends not only on system availability but also on user adaptation and acceptance. Evaluating its effectiveness is crucial to ensure the expected benefits. One common evaluation model is HOT Fit (Human, Organization, and Technology Fit), which assesses the system from human, organizational, and technological aspects. As an institution implementing e-learning, Universitas Papua needs to evaluate its impact on user needs and learning quality. Thus, this study aims to assess e-learning implementation at Universitas Papua using the HOT Fit evaluation model.

The learning process is a series of activities involving the transfer of knowledge between educators and students. This activity can be carried out through formal or non-formal channels, depending on the situation and needs. The approach chosen aims to facilitate better understanding for students (Ningsih et al., 2023). The rapid advancement of technology encourages educators to integrate innovation into the learning process. Teachers now utilize applications that make it easier for students to understand the material, especially in Pancasila and Citizenship Education subjects. One of the choices of learning media that can be an effective solution that helps in a more interactive and dynamic learning process (Elga & Rohman, 2022).

After the Covid-19 pandemic, it has become an effective solution to support online learning in this digital era. In fact, in the future, it has the potential to become an alternative or new variation that can be integrated into conventional learning methods in the classroom (Ajiatmojo, 2021). It is a learning process that utilizes information and communication technology, especially through the internet, to access learning materials flexibly. It has become an important solution in modern education, enabling learning outside the boundaries of classroom and time, and increasing the accessibility of education globally (Arkorful & Abaidoo, 2020). Although its use continues to grow widely, there are still various obstacles that arise in its implementation. These challenges need to be thoroughly evaluated to ensure that they are truly able to support the achievement of learning objectives optimally, as well as provide the expected benefits for students and educators.

To address the gap in utilization in the UNIPA environment, this study uses the Hot Fit model to conduct a comprehensive evaluation. This model includes three key elements that significantly affect the success of information system implementation: people, organizations, and technology (Afandi & Lestariningsih, 2019). Humans play a role in managing and operating the system, as well as providing important input for system development and maintenance. The organization provides the structure, policies, and resources that support the implementation of information systems. Meanwhile, technology acts as a technical means that enables efficient processing and distribution of information. It is widely recognized that the success of an information system does not depend on just one element, but on good synergy between the three elements to achieve optimal effectiveness (Septiyani & Sulistiadi, 2022).

A study conducted by (Maharani, 2022) evaluated the drug management information system at the Indobat Pedungan Pharmacy using the HOT-Fit method. The results showed that the system was quite good in terms of people, organization, and technology, although some features needed improvement. Overall, the system had a positive impact on user satisfaction and was in accordance with the HOT-Fit method. The second study conducted by (Lusiana & Nilogiri, 2023) evaluated the success of the SATUSEHAT application using the HOT-Fit model. With a sample of 100 users, analysis using SEM showed that service quality was significant to user satisfaction, which also affected the benefits of the application. Good organizational management increases benefits. In conclusion, the SATUSEHAT application successfully met user needs.

The third study conducted by (Lestariningsih et al., 2020) evaluated the implementation in higher education using the HOT-Fit model, because evaluation is important to assess user satisfaction. The results show that the quality of the system, services, and information has a positive effect on system usage and user satisfaction, and user satisfaction has a positive impact on system benefits. Based on previous research that has been presented, the model and evaluation carried out have never been specifically carried out in the UNIPA environment. The evaluation at UNIPA will fill this gap by providing relevant data on performance and benefits in higher education that have not been studied before.

This study aims to analyze user acceptance and satisfaction (students and lecturers) with the e-learning system at Universitas Papua, evaluate its alignment with the HOT Fit model (Human, Organization, and Technology aspects), identify factors influencing its success or challenges in implementation, and provide recommendations for future improvements and development. This study focuses on Universitas Papua as a case study. The evaluation covers the Human aspect (user satisfaction, experience, and acceptance of e-learning), the Organization aspect (institutional support, policies, and infrastructure), and the Technology aspect (system quality, usability, and performance). The research methods include surveys and interviews with students and lecturers using e-learning, as well as data analysis to assess system implementation based on the HOT Fit model. The results are expected to provide a comprehensive understanding of e-learning effectiveness at Universitas Papua and serve as a basis for further development.

