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27th, 28th & 29th July 2017

Kuala Lumpur, Malaysia

Committee of the ICOPH - 2017

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Conference Proceedings of the 3rd International Conference on Public Health 2017

Edited by Prof. Dr. Hematram Yadav and Prof. Dr. Rusli Bin Nordin

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MESSAGE FROM THE CO-HOSTING PARTNER ICOPH 2017

On behalf of Taylor's University, it is an honour to welcome delegates to the 3rd International Conference on Public Health (ICOPH) with the theme, "Strengthening the Public Health Infrastructure towards Healthy Communities". A role in public health is vital for increasing life expectancy, however, it is rarely thought of until a crisis catches our attention.

Over the years, health initiatives and management for global communities are increasingly recognised as an important component for the overall wellness of human beings. Public health is constantly evolving in response to the needs of the population around the world. Initiatives like clean air, water policies and vaccinations keep people healthy and safe by preventing injury and disease.

Hospital based treatment may be more apparent to many; community based health initiatives need to be given more emphasis to increase the awareness of the health professionals, and also the public of their valuable role in a healthy population. It is necessary to remove various cultural, social and logistical barriers to enhance knowledge about healthcare needs, closing the gap in health disparities within countries.

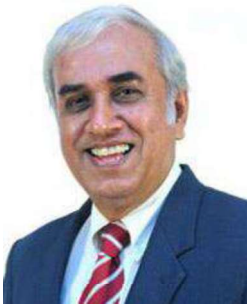
At Taylor's University, we emphasise the advancement of knowledge through research and are happy to contribute to its dissemination through scientific conferences. More importantly, research outcomes should lead to action and guide programme development, followed by the delivery of health services. In line with the new strategic plan, we look to increase our capacity and affinity in the area of research and building commercial success, and to be recognised as the leading international university ranked in the top 100 universities in Asia by year 2022.

I sincerely hope the 3rd ICOPH 2017 will facilitate the exchange of research findings, opinions and views on issues related to Public Health among healthcare professionals and

academicians from different parts of the world and different health care systems. May the participants today gain valuable experience and put into good use what is learnt.

Prof. Michael Driscoll
Vice Chancellor & President Taylor's University
Malaysia

MESSAGE FROM CONFERENCE CO-CHAIR- ICOPH 2017



It gives me great pleasure to welcome all of you to this 3rd International Conference on Public Health in Kuala Lumpur, Malaysia. This is the 3rd time this conference is being organised by TIIKM and the theme of the conference is 'Strengthening the public health infra-structure towards healthy communities. "First of all let me thank you all for attending this conference and secondly I would like to thank all the local academic partners and all universities and is particular the Ministry of Health Malaysia for providing support for the conference. Globally public health is no longer dominated by infectious diseases instead it is being dominated by chronic diseases such as heart disease, diabetes, cancer, and mental-health conditions, which require continuous treatment although polio and HIV are still with us. At the same time, newly emerging diseases such as Zika and Ebola epidemics are making headlines and these pose challenges to global health security in the future.

Also war, civil unrest, and acts of terrorism can hinder progress in all aspects of global development, including health, education, and gender equality. Extreme weather and rising sea levels, temperatures, and carbon dioxide levels could usher in a wide variety of human health effects. We as public health professionals need to address some of these issues and influence our policy makers to act. It is important to consider how our actions today will be viewed by our future generations' decades from now.

This year we have received about 600 abstracts for the conference and we are happy of the tremendous response we have received. I am sure that you all will deliberate on some of these important issues in the next few days. Finally let me take this opportunity to thank all the plenary speakers and also the members of the organising committee for the excellent preparations and arrangements for this conference and you the participants who have made

this conference happen. Hope you all will have good conference for the next few days and also enjoy the beauty of Kuala Lumpur and Malaysia

Thank You

Prof. Dr. Hematram Yadav
Department of Community Medicine
MAHSA University
Kuala Lumpur
Malaysia

MESSAGE FROM CONFERENCE CO-CHAIR- ICOPH 2017

A very warm welcome (*selamat datang*) to all speakers and delegates to Kuala Lumpur, Malaysia and to our Third International Conference on Public Health 2017 (ICOPH 2017), 27-29 July 2017, organized by The International Institute of Knowledge Management (TIIKM). The third conference follows on the highly successful first and second conference in 2015 and 2016, respectively, in Colombo, Sri Lanka. The theme of the first conference was "promoting global health through equitable access to health system" that took cognizance of new advances and research results in the areas of global health and health systems. The theme of the second conference was "bridging the gap between research and policy and creating a global platform to discuss evidence based health policies and interventions in public health." In the third conference, we will address the very important and pertinent issue of "**Strengthening the Public Health Infrastructure towards Healthy Communities**."

