

EVALUATION OF MAIL MANAGEMENT INFORMATION SYSTEM IMPLEMENTATION AT BRAWIJAYA UNIVERSITY USING THE HOT-FIT MODEL APPROACH

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Abstract

Mail activities are considered a highly essential information source for an agency. In short, mail must be adequately governed to maintain the high-value information that lies in it. In this era, mail governance has massively involved technologies in the mail management system. In the Brawijaya University Head Office, the correspondence governance has been managed with the assistance of an information system on correspondence management named Smart Collaborative Office (SCO). In practice, some barriers lead to the optimal implementation of this SCO. Therefore, this research evaluates SCO implementation to discover the supporting factors and barriers to implementing information systems in mail management. This research aims to perform an in-depth evaluation of the implementation of the SCO. And the research objectives are to discover the analysis result based on the HOT-Fit Model and the supportive and barrier factor of the SCO implementation in the Head Office of Brawijaya University. This research used an evaluative method with a qualitative approach. The evaluation model uses the HOT-Fit Model, with 35 people as a sample. The data collection uses questionnaires, interviews, observation, documentation, and literature study. The data was analyzed with a measurement model and structural model. The research shows that SCO implementation receives support from the higher-ups, easy-to-learn and easy-to-modified, support the multi-platform, with local and mandatory characteristics. However, the SCO still lacked advantages. One of them is unequal basic training for the users. The developer's competence with a lack of specialization in document or records management, unclean software-generated output, and sometimes, the software result data is not by the input data.

Keywords: management of information system, mail management, document management, electronic office, HOT-Fit Model.

A. INTRODUCTION

The document is a vital element of an agency since its essential role is a source of information in every agency's activities. In an agency, an adequately managed document will affect it positively (Hendrawan & Ulum, 2017). On the contrary, a lack of document management will negatively impact the agency. Document management is one form of information management. Document management has the function of maximalizing the preservation of the document's existence. A well-governed document and record will increase the employee's work effectiveness and efficiency. Considering the importance of the document role in an agency, mail or correspondence as a document form should be appropriately governed.

Mail is one of among kinds of documents that humans use. In general, the main goal of a sent mail is to inform the recipient. In addition, as a communication line in an agency, mail also has purposes such as written evidence, a working guide, a safety warrant, a promotion tool, and a partnership bond with the other agencies. Before the technologies were widely acknowledged, mail was governed manually, which resulted in some problems. First, the process of archiving mail requires a massive volume of space. Moreover, it results in costly maintenance, and third, it is vulnerable to suffering from loss and damage caused by animals, a disaster caused by nature, or human error. Fortunately, along with the advanced technology, manual-based mail governance has been abandoned and replaced by the technology-based mail management information system.

In general, each agency has a specific information system designed to support mail management inside the organization, as implemented in the Brawijaya University Head Office. Throughout the mail management inside the institution, the Brawijaya University Head Office uses the mail management information system named Smart Collaborative Office (CSO). There are two main problems found in the implementation of this information system. First, there are still users who cannot use

the information system. Secondly, there is an indication that the developer of the information system work alone outside coordination.

Based on the written description, this research aims to perform an in-depth evaluation of the implementation of the SCO. And the research objectives are to discover the analysis result based on the HOT-Fit Model and the supportive and barrier factor of the Smart Collaborative Office implementation in the Head Office of Brawijaya University. The review of the system information is a form of genuine effort to acknowledge the actual condition of the enforcement system information. Through the evaluation, the enforcement activities in evaluating the information system could be discovered, explored, and help the planning of the advanced action to improve the performance in practice (Putra et al., 2020).