RESEARCH METHODS

This study focuses on a comprehensive evaluation of the utilization in the UNIPA environment. The population and sample used are UNIPA students and lecturers who have used it in learning. Population and sample are important elements in educational scientific research, where the population includes the entire research subject, while the sample is part of the population selected for analysis. (Suryani et al., 2023.) This study evaluates the implementation of e-learning at the University of Papua using the HOT-Fit model. The results of the study indicate that the variables of system quality, service quality, and information quality have a positive effect on system usage and user satisfaction. In addition, user satisfaction has a positive effect on perceived net benefits. (Tri Lestariningsih, Budi Artono & Yosi Afandi, 2020).

Hot Fit

The HOT-Fit method provides a comprehensive framework for evaluating and designing better information systems, taking into account the complex interactions between humans, organizations, and technology. The HOT-Fit model can be used to assess the effectiveness of applications in an organizational context. The focus is on the interactions between humans, organizations, and technology to achieve desired goals (Tri Rizqi Ariantoro., 2021)

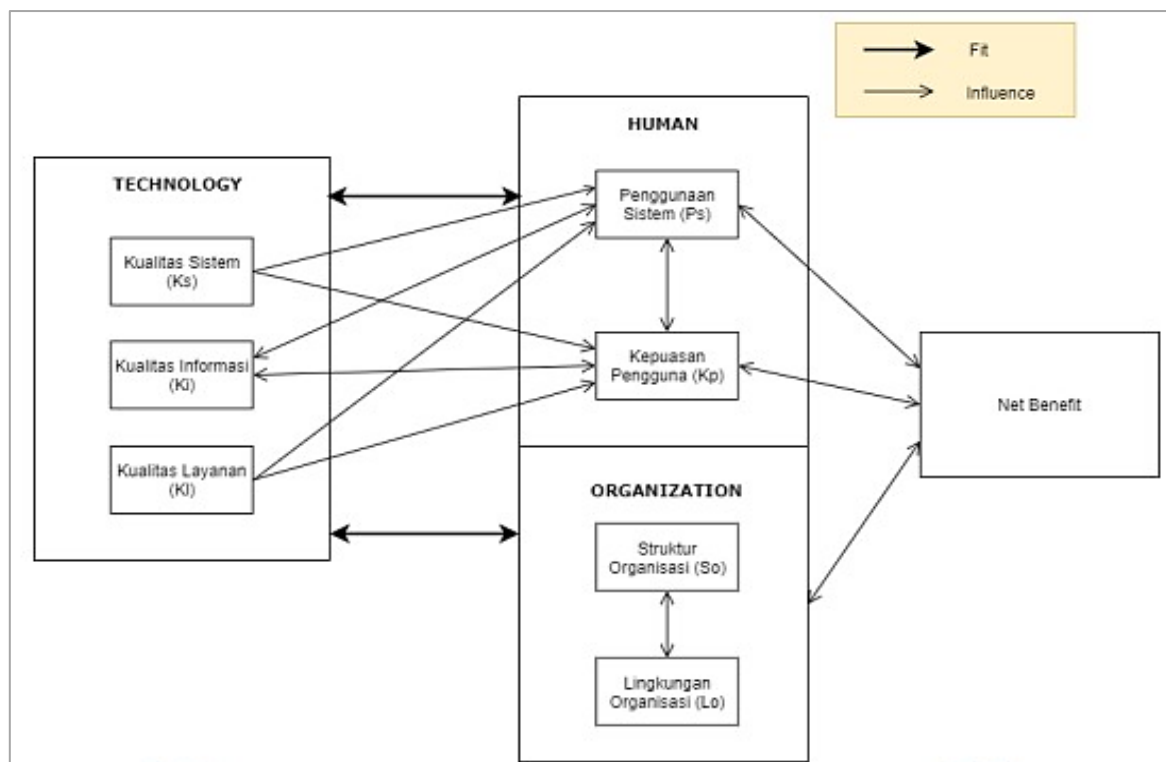


Figure 1. HOT-Fit Model

The model shown in the diagram illustrates the relationship between three key elements: Technology, People, and Organization, and how the interaction between these elements contributes to Net Benefit. Here is an analysis of the method in the context of the University of Papua:

1. Technology

- a. **System Quality (KS):** Assesses how well the system is used at the University of Papua. This factor can include the reliability of the IT infrastructure and the responsiveness of the system.