The Sustainable Development Goals (SDGs), officially known as "Transforming Our World: the 2030 Agenda for Sustainable Development" is a set of 17 "Global Goals" with 169 targets that was officially sanctioned by the United Nations on 25-27 September 2015 as a successor to the Millennium Development Goals (MDGs). The SDGs build on the principles agreed upon under a United Nation resolution, popularly known as The Future We Want. It is a non-binding document released following the Rio+20 Conference in 2012 in Rio de Janeiro, Brazil.

The 17 global goals are: (1) No Poverty; (2) Zero Hunger; (3) Good Health and Wellbeing; (4) Quality Education; (5) Gender Equality; (6) Clean Water and Sanitation; (7) Affordable and Clean Energy; (8) Decent Work and Economic Growth; (9) Industry, Innovation and Infrastructure; (10) Reduced Inequality; (11) Sustainable Cities and Communities; (12)

Responsible Consumption and Production; (13) Climate Action; (14) Life Below Water; (15) Life on Land; (16) Peace, Justice and Strong Institutions; and (17) Partnerships for the Goals. Indeed, the ICOPH 2017 theme of "Strengthening the Public Health Infrastructure towards Healthy Communities" certainly echoes with most of the 17 SDGs.

Implementation of the SDGs has already started worldwide. It is no easy task, however. In each country, the goals must be translated into national legislation. Poor countries need the support of rich countries, and coordination at the international level is crucial. The SDGs is very ambitious, and there are many obstacles. It would be a great opportunity for ICOPH 2017 to deliberate on some of these obstacles and pave the way ahead.

I would like to take this opportunity to thank all speakers and delegates for making time and effort to attend and actively participate in this international conference. A very sincere thanks to the Organizing Committee and Scientific Committee members for all the help and all sponsors and participating organizations for supporting the conference. I hope that the conference will forge new alliances in research, development and training that will be beneficial to us all.

Sincerely,

Prof. Dr. Rusli Bin Nordin
Professor of Public Health Medicine (Occupational Health)
Jeffrey Cheah School of Medicine and Health Sciences
Monash University Malaysia

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EVALUATION OF "SIMPLE WEB" DEVELOPMENT BASED ON THE DeLone AND McLean MODEL

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Abstract: The evaluation of Tuberculosis (TB) surveillance system conducted at the Health Office of Gresik Regency, Province of East Java showed that there was less data quality, due to incompatibility or incomplete data input from Primary Health Center (Puskesmas). This situation caused officers at the district health service level had to validate. "Simple Web" is a software that was developed to help validation run easily without the huge cost and effort required. The objective of the study was to evaluate the successful of the development of "Simple Web" based on the DeLone and Mc Lean approach model. The study was conducted on 30 of 37 existing Puskesmas. User satisfaction scores of Information System (IS) success factors based on the DeLone and McLean IS Success Model were used to evaluate IS performance after Simple Web was introduced. Data analysis was done by Path Analysis using Lisrel 8.80 for Student. The result showed that the development of Simple Web got positive appreciation from health officers. The software was secure and easy to operate.The relationships among IS success factors were also analyzed to identify the important factors influencing. Information System has no significant relationship with Use and User Satisfaction. And, Service Quality and Quality System has significant relationship with Use and User Satisfaction.

Keywords: Information System, Simple Web, DeLone and McLean Model

Introduction

Integrated Tuberculosis Information System (ITSS) is web-based application that can be accessed either offline or online. Since 2012, ITSS had been developed to be used by health officers in province or district level. ITSS became parent of information system related with Tuberculosis control program refer to the Guidance of National TB Control and became subsystem of National Health Information System developed by Center of Data and Information Ministry of Health. As parent system in TB control program, ITSS was developed to transfer data with other information system those had been developed before, such as *e-tb manager* for TB Drug Resistance. Besides, the development of ITSS was aimed to facilitate further analyze about the relationship of cases and logistics, case and laboratory, logistic system alert, inventory study, and *capture to capture*. This information system is very useful for TB program officers so the report could be done efficiently, effectively, accurate, and timely.

