Model of Information Technology Facility Service Based on user Satisfaction

R Roslina*[1], Syafrizal Saulan[2], Wanayumini[3]

[1]Department of Computer and Information Engineering, Politeknik Negeri Medan, 20155 Medan, Indonesia,
[2]Universiti Antara Bangsa Malaysia
[3]Universitas Asahan Kisaran, Sumatera Utara, Indonesia

**roslina@polmed.ac.id/roslinanich@gmail.com*

Abstract. Most research concerning user satisfaction in using Information Technology focuses on user feedback resulting from the use of information systems as a tool to retrieve or produce information. In this case, information technology facilities provide offered hardware and software that can be used by customers to produce information, such as data analyzing software, without considering the specific needs of users. This research focused on customer responses when IT service providers understand their needs before giving them service, which includes hardware, software, staff, room and utilities provided by the information technologyservice provider. The factors that affect the level of user satisfaction were analyzed and the result showed, firstly, that there are three factors that affect the level of user satisfaction, which are: staff service, the utility that is gained, and the equipment system. Secondly, a model has been developed to information technology facilityservice.
Key words : Information Technology; user satisfaction; model; education

1. Introduction

Information technology playsan important role in increasing product and service quality. Through information technology, the heavy burden of work can become easier, the length in communication shorter, data processing faster and more accurate, and a high quality of art can be produced [1] [2]. Based on this IT role, it is necessary to research user satisfaction for the information technology services that they receive in order to measure customer satisfaction and the success of an information system[2].

Many research studies have been done, each using different factors and attributes as measuring tools, for example, stated that staff, user understanding, and system output were the three factors that determine user satisfaction [3]. On the other hand, has made a case for twenty qualified and successful system characteristics[4]. IT user satisfaction measurement tool that they developed has been used widely for deciding customer satisfaction and the success of an information system[5][6].

The opinions and views of users will affect the service system. Information technology services are considered successful if users are satisfied with the service they receive. Users are the main factor in determining whether information technology services are successful or not[3][4]. The measurement of user satisfaction has been done on information systems that focus on data processing, by building

information centers to provide information services to users or allowing users to access the information center. Information received from the information center helps users do their jobs. The measurement of user satisfaction that has been done focuses on the characteristics of the information or the method of sending information itself. The quality of information depends on accuracy, updates, on time, user understanding of the system, and information generated.[7]

The Measurement of this service provide is not the same as measuring information services, but similar to services performed on a computer lab or internet cafe. Measurements made are not based on the quality of information provided but are based on the quality of services provided. In general, it is often assumed that a computer lab or cyber cafe, which must provide good software and hardware needed by the user. Thus, compared to information centers that have important responsibilities to provide information needed by users, computer labs or internet cafes, only need to manage hardware and software for their customers. In fact, providing satisfying information technology services in computer labs and internet cafes is not that simple. This study aims to prove that providing services in computer lab or cyber cafes is also challenging. The expectations of users not only depend on hardware and software, but also depend on skilled employees who can provide direction and guidance. This study focuses on the needs of users to measure the quality of information technology service provided by considering various factors in measurement, which are based on the comfort aspects provided to users like as software, hardware, technicians, supporting equipment,space environment of information technology systems, the benefits obtained.

2. Literature review

2.1 Quality

Quality is a continuous system from process to outcome/output consistently . Qualityis providing something on time, within budget and meeting user needs [7]. There are twenty characteristics of quality software which are: economic, smart, flexible,can be tested, easy to understand,security system, has good documentation,reliable, easy to use, easy to change, easy to update, link with other systems, has a module, complies with the agreement, accurate, true, generally, useful, clear and easy to move [4].

2.2 Service quality

Quality of service is a subjective concept, whichinvolves understanding how customers think about the quality of a service. This is very important in deciding the success of management. Three concepts related to this understanding are: user satisfaction, quality of service, and customer value [8]. The response of user about quality and service are not same. There are five measures of quality service : [9]

1. Clear/visibility: Users can see how the available service works and decide whether it can be trusted. Services provided should be appropriate, accurate and reliable.
2. Responsive: Provide service and appropriate responses to user
3. Certainty: The attitude and courtesy of employees in service; they need to be assuring and responsible.
4. Empathy: Employees in service are sincere in fulfilling the wishes of the user.

2.3 User satisfaction

User satisfaction has brought in some concepts such as feeling needed by the system, acceptance of the system, perceived benefits in using the system, antipathy towards information systems, response to the MIS, user perception and trust [3] [10]. If information systems meet the user's needs, user satisfaction will increase [1]. Low user satisfaction will be followed by users terminating their use of the system services [10]. Beside organization quality, user satisfaction influenced of information technology services [11]

2.4 Factors that affect user satisfaction

The found of researchers are many factors influence the level of user satisfaction ininformation technology services such as user expectations, features and user trust, characteristics and benefits of the system, user involvement, the design of information system strategy, system implementation, training, and management support [11].