- b. **Information Quality (KI)**: Refers to the accuracy and relevance of data provided by the system. This is important for decision making at the management level.
 - c. **Service Quality (KL)**: Assesses user satisfaction with IT services, including the quality of technical support provided.
- 2. Human
 - a. **System Usage (Ps)**: Examines the extent to which staff and students use existing technology. High usage indicates acceptance and adaptation to technology.
 - b. **User Satisfaction (Kp)**: Measures the level of satisfaction of users (staff and students) with the system and information available. This satisfaction has a direct impact on motivation and productivity.
- 3. Organization
 - a. **Organizational Structure (So)**: Assess whether the organizational structure at the University of Papua supports the implementation of technology or not. A good structure supports better collaboration.
 - b. **Organizational Environment (Lo)**: Includes the culture and work environment at the university. A positive environment can increase technology adoption and user satisfaction.
- 4. Net Benefit
 - a. All of the above elements, when functioning well, will produce significant Net Benefits for the University of Papua. This can be in the form of better operational efficiency, improved quality of education, and better services for students and staff.
- 5. Relationships and Influence
 - a. **Fit**: Indication that these elements should support each other and integrate well. For example, good technology will increase user satisfaction if used optimally.
 - b. **Influence**: Elements in one category can influence elements in other categories. For example, high system quality can increase user usage of the system.

By analyzing these three components in the context of the University of Papua, areas that need to be improved can be identified to achieve maximum benefits from technology adoption and effective human resource management.

Validity test

Validity testing aims to determine whether a questionnaire can be considered valid. A questionnaire is said to be valid if the questions contained in it are able to accurately measure what should be measured. Validity ensures that the research instrument produces data that is in accordance with the expected measurement objectives (Rahayu & Nursanta, 2023).

Reliability test

Reliability testing in e-learning is a process to assess the consistency and reliability of instruments used in online learning. Reliability testing is very important to ensure that the instruments used in e-learning can provide consistent and reliable results. They emphasize that reliable instruments will improve the quality of online learning. (Trinita & Simanjuntak, 2024.)

Descriptive Analysis

Descriptive analysis is a statistical method used to describe or illustrate data that has been collected without making broader conclusions or generalizations. In the context of e-learning, descriptive analysis is often used to evaluate various aspects of online learning, such as platform effectiveness, user satisfaction levels, and student learning outcomes. This study uses descriptive analysis techniques to evaluate online learning through e-learning platforms, focusing on presenting various measures such as mean, median, and mode to understand the characteristics of the data collected. (Intang Sappaile et al., 2024.)

Linear Regression

Linear regression is a statistical method used to model the relationship between one independent variable and one dependent variable, with the aim of predicting the value of the dependent variable based on the independent variable. According to Setyoningrum & Rahimma (2022), linear regression is a method for modeling the relationship between variables that can be used in data analysis.

Inferential Analysis

Inferential analysis in evaluating e-learning implementation allows researchers to draw broader conclusions about the effectiveness of e-learning programs based on data collected from users. Inferential analysis can be used to evaluate the effectiveness of e-learning by examining differences in learning outcomes between students who use e-learning and those who do not. They use statistical techniques to identify factors that influence the success of online learning. (Arifin et al., 2022)

Analysis of Variance (ANOVA)

The use of ANOVA in e-learning research helps researchers understand the differences and effects of various variables on learning outcomes, so that they can provide more appropriate recommendations in implementing e-learning methods and platforms. This study evaluates the effectiveness of e-learning platforms in supporting the learning of informatics engineering students.

Chi-Square Test

Chi-square test is a statistical method used to analyze the relationship between two categorical variables by comparing the expected and observed frequencies. In the context of evaluating e-learning implementation, this test helps assess user satisfaction and the effectiveness of learning materials. applied the Chi-Square test to analyze factors related to student achievement in online learning during the COVID-19 pandemic. This study found that factors such as learning interest, learning activities, accessibility, and device ownership have a significant relationship with student learning quality in the context of e-learning. (Arifin et al., 2022)

RESULTS AND DISCUSSION

This chapter presents the analysis and discussion of the data collected based on the HOT-Fit method, which involves three main dimensions: Human, Organization, and Technology. The purpose of this analysis is to understand how well the implemented information system meets user needs, organizational support, and the quality of the technology used.