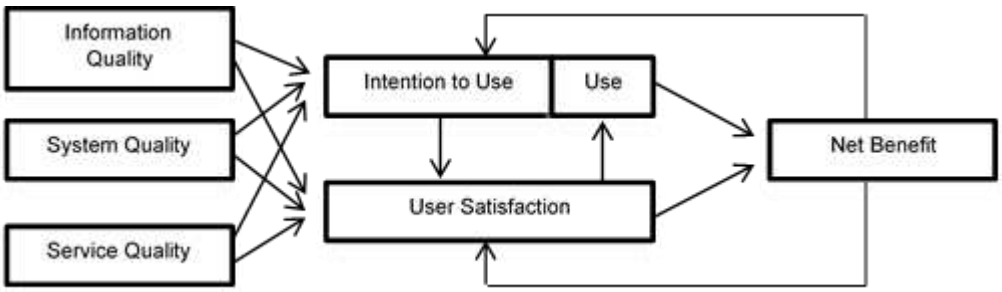
The use of ITSS in Health Office of Gresik Regency is still experiencing obstacles. At each reporting period, TB program officers at the district level must validate data already entered by the Primary Health Center officers. Validation is necessary because there were frequent non-synchronized data of individuals entered by Primary Health Center officers (eg case and suspect data) with aggregate output (eg sputum conversion). The validation process took time, cost, and energy, because the Primary Health Center officers must meet directly with the officers in the district by bringing the data they have or the extracted data that has been entered.

Based on the problems above, "Simple Web" was developed. It is an application system that was expected to facilitate the activities of data validation conducted by TB program officers at the district level. As impact of the application of Simple web in Gresik District Health Office, it is very important to know the sustainability of the implementation of this system. To determine the impact of successful implementation of Simple Web, evaluation is conducted using the success model of information systems developed by DeLone and McLean (2003). The use of DeLone and McLean model is based on the components contained in the model in accordance with the rules in this study. The development of this model was based on the process of causal relation of the elements contained in this model. So the measurement of each element is not counted independently, but as a whole that affects the other.

Methods

This was an evaluation research conducted at the Health Office of Gresik Regency. The research began with conducting training for TB program officers of Primary Health Center about "Simple Web". Primary Health Center officers who attended the training completely became respondents in this study. The number of respondents was 30 people representing 30 of 37 Primary Health Center available.

De Lone and McLean model was used to assess the success of the system that had been developed. Since the introduction in 1992 and updated in 2003, the success model of information systems developed by DeLone and McLean (D & M IS Success Model), has been widely applied in some empirical studies to explain the success of an information system. The DeLone and McLean model (1992) states that the success of the information system can be represented by qualitative characteristics of the information system itself (system quality), the quality of information system output (information quality), the use of the output, the user's response to the information system, the influence of information systems on user habits (individual impact), and its effect on organizational performance (DeLone, W., & McLean, 1992; DeLone, W. & McLean 2003; Wahyuni, 2011). The DeLone and McLean model is illustrated in Figure 1.



Source : (DeLone, W.,& McLean, 2003)

Figure 1. The DeLone and McLean's Model (2003)

According to Figure 1, this model was built from three components, namely system creation, system usage, and impact of system usage (DeLone, W., & McLean, 2003; Falgenti, 2013). The components were arranged in the following order of measurements. First, the information system was made and measured its quality with three dimensions of quality, namely information quality, system quality, and service quality. Second, the information system is used and the experience of this usage is measured by two dimensions, namely usage dimensions and dimensions of user satisfaction. Third, the impact of usage was measured by two dimensions, namely individual impact and organizational impact (net benefit) (Falgenti, 2013). The model in Fig. 1 is adopted in this study as in Figure 2

