Human Organization and Technology-Fit Model to Evaluate Implementation of Library Information System

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Human Organization and Technology-Fit Model to Evaluate Implementation of Library Information System

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Abstract

This study discusses the factors of influence on the successful implementation of library information system at the Library Archives Office of Riau Province that called QALIS (Quadra Automated Library Information System). This evaluation is using HOT-Fit model. HOT-Fit placed three substantial components of information system, there are human, organization and technology. The purpose of this research is to evaluate and knows that system quality, information quality, service quality, system use, user satisfaction, organization structure and net benefit are the factors affecting successful implementation of QALIS. The underlying purpose of this research is the phenomenon that QALIS was implementation since 2010 but not optimal using of librarian and it is utilization not measured for all library users. Data is obtained through distributing questionnaires to 100 respondents, consisting of 9 librarians and 91 library users. The results of this study indicate that information quality variables and service quality variables influence user satisfaction, user satisfaction variables influence system use, organization structure variables influence user satisfaction, and finally all three variables influence net benefit (level of significant 0.05).

Keywords: HOT-Fit model, Library Information System, SEM PLS, QALIS

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1. Introduction

According to the Indonesian Government Regulation Number 43 Year 2007, Library is the institution to organize the collection of paper, print work, and work record with professional manner using standard system to meet the needs of education, research, preservation, information and recreation for library user [1]. A crucial factor for libraries is that the information they preserve and deliver must be effectively organized [2]. Advances of information technology are very important for libraries in propagating information. The type of technological advances mentioned in the form of library information system. Implementation of library information system expected can help to facilite

propagating information, classification, cataloging, data member managing, transaction and sirculation to fix libraries administration and operational.

Transforming from manual system to computerized system not only related with technology changes but human and organizational changes including. An important body of information system research finds that high quality interfaces and content alone are not sufficient to ensure that information system are widely used within specific organizations [3]. Previous research has found that in order for users to maximally utilize and enjoy the benefits of the e-library, IT innovation must first be appropriately accepted and used by its intended users [4]. Yusof [5], [6] said that three important factors in successful implementation of information system wich are human, organization, and technology. Moreover, in every interaction between users and interfaces, achieving user satisfaction is key in determining the success of a product or system [7], user satisfaction is one component of human interaction with computers. Satisfaction is defined as act of giving what is needed or desirable [8]. User satisfaction with an information system can be defined as the overall affective evaluation of an end-user regarding their experiences in relation to the information system [9]. To evaluate these three aspects are interrelated in the adaption of library information system, the Human, Organization and Technology-Fit (HOT-Fit) model by Yusof are fits this research purpose. Human, organization and technology comprise information system wich impacts are assessed in the net benefits [6]. Research by Yusof finds these factors correspond to eight interrelated dimensions of HIS success: system quality, information quality, service quality, system use, user satisfaction, organizational structure, organizational environment and net benefit [6]. The model originated from the previous works on the Information System Success Model (Delone and McLean) and the IT-Organization Fit Model [5], [6]. This research focuses on the implementation of the HOT-Fit model to evaluate a Library Information System use seven dimensions: sistem quality, inforrmatin quality, service quality, system use, user satisfaction, organization structure and net benefit. The case study employed in this research is Library and Archives Office of Riau Province that has been long implementation library information system that called QALIS. QALIS was first implemented in 2010 as embodiment of the mission of organization in order to increased library service for people and also increased the facilities and infrastructure.

2. Research Method

2.1. Sample and Procedure

In this research, data collection method is obtained by distribution of questionnaires. The questionnaires are distributed to librarian and library user. There are 100 respondents who participate in this survey which consisted of librarian: 9 people and library user: 91 people. In this study we use a structured questionnaire designed consist of three parts. The first part is a brief introduction about the purpose of the study. The second part asks the respondent's information. The third section contains measurable questionnaires based on constructs (HOT-FIT), with total of 32 statement items.

2.2. Research Design and Hypotheses

Human, Organization, and Technology-Fit model is developed by Yusof et al in 2006 with combined the concept of the DeLone and McLean IS Success Model [10] and the IT-Organizational Fit Model [11]. HOT-Fit model has three aspects and different dimensions in every aspect. In technology aspect, there are three dimensions: system quality, information quality, and service quality. In human aspect, there are two dimensions: system use and user satisfaction. In organization aspect are two dimensions: organization structure and organization environment [12]. Those dimensions is used to measure the net benefits. HOT-Fit evaluation framework by Yusof can be seen on Figure 1 below.