The success of an information technology service system is determined by the level of user satisfaction. Measurements were generally done on the system's own applications, which were built using different aspects. There are three aspects the factors had imfact users' satisfaction i.e. information satisfaction (information output), system satisfaction (technical system), and service satisfaction (supporting services) [12]. And objective measurement focuses more on internal users, trust, information accuracy, understanding, user involvement in the system[13].

3. Research Methodology

3.1 Generation of scaling tools

User satisfaction is measured through user responses and views regarding the available service facilities. Facilities provided by providers are presented in the form of questionnaires grouped into several parts: the first part is the characteristics of the user; the second part of the user's response to the system services provided, such as software, hardware, employees, room, and additional services. The third section has to do with getting user feedback regarding the benefits they received from using the provided information technology services.

There are 63 question items consisting of: 7 items user characteristics, 11 itemshardware, 11 itemssoftware, 11 itemshelp desk technician, 5 items information technology rooms, 5 items support services, and 13 items IT systemadvantage. The second and third parts of the questionnaire were measured using a Likert scale with 7 scale, ranging from "very strongly disagree" to "very strongly agree."

3.2 Sample And Proccess

Data were collected from 250 students using information technology facilities found in computer labs on campus with a composition of samples from various departments: 38.8% technique, social 44.8%, and science 16.4%. [14].

3.3 Scale Verification

The initial stage of this research is to build a reliable and accurate instrument to measure user satisfaction about IT service facilities. 63 items in the questionnaire were tested before being used to collect data. measurement validity used weaker method by testing the correlation between the number of values of each group of variables with the total number of values of the variables. The test results show a valid correlation with a value of above 0.4. The second measurement is to test the confidence level of the questionnaire by calculating "Cronbach Alpha" for each variable item used such as software, hardware, technical staff, room conditions, assistance and service advantage. All scores above 0.85, which means that the questions used can be relied upon as a measuring instrument. The third test uses factor analysis to determine aspects of the relationship that affect overall satisfaction. The test results show that there is a strong relationship between the variables of each group with the overall value of the variable.

4. Result and Discussion

Data collected through questionnaires was entered into a data processing software (SPSS). The first analysis was conducted to determine the level of user satisfaction regarding the IT facility service system. The best value for each group of variables was the one with a minimum satisfaction value of 57.93, such as in Table 1.

Table 1. Mean and stadard deviation value of variabel group

Scale	Mean	Deviation Standard
Hardware	33.44	11.04
Software	43.48	11.12
Employe	40.20	13.66
Room environment	21.63	6.95
Service Support	16.10	6.03
The benefit received	57.93	16.17

The second: group analysis describes the characteristics of variables to group data containing sample information that has almost the same characteristics. The results of group analysis, group composition shows a high correlation value located at the top and followed by a low value correlation. Variables have almost the same correlation values occupying adjacent locations. The third: factor analysis to determine aspects that affect overall user satisfaction. Based on the results of the correlation and factor analysis carried out to classify and determine the main factors that influence the level of user satisfaction as shown in table 2.