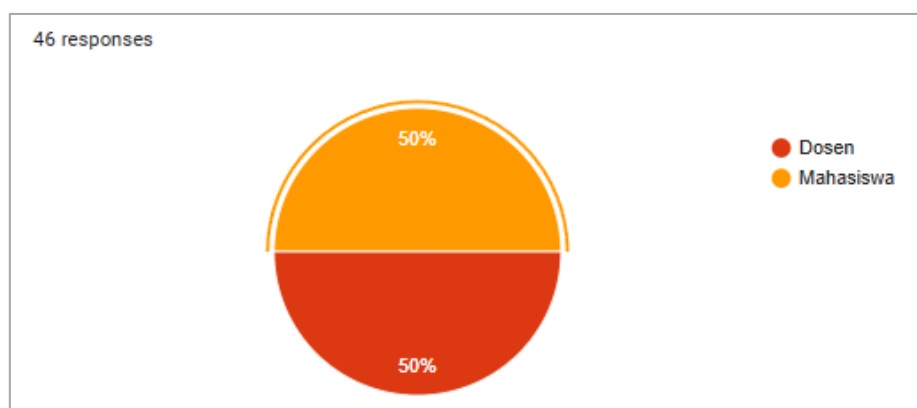


Figure 2. Chart Responden

In this study, there were 46 respondents who participated, consisting of various ages and backgrounds. Respondents were selected randomly to ensure the diversity of the data collected. Of the total respondents, 50% were lecturers and 50% were students. All respondents have given their consent to participate, and the data obtained will be used for analysis purposes anonymously.

Validity test

Validity test is done by calculating the correlation between each item (P1 - P8) with the total related factors. Here are the results:

Table 1. Correlation results between each item (P1 - P8)

Indicator	r_count	p_value	Information
P1	0,578	0.000021	Valid
P2	0,630	0.000002	Valid
P3	0,209	0.159	Invalid
P4	0,536	0.000104	Valid
P5	0,693	0.00000007	Valid
P6	0,885	0.000000000000000139	Valid
P7	0,848	0.00000000000000534	Valid
P8	0,398	0.00565	

Validity Criteria:

1. If $r_count > 0.2907$ and $p_value < 0.05$, then the indicator is declared valid.
2. P3 is not valid, because r_count is only 0.209 (less than 0.2907) and p_value is greater than 0.05.

Reliability Test

Table 2. Reliability Test Results (Cronbach's Alpha)

Factor	Cronbach's Alpha	Information
Factor Human (H)	0.617	Reliable (Enough)
Factor Organization (O)	0.692	Reliable (Good)
Factor Technology (T)	0.667	Reliable (Enough)

Interpretation:

1. The minimum limit of good reliability is 0.60
2. All factors have values above 0.60, so it can be said that this instrument is quite reliable.
3. The Organization (O) factor has the highest reliability (0.692), while the Human (H) factor is the lowest (0.617).

Conclusion:

1. All factors are fairly consistent in measuring their respective variables.
2. The data can be used for further analysis, such as regression or ANOVA.
3. The Fit factor (P8) was not tested because it only has one item.

Descriptive Analysis

Here is a statistical summary of the cleaned data:

1. Human Factor (H)
 - a. Average Total_H: 11.02
 - b. Min - Max: 7 – 15
 - c. Standard Deviation: 1.86

2. Organizational Factor (O)
 - a. Average Total_O: 6.60
 - b. Min - Max: 3 – 10
 - c. Standard Deviation: 1.57
3. Technology Factor (T)
 - a. Total_T Average: 6.98
 - b. Min - Max: 2 – 10
 - c. Standard Deviation: 1.71
4. Fit Factor (P8)
 - a. Average: 3.89
 - b. Min - Max: 1 – 5
 - c. Standard Deviation: 0.89

Initial Interpretation:

1. The Human factor has the highest average value (11.02), indicating that the human aspect of e-learning is quite good.
2. The Organization factor has a relatively large standard deviation (1.57), indicating a high variation in respondents' perceptions of the organization.
3. The Technology factor has a fairly wide distribution of values (Min: 2, Max: 10), indicating that there are significant differences in technology experience among respondents.