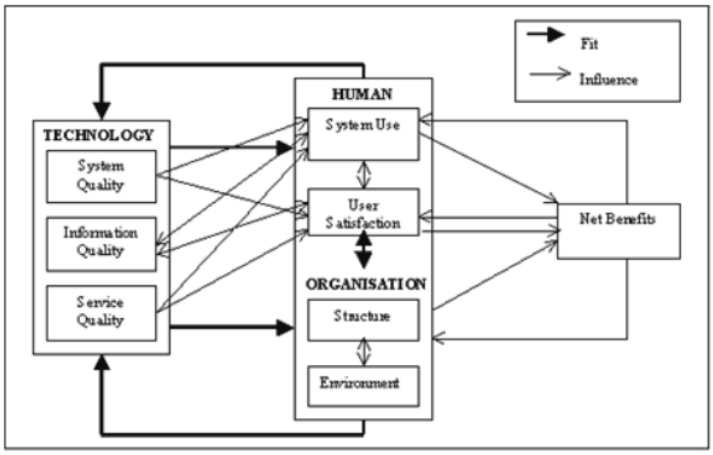

Figure 1: HOT-Fit framework (5)] (6)]

In this study use seven dimensions of HOT-Fit model there are system quality, information quality, service quality, system use, user satisfaction, organization structure

and net benefit. While the dimension of organization environment is not includ in this research because not accord with the problem.

The conceptual framework research is modification of the HOT-Fit model can be seen on Figure 2.

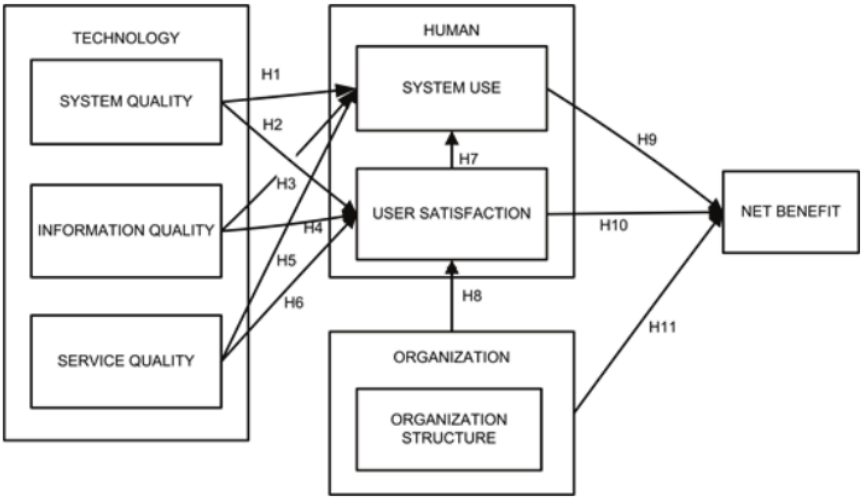

Figure 2: Conceptual Framework Research

Based on Figure 2 it is known that hypothesis in this study as follow below:

H1: system quality has a significant positive effect towards system use

H2: system quality has a significant positive effect towards user satisfaction

H3: information quality has a significant positive effect towards system use

H4: information quality has a significant positive effect towards user satisfaction

H5: service quality has a significant positive effect towards system use

H6: service quality has a significant positive effect towards user satisfaction

H7: user satisfaction has a significant positive effect towards system use

H8: organization structure has a significant positive effect towards user satisfaction

H9: system use has a significant positive effect towards net benefit

H10: user satisfaction has a significant positive effect towards net benefit

H11: organization structure has a significant positive effect towards net benefit

2.3. Measures

The data analysis in this research is done by employing quantitative method via questionnaire. Techniques of data processing use SmartPLS. This study was assessed using

likert scale with four points ranged from 1 (strongly disagree) to 4 (strongly agree). Questionnaires in this study use seven HOT-Fit constructs are system quality, information quality, service quality, system use, user satisfaction, organization structure, and net benefit. there are 32 item of statements that are measured. System quality consisted of 4 item of statements, information quality consisted of 5 item of statements, service quality consisted of 3 item of statements, system use consisted of 4 item of statements, user satisfaction consisted of 5 item of statements, organization structure consisted of 6 item of statements, and net benefit consisted of 5 item of statements.