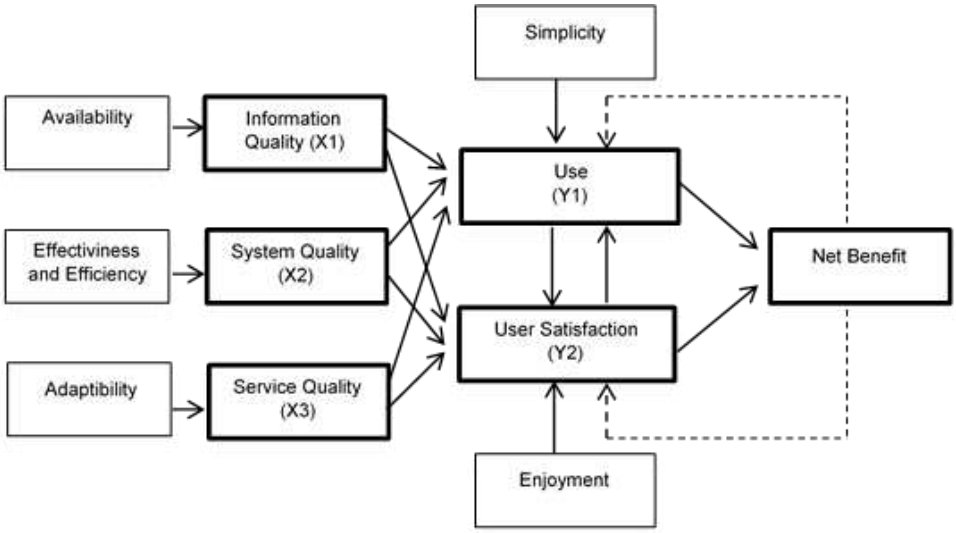


Figure 2. Model adopted from DeLone and McLean model

In accordance with the model in Figure 2, the variables in this research included Information Quality (X1), System Quality (X2), Service Quality (X3), Use (Y1) and User Satisfaction (Y2), each variable had one indicator that was assumed to have influence on the variable. Since there was only one indicator that influenced all variables studied, it was assumed that the indicator represented the variables studied.

The data used were in the form of primary and secondary data. Primary data were obtained from the evaluation to determine the influence of success Information Quality (X1), System Quality (X2), Service Quality (X3) to Use (Y1) and User Satisfaction (Y2) and described the net benefit of Use (Y1) and User Satisfaction (Y2). The instrument used in this research was questionnaire with Likert scale. The categories of the scale were (1) strongly disagree, (2) disagree, (3) agree, and (4) strongly agree (Hendrawati, 2013).

The influence of information system success, service quality, system quality to use and user satisfaction, and the influence of net benefit to use and user satisfaction were tested in order to formulate the best model of the system. Data analysis was done using Path Analysis with the assistance of Lisrel 8.80 for Student.

Result

a. Distribution of Respondents' Assessment

Based on the score of respondents' answers to the items in the questionnaire, it could be concluded respondents' perceptions of each variable researched. The distribution of respondents' perceptions could be seen in table below:

Table 1. Distribution of Respondents' Perceptions

Aspect	Strongly agree		Agree		Disagree		Strongly disagree	
	n	%	n	%	n	%	n	%
Information System	12	40	15	50	3	10	0	0
System Quality	19	63	11	37	0	0	0	0
Service Quality	13	43	16	53	1	4	0	0
Use	12	40	15	50	3	10	0	0
User Statisfication	12	40	18	60	0	0	0	0
Means	14	45	15	50	1	5	0	0

Table 1 showed that if the development of Simple Web in Gresik District Health Office got positive appreciation from the Health Implementation Unit (HIU) officers. The table revealed that in all aspects of the assessment the percentage of officers who declared disagree were mostly 10 percent or less.

b. Structural Model

Here is the path diagram adopted the DeLone and McLean model as the result of analysis.

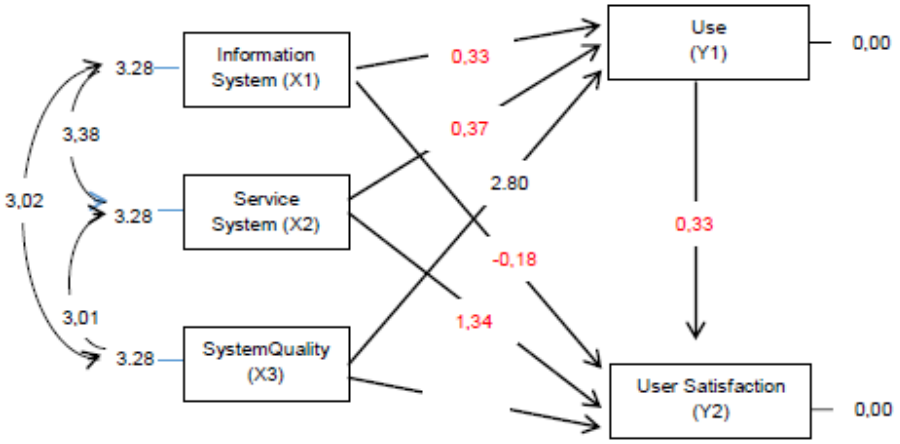


Figure 3. t-values of structural model 1

In Figure 3, structural model 1, we found that there was only one path which had significant effect, that was from System Quality (X3) to Use (Y1) (t-value>1,96), while the other structural coefficients showed non significant effect. So, it needed to be modify the model.