The evaluation activity is essential to discover and give consideration to the quality of the information system – the better quality of the system information, the more effective and efficient the user's work performance; while Krisbiantoro et al. (2015) and Nurlani and Permana (2017) state that the quality of the system influences the use of the system, which means that if the quality of the system increases, it will also increase its use. Research conducted by Bayu and Izzati (2013) states that information system providers are expected to continue to make system improvements to improve the quality of information systems. This research is expected to provide a case model for the users of the system information to be more criticized on the method they used. Therefore, whenever they find a plan deviant, they will directly report suggestions and feedback to the system developer. This research aims to perform an in-depth evaluation of the implementation of the SCO and discover the analysis result based on the HOT-Fit Model. Hence, this research is expected to give valuable information to the readers about the steps to go through to evaluate the information system, which will be deepened in the method to the conclusion.

B. LITERATURE REVIEW

According to Sahidi et al. (2017), every institution, company, or organization produces documents in their daily activities. Documents need to be retained and retrieved if the documents are required for decision-making. Therefore, the following documents should be adequately governed, so the documents and records are not damaged and are easy to retrieve (Hendrawan & Mukhlis, 2021). Among the available methods is using the document management system support.

Association for Intelligent Information Management (AIIM) defined a document management system as software that controls and adjusts the organization's documents. Hence, the system combines document input, workflow, repository, and document output with the information retrieval system. It's helpful to track, reserve, and control the documents (AIIM, 2021)

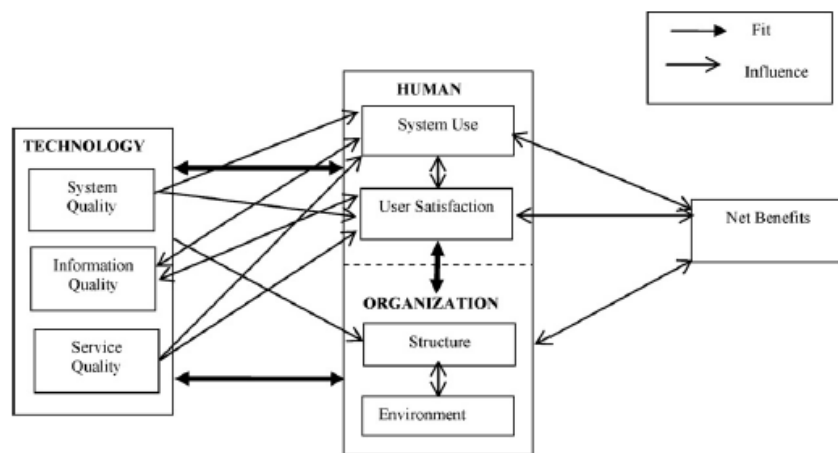
Utilizing a document management system will allow the organization to seize the more significant potential to overcome the challenges related to electronic notes governance and documents (Jones, 2008). Implementing the document management system should ensure that the software can fulfill the requirement and user approval. Because in fact, some research showed that the implemented document management system couldn't meet the following two main things: Simplicity to attain and simplicity to understand (Remenyi et al., 2007), which those statement supported by research held by Kaleb (2019), Ismail (2020) and Purwanti (2019).

In the research held by Kaleb (2019), the system information implementation faces problems with infrastructure support and a lack of introductory courses for its human resource. Meanwhile, Ismail (2020) stated in his research that the problem with the implementation is located in the unoptimized information retrieval feature, server with slow speed, and improper hardware capacity. In another trial found by Purwanti (2019), the problem lies in the internet network, limited server capacity, and lack of user skills in its research, and user satisfaction is the overall evaluation of the user experience in using the information system and the potential impact of the

information system (Murnita et al., 2016). To ensure this document management system could be implemented correctly, supervision and monitoring are urgently needed, along with systematic and periodic internal improvement (Sihaloho & Subandi, 2018) and Soraya et al. (2019) show that all hypothetical pathways in the HOT Fit model framework in an information system that is tested influence each other, except for the organizational variable which does not affect the benefit variable.

In the information system, evaluation aims to define how good or poor a system works for the company or the agency that implements it. The activity achievement or the activities log on the system information implementation could be recognized immediately with the review. Further action could be planned to improve the performance of the information system (Mulyadi & Choliq, 2017). Cited to Tullah and Hanafri (2014), the main objective of evaluating the information system is to measure the technical ability of the information system and assess the accomplishment and failures of the information system's operational performance.