3. Results and Analysis

3.1. Validity and Reliability

In partial least square there are three step to testing validity, there are measure the value of convergent validity, discriminant validity and compared square root value of average variance extracted (AVE). The first step is to ensure that meet the standards of convergent validity, when if the loading factor on each indicator in the construct is above 0.5 [13]. The value of convergent validity can be seen on table 1 below.

After testing, it was found two indicators which have a value of loading factor is below 0.5, namely US2 and OS1. Due the loading factor has a value bellow 0.5, we conclude these indicators do not qualify as an item in this research instrument. The indicators is then dropped and not included in the next testing phase.

The second step is to conduct repeated testing to ensure the convergent validity, where indicators are not eligible are excluded. After the second testing the final results could show in table 2. Table 2 shows that the value of the lowest indicators of each indicators construct is 0.5 so that all indicators in this study met the criteria specified. The next step is to ensure that every indicator is part of the variable it can be evaluated through the value of cross loading factor. Table 2 also shows how thw value of cross loading factor between one variable with another variable. It can be concluded that the indicators that have been dteremined to be measuring what should be measured at predetermined variables.

Another way to assessed the discriminant validity is by looked at the value of average variance extracted (AVE). AVE value was eligible if the value above 0.5. Table 3 shows that all constructs have a value above 0.5.

In addition to testing the validity, measurement model also carried out to testing the reliability of construct. Reliability tests perfomed by conducting internal checks on

TABLE 1: Convergent Validity Value

Variabel	Indikator	Outer Loading	Keterangan
System Quality	SQ1	0.758	Qualify of convergent validity
	SQ2	0.839	Qualify of convergent validity
	SQ3	0.792	Qualify of convergent validity
	SQ4	0.678	Qualify of convergent validity
Information Quality	IQ1	0.698	Qualify of convergent validity
	IQ2	0.760	Qualify of convergent validity
	IQ3	0.749	Qualify of convergent validity
	IQ4	0.741	Qualify of convergent validity
	IQ5	0.779	Qualify of convergent validity
Service Quality	ServQ1	0.785	Qualify of convergent validity
	ServQ2	0.866	Qualify of convergent validity
	ServQ3	0.619	Qualify of convergent validity
System Use	SU1	0.847	Qualify of convergent validity
	SU2	0.839	Qualify of convergent validity
	SU3	0.522	Qualify of convergent validity
	SU4	0.650	Qualify of convergent validity
User Satisfaction	US1	0.793	Qualify of convergent validity
	US2	- 0.478	Not qualify of convergent validity
	US3	0.772	Qualify of convergent validity
	US4	0.729	Qualify of convergent validity
	US5	0.796	Qualify of convergent validity
Organization Structure	OS1	0.473	Not qualify of convergent validity
	OS2	0.604	Qualify of convergent validity
	OS3	0.805	Qualify of convergent validity
	OS4	0.703	Qualify of convergent validity
	OS5	0.630	Qualify of convergent validity
	OS6	0.782	Qualify of convergent validity
Net Benefit	NB1	0.744	Qualify of i convergent validity
	NB2	0.867	Qualify of convergent validity
	NB3	0.700	Qualify of convergent validity
	NB4	0.864	Qualify of convergent validity
	NB5	0.643	Qualify of convergent validity

the reliability of indicators, this is done by looking at the value of cronbach alpha and composite reliability. Value of cronbach alpha and composite reliability were eligible if cronbach alpha and composite reliability above 0.6. The value of cronbach alpha and composite reliability can be seen on table 4.