Linear Regression

Regression was conducted to see the influence of Human (H), Organization (O), and Technology (T) factors on the Fit Factor (P8).

Table 3. Linear Regression Analysis Results

Independent Variables	Coefficient (B)	p_value	Information
Constants	2.7853	0.001	Significant
Total_H (Human)	-0.0629	0.456	Not significant
Total_O (Organization)	0.0339	0.763	Not significant
Total_T (Technology)	0.2261	0.058	Almost significant

- R-squared = 0.171 → Only 17.1% of the variability in the Fit Factor can be explained by this model.
- F-statistic = 2.950, p = 0.0432 → This model is significant overall (p < 0.05), but only one variable is nearly influential.

Interpretation

- Human (H) and Organization (O) factors do not have a significant effect on the Fit Factor (P8).
- The Technology (T) factor has a positive effect on the Fit Factor (p = 0.058), although it is almost significant (approaching 0.05).
- The model is still weak in explaining the variation of the Fit Factor, so there may be other factors that are more influential.

Inferential analysis

T-test

The T-test is conducted to see whether there is a significant difference between the Human, Organization, and Technology factors on the Fit Factor (P8).

Table 4. T-Test Results

Factor	T-statistic	p_value	Information
Human (H)	23.706121	5.153078e-34	Very Significant
Organization (O)	10.265883	8.455465e-16	Very Significant
Technology (T)	10.955527	9.181632e-17	Very Significant

Interpretation of Test Results

1. All factors (Human, Organization, Technology) have a significant effect on the Fit Factor (P8) (p-value < 0.05).
2. The Human factor has the strongest influence (T = 23.71), followed by Technology (T = 10.96) and Organization (T = 10.27).
3. This means that the human aspect (e-learning users) greatly determines the success of the e-learning system at UNIPA, more than the technological and organizational aspects.

Conclusion

T-test shows that all factors (Human, Organization, Technology) have a significant influence on the Fit Factor (P8).

Analysis of Variance (ANOVA)

ANOVA analysis was used to see whether there were significant differences between the Fit Factor (P8) groups and other factors (Human, Organization, Technology).

Table 5. ANOVA Analysis Results

	F-statistic	p_value	Information
Human (H)	0.461	0.764	Tidak Signifikan
Organization (O)	2.396	0.065	Hampir Signifikan
Technology (T)	2.623	0.048	Signifikan

Interpretation

1. The Human Factor (H) does not have a significant difference to P8 (p = 0.764 > 0.05).
2. The Organization Factor (O) is almost significant (p = 0.065), meaning there is an indication of influence, but it is not strong enough.
3. The Technology Factor (T) is significant (p = 0.048 < 0.05), meaning there is a real difference in the Fit Factor based on the level of Technology used.

Chi-Square Test

The Chi-Square Test is used to see the relationship between the Fit Factor (P8) and the Technology Factor (Total_T):

Table 6. Chi-Square Test Results

Statistic	Value
Chi-Square	83.33796296296298,
p-value	1.8608120474051873e-06,
Degrees of Freedom	32

Interpretation

1. p-value = 1.86e-06 (very small) → This means that there is a significant relationship between the Fit Factor (P8) and the Technology Factor (Total_T).
2. Chi-Square = 83.34 indicates a strong relationship between the two variables.
3. This means that the quality of technology in e-learning has an effect on the success of the system at UNIPA.

Conclusion

The Chi-Square test shows that the quality of e-learning technology is strongly correlated with the success of the system.

CONCLUSION

The technology-based learning process, especially at the University of Papua (UNIPA), has shown great potential in improving accessibility, transmission, and quality of learning, especially after the COVID-19 pandemic. Evaluation using the HOT-Fit model emphasizes the importance of synergy between humans (teachers and students), organizations (educational institutions), and technology (dare platform) in achieving successful implementation of dare learning.

The results of the study indicate that the implementation of the dare learning system at UNIPA has not been fully evaluated in its entirety, especially regarding its impact on the learning process. Therefore, a comprehensive evaluation that considers technical, organizational, and user needs aspects is needed to ensure maximum benefits for students and institutions.

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