Fig. 1. Conceptual Model of the HOT-Fit Model



Source: Yusof et al. (2006)

HOT-Fit Model itself is an evaluation method discovered by Yusof et al. (2006) as a combination of the Information System Success Model and Information Technology Organization-Fit Model evaluation. The HOT-Fit Model deeply evaluates information systems by measuring the three critical components: humans, organizations, and technology. This model was chosen because it is considered capable of explaining evaluation comprehensively with the approach to the core components of the information system. The components of the HOT-Fit Model used in this scientific research are human (System Usage, User goals), organization (Organizational Structure), technology (System Quality, Information Quality, Service Quality), and these three factors affect the benefits (net benefit).

C. METHODS

The utilized research type is evaluative research with a quantitative approach. This research aims to discover the actual condition of the system implementation and the supporting and hindering factors. Researchers consider the exact research method as the evaluative method to achieve it. The quantitative approach is used to prove the appointed hypothesis. The used analysis model is the HOT-Fit Model was delivered by Yusof et al. (2006). This research is held at Brawijaya University Head Office, using the total sampling technique. With the SCO as the research object. About 35 people will be involved in sampling in this research, including the Head of Bureau, Head of Division, Head of Sub-division, and the Secretary, with the "total sampling technique" as the sampling technique. Total population sampling is a type of purposive sampling technique where the researcher chooses to examine the entire or total population that has a particular set of characteristics.

There are eight variables in this research. This includes five independent variables: system quality, information quality, service quality, organizational support, and organizational environment. These five variables were measured along with three dependent variables: system usage, user satisfaction, and benefit. This research uses a Likert scale with five alternative answers in Table 1.

Table 1. Research and Variables Indicators

Variables	Indicators	Code
System quality	Easy to use and learn	KS1
	Response time	KS2
	Availability	KS3
	Security	KS4
Information quality	Tidiness	KI1
	Information input and output	KI2
Service quality	Quick Response	KL1
	Service follow-up	KL2
Organizational support	Support from organization	DO1
	Culture	DO2
	Planning and system control	DO3
Organizational Environment	Politics	LO1
	Correlation with the external organization	LO2
System usage	Usage rate	PS1
	Training	PS2
	Desire	PS3
	Attitude to the system acceptance	PS4
User satisfaction	Perceived benefits	KP1
	User comfort and satisfaction	KP2
Benefit	Impact on work	MF1
	Effectivity and efficiency	MF2
	Mistake rate decrease	MF3
	Cost	MF4

Researchers collected the data from July to October 2021 by questionnaire, interview, observation, documentation, and literature review. The interviewee in this research is the developer of the SCO. The collected data was analyzed using the PLS-SEM analysis technique, with the measurement and structural analysis models as the analysis stages.

D. RESULTS AND FINDINGS

1. Result of Descriptive Analysis

Respondents' answer interpretation of this research could be seen in table 2.

Table 2. Result of Descriptive Analysis

Variable	General Median	Description
System quality	4.122	Good
Information quality	3.857	Good
Service quality	3.843	Good
Organizational Support	4.076	Good
Organizational environment	3.314	Moderate
System usage	3.600	Good
User satisfaction	3.843	Good
Benefit or Advantage	4.000	Good

2. Measurement Model Test Result

a. Validity Test

This test aims to discover the validity indicator of research, and it could be known by seeing the value points of the standardized loading factor. The measured indicator is counted as valid if the indicator has value points above 0.708 (Hair et al., 2019).