TABLE 2: Cross Loading Value

Indikator	IQ	ServQ	US	SQ	NB	SU	OS
IQ1	0.700	0.187	0.489	0.361	0.464	0.412	0.453
IQ2	0.761	0.330	0.529	0.350	0.504	0.460	0.331
IQ3	0.746	0.411	0.567	0.420	0.469	0.530	0.308
IQ4	0.740	0.388	0.567	0.445	0.428	0.389	0.350
IQ5	0.779	0.259	0.544	0.418	0.486	0.453	0.386
ServQ1	0.359	0.778	0.437	0.332	0.345	0.379	0.267
ServQ2	0.343	0.865	0.460	0.254	0.282	0.237	0.156
ServQ3	0.265	0.628	0.407	0.212	0.167	0.306	0.305
US1	0.598	0.538	0.810	0.418	0.517	0.549	0.484
US3	0.636	0.354	0.784	0.358	0.603	0.510	0.540
US4	0.414	0.399	0.691	0.317	0.331	0.365	0.272
US5	0.571	0.489	0.819	0.441	0.553	0.607	0.450
SQ1	0.323	0.141	0.258	0.757	0.439	0.482	0.391
SQ2	0.383	0.112	0.332	0.838	0.409	0.386	0.310
SQ3	0.503	0.417	0.435	0.793	0.392	0.377	0.348
SQ4	0.419	0.387	0.482	0.680	0.420	0.325	0.288
NB1	0.529	0.206	0.485	0.422	0.744	0.592	0.437
NB2	0.536	0.351	0.533	0.393	0.867	0.589	0.439
NB3	0.515	0.288	0.422	0.366	0.699	0.471	0.300
NB4	0.545	0.304	0.609	0.517	0.864	0.595	0.560
NB5	0.292	0.208	0.457	0.363	0.644	0.467	0.592
SU1	0.541	0.283	0.459	0.416	0.643	0.846	0.479
SU2	0.557	0.440	0.610	0.464	0.571	0.839	0.481
SU3	0.199	0.025	0.305	0.297	0.395	0.526	0.385
SU4	0.380	0.370	0.487	0.283	0.426	0.649	0.303
OS2	0.426	0.448	0.502	0.377	0.395	0.329	0.616
OS3	0.479	0.198	0.426	0.367	0.551	0.466	0.805
OS4	0.371	0.241	0.407	0.253	0.509	0.549	0.715
OS5	0.107	0.088	0.245	0.264	0.359	0.304	0.656
OS6	0.263	0.126	0.442	0.289	0.347	0.352	0.785

The results of data analysis on table 4 showed that the cronbach alpha and composite reliability value of each constructs is above the value of 0.6 means that all constructs have fulfilled the criteria specified.

3.2. Hypotheses Testing

Hypothesis testing is done to determine the influence of each variable on HOT-Fit model. Basic used in hypothesis testing is the T-Statistic value from output of path coefficients

TABLE 3: AVE Value

Konstruk	Nilai AVE	Keterangan
User Satisfaction	0.604	Qualify of discriminat validity
Information Quality	0.556	Qualify of discriminat validity
Service Quality	0.583	Qualify of discriminat validity
System Quality	0.592	Qualify of discriminat validity
Net Benefit	0.591	Qualify of discriminat validity
System Use	0.529	Qualify of discriminat validity
Organization Structure	0.517	Qualify of discriminat validity

TABLE 4: Cronbach Alpha and Composite Reliability Value

Konstruk/variabel	Composite Reliability	Croanbach Alpha	Keterangan
User Satisfaction	0.859	0.783	Reliable
Inormation Quality	0.862	0.801	Reliable
Service Quality	0.805	0.629	Reliable
System Quality	0.813	0.767	Reliable
Net Benefit	0.877	0.822	Reliable
Sistem Use	0.813	0.692	Reliable
Organization Structure	0.841	0.764	Reliable

after running the bootstrapping function on SmartPLS. In this reaserch hypothesis testing uses a significant level 0.05. The value of t-table for significant level 0.05 is 1.96, thus hypothesis is accepted if t-statistic is greater than 1.96. Hypothesis testing result are presented in table 5 in below.

TABLE 5: Hypothesis Testing Result

Hypothesis			T-statistics (t)	T-table (Significant 5%)	Result
	From	To			
H1	SQ	SU	1.734	1.96	Rejected
H2	SQ	US	0.543	1.96	Rejected
H3	IQ	SU	1.446	1.96	Rejected
H4	IQ	US	5.762	1.96	Accepted
H5	ServQ	SU	0.196	1.96	Rejected
H6	ServQ	US	3.482	1.96	Accepted
H7	US	SU	3.492	1.96	Accepted
H8	OS	US	2.862	1.96	Accepted
H9	SU	NB	4.612	1.96	Accepted
H10	US	NB	2.134	1.96	Accepted
H11	OS	NB	2.060	1.96	Accepted

Based on result of analysis, it is known the accepted or rejected hypothesis. There are 4 of 11 hypothesis that rejected and 7 hypothesis can be accepted.