c. Structural Model after modification

After the modification by removing the non significant coefficients from the results of structural model 1 the model became as figure 3 below.

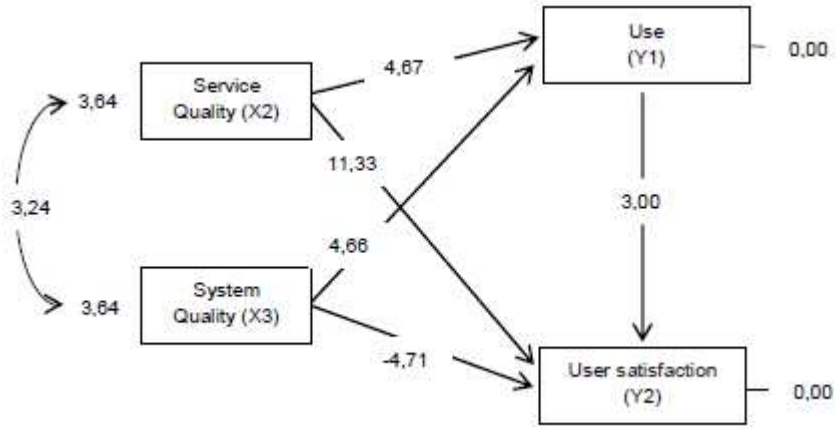


Figure4. t-value of structural model 2

Based on Figure 4 it could be concluded that in the structural model 2 all structural coefficients were significant with positive effects, except one variable had negative effect that was system quality to user satisfaction.

It could be seen that either service quality (X2) or System Quality (X3) had either direct or indirect effect to (Y2) through Use as intervening variable. From the test results can be concluded if service quality and use simultaneously have influence on user satisfaction.

d. The relationship between Use and User satisfaction with Net Benefit

The application of Simple Web to support ITSS in Gresik District Health Office was approved by some respondents (97%). This happened because the system was considered easy to be learned by officers, easy to be operated, easy to be accessed and facilitated the delivery of reports. While the relationship of user satisfaction with net benefit was seen from the percentage of respondents those felt comfortable in operating Simple Web that was 90% of officers felt comfortable with the Simple Web because it did not make additional burden for them.

From the above result it could be concluded that Simple Web could provide benefits for officers and institutions because it was more effective, efficient and could facilitate data validation activities.

Discussion

Effect of Service Quality on Use

From the results of data analysis that had been done was known that the quality of service (Service quality) directly have a positive effect on usage (Use). This could be interpreted that the quality of good service would affect the use of Simple Web. Good system quality could be seen from the measurement of indicators related to the effectiveness and efficiency of an information system (H.Zaied, 2012). If each indicator showed a high level then the user would repurchase the Web Simple in the future. This was related with the results of research conducted by DeLone and McLean (2003) and Fitri (2015) which stated that Service Quality had an influence on Use. This result was different from the research that had been done by Adiyan M (2015) which stated that the quality of the system did not affect positively the satisfaction of user because in the research it was identified if the users (Use) rarely use helpdesk facilities that available in the system when experiencing constraints during the usage.

Service Quality Influence on User Satisfaction

From the analysis that had been done it was known that the quality of service (Service Quality) had positive effect on user satisfaction (User Satisfaction). This indicated that good service quality would affect the increase of user satisfaction. If the quality of service was good then the user would feel comfortable in using Simple Web that would increase the user's satisfaction of the Simple Web.

The results of this study were consistent with the results obtained by DeLone and McLean (2003) who found that service quality could affect user satisfaction (User Satisfaction). Good service quality would make users feel happy, thus increasing user satisfaction.