Table 3. Validity Test Result

Indicator	Standardized Loading Factor	Indicator	Standardized Loading Factor
KI1	0,934	KL1	0,943
KI2	0,866	KL2	0,892
MF1	0,890	KS1	0,752
MF2	0,871	KS2	0,745
MF3	0,722	KS3	0,722

Indicator	Standardized Loading Factor	Indicator	Standardized Loading Factor
MF4	0,832	KS4	0,757
LO1	0,933	PS1	*0,249
LO2	0,808	PS2	0,728
DO1	0,892	PS3	0,861
DO2	0,718	PS4	0,876
DO3	0,887	KP1	0,868
		KP2	0,833

*Deleted from the research

After the SU1 indicator was deleted and received a re-test, the researcher found no problem in the validity test.

b. Reliability Test

This test aims to discover the variable reliability of research. A variable could be concluded as “reliable” when it has 0,7 minimum points and 0,95 at maximum effectiveness. The more composite reliability points, the more reliable the variable in research (Hair et al., 2019).

Table 4. Reliability Test Result

Variable	Composite Reliability
Information quality	0,895
Benefit	0,899
Organization environment	0,864
Support from organization	0,874
Service quality	0,914
System quality	0,832
System use	0,868
User satisfaction	0,840

c. Average Variance Extracted (AVE)

The AVE points show the value size of the diversity indicator conceived by a variable. The higher the AVE points, the higher the diverse hand created

by a variable. A variable indicator should have at least 0,50 AVE value points (Hair et al., 2019).

Table 5. Average Variance Extracted (AVE) Test Results

Variable	Average Variance Extracted (AVE)
Information quality	0,810
Benefit	0,691
Organization environment	0,762
Support from organization	0,699
Service quality	0,842
System quality	0,554
System use	0,689
User satisfaction	0,724

3. Structural Model Test Result

a. Path coefficient (β)

Path coefficient (β) is used to discover how much influence each path is influenced in this research model. The obtained scores from this test will show the negative and positive values of the variables (Hair et al., 2019).

Table 6. Path Coefficient (β) Test Results

Path	β	Path	β
KI-PS	0,292	KL-KP	0,169
KI-KP	0,287	KS-PS	0,117
LO-MF	-0,069	KS-KP	0,198
SO-MF	0,344	PS-MF	0,413
SO-KP	0,862	KP-MF	0,238
KL-PS	0,020	KP-PS	0,655

b. Coefficient of determination (R^2)

This test is used to discover the ability of an independent variable to clarify how independent it is. The determined measurement standard in this test is 0,75 (highly independent), 0,5 (moderate), and 0,25 (weakly independent) (Hair et al., 2019).

Table 7. Coefficient of determination (R²) Test Result

Variable	R ²	Description
Benefit	0,745	Moderate
System use	0,822	Highly independent
User satisfaction	0,466	Moderate

c. T-test

This research hypothesis test is conducted by observing the t-statistics with the bootstrapping method, which used a two-tailed test with a significance level of 5% and a subsample value point of 5000. In the research with a significance level of 5%, the research hypothesis will be accepted if it has T-statistic value points at > 1,96 (more than 1,96) (Setiaman, 2021).

Table 8. "T-Test" Test result

Hypothesis	Path	T-Statistics	Description
H1	KS-PS	0,748	Denied
H2	KS-KP	1,364	Denied
H3	KI-PS	2,178	Accepted
H4	KI-KP	1,033	Denied
H5	KL-PS	0,198	Denied
H6	KL-KP	0,852	Denied
H7	DO-KP	2,566	Accepted
H8	KP-PS	5,678	Accepted
H9	PS-MF	1,734	Denied
H10	KP-MF	1,096	Denied
H11	DO-MF	2,582	Accepted
H12	LO-MF	0,649	Denied

E. DISCUSSION

As in the background of this research, it can be seen the success rate of SCO implementation at the Head Office of Brawijaya University. The HOT-Fit Model deeply evaluates information systems by measuring the three critical components there are humans, organizations, and technology. The components of the HOT-Fit

Model used in this scientific research are human (System Usage, User goals), organization (Organizational Structure), technology (System Quality, Information Quality, Service Quality), and these three factors affect the benefits (net benefit).