Based on hypothesis testing it known that information quality variable has significant effect on user satisfaction, because t-statistic > t-table (5.762>1.96) thus H4 is accepted. It means the higher the information quality resulting from system, the higher that level of satisfaction of user.

Service quality variable has significant effect on user satisfaction, because t-satistic > t-table (3.482>1.96) thus H6 is accepted. It means the better the service quality is given, the higher that level of satisfaction of user.

User satisfaction variable has significant effect on system use, because t-statistic > t-table (3.492>1.96) thus H7 is accepted. It means the higher that level of satisfaction of user, the higher the intensity of user to system use.

Organization structure variable has significant effect on user satisfaction, because t-satististic > t-table (2.862>1.96) thus H8 is accepted. It means the better the organization structure, the higher the intensity to system use.

System use variable has significant effect on net benefit, because t-statistic > t-table (4.612>1.96) thus H9 is accepted. It means the higher the intensity of system use, the higher the benefits that perceived of user.

User satisfaction variable has significant effect on net benefit, because t-statistic > t-table (2.134>1.96) thus H10 is accepted. It means the higher that level of satisfaction of user, the higher the benefits that perceived of user from using system.

Organization structure variable has significant on net benefit, because t-statistic > t-table (2.060>1.96) thus H11 is accepted. It means the better organization structure will produced the great benefit.

While the hypothesis of H1, H2, H3, and H5 are not effect and not significant the dependent variables to independent variables.

The result of HOT-Fit model analysis are shown in Figure 3 below.

To understand the effect of dependent variables on the HOT-Fit model, we perfomed a percentage analysis of the R-Square results. R-Square is used to determine the capability of independent variables that can describe dependent variables such as system use, user satisfaction and net benefits. Based on the result it is known that:

- System quality, information quality, service quality and user satisfaction can describe system use in the amount 50.1%
- System quality, information quality, service quality, and organization structure can be describe user satisfaction in amount 65.8%

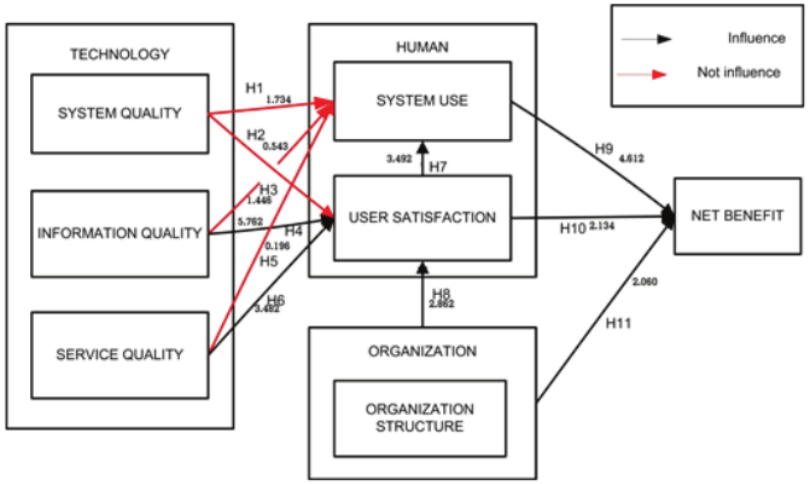

Figure 3: result of research model

- System use, user satisfaction and organization structure can be describe net benefit in amount 60.2%

4. Conclusion

The result of analysis shows that the variables of information quality and service quality have significant influence to user satisfaction. Variable of system quality is has not significant influence to system use and user satisfaction. Variable of user satisfaction has significant influence to system use. Variable of organization structure has significant influence to user satisfaction. Variable of system use, user satisfaction and organization structure have significant influence to net benefit.

Overall, it can be seen that successful rate of implementation of library information system was in level “quite successful” it shown at result of R-Square value from variable of net benefit there are 0.602 or 60.2% in percentage.

In this research not using all dimensions of HOT-Fit model, therefore future research should be use all dimensions of HOT-Fit model in accordance with the original model of HOT-Fit.

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