Table 2. Classify of factor analysis

No	Item	Factor		
		Employ and Service	The Benefit Received	System Equipment
1	Technical employe service	**0.826**	0.249	0.118
2	The employe comunication well	**0.777**	0.125	0.117
3	The employe friendship	**0.767**	0.238	0.089
4	The employe responship	**0.765**	0.211	0.120
5	The employe expert	**0.741**	0.150	0.223
6	The employe give up to date information	**0.737**	0.202	0.212
7	The employe quick respon	**0.735**	0.154	0.207
8	The arrange of equipment	**0.660**	0.229	0.158
9	On time duty	**0.655**	0.141	0.225
10	Comfort of the environment room	**0.636**	0.253	0.173
11	Satisfaction of support service	**0.634**	0.161	0.346
12	Motivation	**0.631**	0.223	0.227
13	Well tutorial	**0.618**	0.171	0.052
14	Enough employe	**0.596**	0.084	0.318
15	Confort room	**0.585**	0.181	0.186
16	Easy order equipment	**0.570**	0.134	0.299
17	Clearly notes	**0.534**	0.286	0.217
18	Install software service	**0.520**	0.160	0.327
19	Easy mantenance computer service	**0.512**	0.106	0.359
20	Borrow software service	**0.504**	0.121	0.258
21	Confort environment	**0.455**	0.192	0.283
22	Improve knowledge	0.226	**0.859**	0.076
23	Improve Inovation and creativity	0.114	**0.853**	0.089
24	Rich work	0.187	**0.850**	0.079
25	Benefit of use IT	0.080	**0.831**	0.126
26	Improve study quality	0.210	**0.831**	0.106
27	Confort work	0.140	**0.830**	0.155
28	Easy work	0.165	**0.811**	0.169
29	Work speedly	0.238	**0.810**	0.164
30	Sharing data and information	0.227	**0.792**	0.121
31	Easy e-comunication	0.307	**0.779**	0.142
32	Receive Information up to date	0.221	**0.754**	0.195
33	IT knowledge up to date	0.237	**0.728**	0.063
34	As expected	0.270	**0.722**	0.138
35	carry out work easily	0.270	**0.480**	0.450
36	Up to date hardware	0.194	0.098	**0.759**
37	High process	0.147	0.199	**0.751**
38	Last technology	0.211	0.139	**0.743**
39	Speed respons	0.133	0.171	**0.728**
40	Compatible with hardware	0.227	0.204	**0.720**
41	Enought memori	0.141	0.114	**0.659**
42	Up to date software version	0.199	0.220	**0.682**
43	Virus protection avilable	0.084	0.165	**0.637**
44	Satisfaction's software	0.446	0.237	**0.595**
45	Saticfaction's hardware	0.482	0.127	**0.584**
46	Enought Computer quantity	0.229	0.003	**0.493**
47	Flexible software	0.139	0.314	**0.475**
48	Software guidline	0.202	0.320	**0.460**
49	software easy understand	0.300	0.320	**0.455**
50	Software easy use	0.290	0.323	**0.450**
51	Software user friendly	0.400	0.284	**0.423**
52	Software not trouble	0.354	0.250	**0.420**
53	Can use outside tutorial	0.340	0.210	**0.410**
54	Expert use software	0.190	0.290	**0.410**
55	New catridge/ribbon	0.230	-0.070	0.383
56	Enought printer	0.130	-0.030	0.360

The test results show that variables are grouped into three main factors based on the value of each item, there are employee and servicesfactors, advantage and system instrument. Items taken from factors that influence the level of user satisfaction are items that have a value above 0.4. To find out

among the three factors that most influence the level of user satisfaction by multiplying the average value of items from each item. Most of the values of the number of factors influence the level of user satisfaction such as: the advantage of the service system with a value of 4.04, employees and services with a value of 3.19 and system instrument with a value of 2.67. From the results of data analysis, the found three factors that directly influence the level of user satisfaction: advantage, employees and service, instrument system. In addition, the user's background, such as how often uses information technology facilities lab or cyber cafe, also indirectly affects the level of user satisfaction, shown in Figure 1.
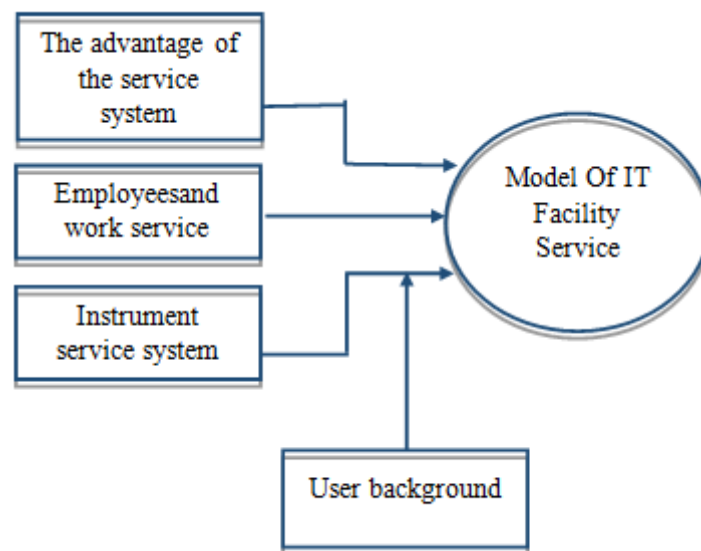

Figure 1 : Model of information technologyfasility service

The result of this study is in line with the result/conclusion obtained by similar research about user satisfaction regarding information system applications. Although the measuring tools used in this study were differentfrom those used by other researchers, they are still valid because the aspect which is used as a measuring tool in a study must be adapted to how the organization functions where the study takes place.

5. Conclusion

Research has been conducted regardinginformation technology service facilities where users use the facilities provided by a service provider. This research resulted in a model that can be used to test the quality of information technology service facilities. The results showed that user satisfaction level regarding information technology service facilities were influenced by: advantage of the system, employees and service, instrumen of service system (hardware and software), as well as the background or characteristics of usersas indirect factor.

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