These will be discussed as well as their correlation in the points below:

- a. Correlation between System Quality (SQ), Information Quality (IQ), and Service Quality (SQ) with the System Use (SU)

Correlation between the system quality, information quality, service quality, and system use could be discovered in H1, H3, and H5. Based on the t-test result, this research found that H5 declined, and H3 was accepted. From the result, it could be concluded that the SCO's system quality and service quality don't affect the insignificance of the SCO use intensity.

This research suspects that the SCO's mandatory nature of use could be a source of the result. On the other hand, the users have no other options in choosing an information system that can be used for mail management activities. Furthermore, the error or bug in the SCO unusually happened when the application started. It resulted in the service that developers give not affecting users when they use the system.

- b. Correlation between System Quality (SQ), Information Quality (IQ), and the Service Quality (SQ) with the User Satisfaction (US)

T-test resulted in a conclusion that the correlation between H2 (System Quality), H4 (Information Quality), and H6 (Service Quality) against User Satisfaction declined. In conclusion, the SCO system quality, Information Quality, and service quality don't significantly affect User Satisfaction. System Quality is formed from a combination of hardware and software quality.

However, this research found that the SCO itself has the main problem: Hardware. The hardware terminology usually related to the actively used personal computer, which in the Brawijaya University Head Office, they had an unequal specification. This research found that SCO has internet speed problems

and hardware problems. In detail, internet speed is affected by various factors, i.e., the used internet service provider (ISP), the condition of the server destination, the used bandwidth, and how many users are currently using the internet. The low internet speed will also affect the SCO velocity response.

The Information Quality depends on the quality of the information output quality. The information quality alone depends on the suitability between output and input, along with the simplicity and tidiness of the production for the uses. This research supposed that the SCO lacked two factors. The first factor has come from the system processing components inside the SCO, which affects the adjustments between information output and input. The second factor is caused by the imperfect letter format listed in the Rector Order Number 22, the year 2019 on the Official Correspondences Regulation (Peraturan Rektor Tahun 2019 tentang Tata Naskah Dinas), it affects the letter layout generated by the SCO.

Moreover, this research found that the SCO lacked in the Quality Service segment. It shows that this segment doesn't have an online help center. If the user faced a problem, they only could rely on a person called Developer to consult about the situation. Though, the consulting session only could do via WhatsApp. Moreover, the Developer contact person is not included in the SCO. The other problem involved in Service Quality lies in the Developer's position as a single developer. If he gets sick or busy, the responsiveness of this service will decrease immediately.

c. Correlation between Organizational Support (OS) with the User Satisfaction (US)

This research categorized Organizational Support and User Satisfaction as 'H7'. Based on the t-test result, this research discovered that the H7 is 'accepted.' In conclusion, the support from Brawijaya University could affect the significance of User Satisfaction. This support is shown by the leaders and officials who actively promote the SCO's advantage compared to the previously used mail management information system. The promotion conducted by these

leaders and officials affects the increasing usage of the SCOs by the staff and employees. After receiving the SCO's advantages, the teams and employees widely accept the SCO, considering the positive impact they received from their job.

d. Correlation between the User Satisfaction (US) and the System Usage (SU)

Correlation between the User Satisfaction (US) and the System Usage (SU) intensity could be recognized from the 'H8'. Furthermore, based on the t-test result, we could discover that the H8 is accepted. In conclusion, User Satisfaction has a significant effect on System Usage intensity. User Satisfaction is obtained from various factors, such as system quality, service quality, information quality, and organizational support.

User Satisfaction primarily comes from Brawijaya University's support in the SCO's implementation in the SCO. Along with increasing user satisfaction, the user won't be hesitated to use the SCO continuously, so the SCO's usage intensity will naturally increase.

e. Correlation between the System Usage (SU) and the User Satisfaction (US) along with the advantages (Adv.)