Effect of System Quality on Use

Based on the above analysis it was known that the quality system (System Quality) have a positive effect on usage (Use). This indicated that the quality of a good Simple Web system would affect the intensity of Simple Web usage. The quality of this good system could be seen from the measurement of indicators used in for the assessment of the quality of the system using 'Simplicity'. If the indicator showed a high level then users would be willing to repurchase Simple Web as a future reporting media (Hana, 2012). This result was in accordance with the results of research conducted by DeLone and Mclean (2003) that System Quality had significant impact on Use. In addition to DeLone and McLean this study was also supported by research

conducted by Seddon (1997) and Cheong (2005). However, there were studies conducted by Groho (2014) which stated that the quality of the system had no effect on the user. This was because in the research the existing system was not useful for them. The difference of the result was happened because in the research done by Groho (2014) the respondents felt whether exist or not the system is, they could still perform the task well.

Information systems that could be regarded as a quality system if it was design to meet the ease of use of the information system. From the results of the assessment most of the respondents considered that Simple Web was easy to be learned, operated, accessed and easy in terms of delivery of reports so it was considered really simplify the performance of the officers, and it could be said that Simple Web was qualified.

Effect of System Quality on User Satisfaction

In the analysis that had been done, system quality had negative direct effect on user satisfaction. This indicated that although the quality of the system (System Quality) was good but user satisfaction (User Satisfaction) in using the Simple Web actually decreased. This could happen because there was lack of socialization to the officers and there still assumption that Simple Web was a difficult tool to use. In addition, officers also felt less practice related to the operation of Simple Web. According to Bulter (1982) practice that was done continuously would produce good skills.

The results of this study were not in line with the research conducted by Hana (2012), Oktaviani (2015), Park J (2009) and Wicaksono (2012) which stated that the quality of the system affected user satisfaction because it assumed that the system had navigation menus that facilitated Users to perform browsing activity, reliability, and speed of loading time and download time.

Influence Use against User Satisfaction

Based on the results of research that had been done it was known that Use had positive effect on User Satisfaction which means if the system was used frequently would increase user satisfaction in using Simple Web. This means, if the use of Simple Web could meet user needs, user satisfaction would also increased, so the system would be sustainable. This statement was in accordance with DeLone and McLean (2003) research which stated that a positive experience of system usage would drive user satisfaction. If the use of the system could meet the needs of users, then user satisfaction will increase and the system will be sustainable (DeLone, W., & McLean, 2003; DeLone, W., & McLean, 1992). Thus, it could be said that Usage (use) was a predictor of the user satisfaction (User Satisfaction) of Simple Web.

The relationship between Use and User Satisfaction against Net Benefit

Use (Usage) and user satisfaction (User Satisfaction) had significant relationship with Net benefit. This was shown from the results of this research that showed, if according to the officer, Simple Web was considered easy to be learned, easy to be used and easy to be understood. From the results of research that had been done, most officers declared it only took a few hours to learn simple web until could practice data upload. According to the officers, by using Simple Web, officer only took less time to access and upload report. But this also depent on the internet connection. With this condition, the development of Simple Web in Gresik District Health Office was deemed appropriate to be able to solve problems related to the ease of data validation. So it was right that this Simple Web was developed in Gresik District Health Office because it had a great relationship either on the use of net benefit or user Satisfaction to net benefit.

Based on the model that had been developed according to Figure 3 it could be seen that the development of the system using the Simple Web was expected to provide great benefits for Gresik district health office. It was also declared by respondents that the existence of this Simple Web could facilitate reporting, because it did not need manual reporting by coming to the Health Office and then copied report to the supervisor by using flash so it could save time so that the productivity of workers increased. This result was in accordance

with the opinion of Triastoto (2015) which stated that if the increase of efficiency of workers was supported by an information system, it would increase worker productivity.

Information systems could have direct effect on a working group (Ishman, 1998; Myers, 1998; William, 2003). The result of this research was in line with the research done by Fitria (2015) that the use of system (use) and the quality of service (user Satisfaction) were related with the benefit.

Conclusion

a. Service Quality and Quality System have significant relation to Use and User Satisfaction
b. Service Quality directly has a positive effect on Use
c. Service Quality indirectly has a positive effect on User Satisfaction
d. Service Quality indirectly has a negative effect on User Satisfaction
e. System Quality directly has a positive effect on Use
f. System Quality directly has a negative effect on User Satisfaction

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