Correlation between the System Usage (SU) and the User Satisfaction (US) along with the advantages (Adv.) could be recognized by the 'H9' and 'H10'. Furthermore, based on the t-test, researchers could discover that the H9 and H10 declined. In addition, based on the t-test result, researchers could find that System Usage and User Satisfaction have no impact on the Advantage. As written in table two, the descriptive analysis discovered that the value of the System Usage intensity and User Satisfaction has a relatively low value compared to the Advantage value. This indicates despite the unsatisfied user and low intensity of usage; this fact shows no effect on the employee performance. This is rooted in the fact that most users are linked to mail management, but

another task is their primary task. So as they are not entirely dependent either on the existence or the inexistence of the SCO.

- f. Correlation between the Organizational Support (OS) and the Organizational Environment along with the advantages (Adv.)

The results between the Organizational Support (OS) and the Organizational Environment and the advantages (Adv.) could be discovered by the 'H11' and the 'H12'. Furthermore, based on the t-test result, researchers could find that the 'H11' is accepted and the 'H12' is declined. In conclusion, the Organizational Environment at Brawijaya University has a low impact on the Advantage. This is caused by the SCO's primary function: local mail management system information. This means the SCO could be utilized for the interest inside Brawijaya University only. Moreover, the SCO usage is limited to the employee and officials in the Brawijaya University, so the external stakeholders do not influence the policy and implementations of the SCO.

Hence, after the interview between the researcher and the SCO developer, this research discovers numerous factors that support and hinder SCO implementations, as written below:

Table 9. Supporting and restraining factors of the SCO implementation

Supporting factors	Hindering factors
Covid-19 Pandemic	Covid-19 Pandemic
Standalone working developers	Standalone working developers
Support from the Brawijaya University Highers and Officials	Potential security breach by the irresponsible party
SCO supports multi-platform access and multi-devices	Unequal Personal Computer specifications along with the unstable internet connection
Prioritize to simplicity	The inherent problem with the Android-based smartphone
The developer is part of the Brawijaya University employee	Users are elderliness

E. CONCLUSION

This research aims to discover the success of the SCO implementation as a mail management information system in the Brawijaya University Head Office using HOT-Fit Model as a measuring method. Four of the 12 submitted hypotheses are accepted, and the rest are rejected. Further, this research discovered the following findings the good or poor System Quality in the SCO won't affect the usage intensity because this information system tends to be mandatory, and the good or poor Service Quality in the SCO won't affect the usage intensity because the bug or error unusually occurs, the good or poor System Quality, Information Quality, and Service Quality in the SCO won't affect User Satisfaction. User Satisfaction and the SCO usage intensity and its advantages will only affect the users if mail management is added to their primary task. The organizational environment in Brawijaya University doesn't affect the SCO implementations because the information system is locally oriented.

The organizational environment didn't affect the SCO implementation because this information system was used in the local work environment. By the result, researchers conclude that the SCO implementation is influenced by Organizational Support, User Satisfaction, and Information Quality. In conclusion, future SCO development is expected to be focused on these three indicators. Based on the results, this research recommends the following steps to improve the Smart Collaborative Office:

- a. In Organizational Support, it is recommended that Brawijaya University focuses on supporting infrastructures such as personal computers and internet quality. The other support is by providing the employees essential support, primarily recruiting document control and records manager.
- b. In the User Satisfaction field, researchers expected the SCO improvement would add features that could improve the system security, increase the system response and, at the same time, maintain the simple concepts that SCO had.

Furthermore, the SCO is expected to improve information quality by evaluating every factor that could lead the system to result in a mismatch between the input and output. Lastly, the service quality could be improved by adding "Online Help Centre" features and assigning more personnel to the SCO development section.

- c. In the Information Quality field, this research expected the Brawijaya University Head Office to perform a re-evaluation of the mail format produced by the SCOs because the SCOs alone only follow the mail format that Brawijaya University plotted in the Rector Order Number 22, the year 2019 on the Official Correspondences Regulation.

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