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Factors Influencing the Quality of e-Services on Hospital Information System (HIS) in Malaysia

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Abstract

This research explores the applicability of quality e-services (QES) in new media and looks at how facilities, promotion and IT knowledge influence the levels of QES in new media for four hospitals in Malaysia. Methodologically, it uses quantitative approaches. The research was conducted at the four government hospitals in Malaysia: Selayang's Hospital, Sultanah Bahiyah Hospital, Queen Elizabeth Hospital and Putrajaya Hospital. As for the main objective, the study showed that there is significant relationship between the antecedents' factors of QES in new media. Furthermore, the element of facilities showed the most significant relationship for QES.

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1. Introduction

In Malaysia, Information Communication and Technology (ICT) is now used as a channel for communication among the staff at government hospitals. As a developing country, Malaysia is trying to achieve maximum development; thus, there is currently an increased need to develop technology in management. At this time, technologies facilities are considered to be a basic need in the administration of a country. Some countries have been

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assisted by ICT, including South Korea, USA, Canada, United Kingdom, Netherlands, Norway, Denmark, Australia and several other developed countries. Malaysia is seeking to place themselves in an active list of the top countries to use the application of technology in management. Thus, the existence of the Multimedia Super Corridor (MSC) in Malaysia is considered as one of the hallmarks of the sincerity of the government in this regard. However, QES is also important. Despite the existence of the best systems and facilities, it would not be of little value without the high quality of maintenance and services from the providers. To ensure the highest QES given, it should be maintained and reviewed regularly from time to time.

2. Importance of study

In Malaysia, a study on the quality e-services in new media is very limited. The main and most significant result of this study will be to determine whether information technology systems weaken the communication gap that exists among the staff working in the hospital. Whatever the results obtained through this study, they can be used as input to the government in terms of whether to maintain existing policies or make changes to improve implementing its use among other sectors in the future. This is because this development certainly requires a substantial cost to implement, manage and maintain it. Finally, this study will provide a clear picture of the nurses regarding the importance and need for them to accept technological innovation in the management system. Subsequent to this study, they will have the opportunity to provide feedback about their needs to receive training to enhance skills and competencies over time.

3. Quality of e-Services in new media

QES in new media is very important in hospitals. Quality services include the data storage aspects of the patient. Errors that may occur will affect the patient. Therefore, errors in records management and data should be avoided. The quality of service provided by the public sector is often debated in the community even though they still have the option to obtain services in the private sector. Zeithaml et al. (1990) describe the quality of service in an organization is considered as a determinant of whether a service will be continued or terminated. Teicher et al. (2002) state that issues related to quality problems in the public service should not happen, because the public sector is a body entirely under government administration established to meet the requirements needed by the community. This is also consistent with statements made by Mahathir (1996) who argue that civil society will continue to evaluate the performance of the services provided by the public sector because the public see it as a return to the tax paid by citizens to the government. Thus, people feel they are entitled to first class service from the government. Currently, consistent with the concept of using technology in the service, issues related to the quality of the workforce is maintained and even partially transferred in the form of technologies

The first element of QES in new media is Assurance. Assurance in this aspect includes the aspect of the information display in the system provided. DeLone and McLean (2003) explain that the aspect of Assurance means all the data sent and accepted by the user should be updated from time to time. Next, the second element of the QES in new media is with Navigation. From the aspect of Navigation, the ideally websites should be user friendly. This is supported by Seddon and Kiew (1996) who believe that the system found on the websites that will be used by the public should be easy to use. The third element of QES in new media is Customization. DeLone and McLane (2003) state that the best websites are created according to staff need. The fourth element of QES in new media is that of Responses. DeLone and McLean (2003) state that websites are a medium to communicate, either verbal or nonverbal. Thus, it is possible to respond immediately



Fig. 1. QES in new media
Source: Parasuraman, et al. (1998)

4. Antecedent factors that influence the quality of e-services in new media

There are many factors that influence the acceptance of using technology in an organization. However, the factors that exist are different from one organization to another. According to Alwani and Soomro (2010), the factors vary from one place to another, and are dependent on the environment in which technology is introduced and the purpose and time of introduction. Further, Burgelman et al. (2004) explain that there are several factors that contribute to the increased use of IT in the community; quality and usability of the service; service ability to meet the real needs of the people; ability to aid in the use of services; and the value received by the people in terms of time saving and flexibility. Based on the literature, three factors influence the acceptance of new technology facilities in the organization. Table 4.0 displays the three factors that influenced the existence of EP and QES in the organization.

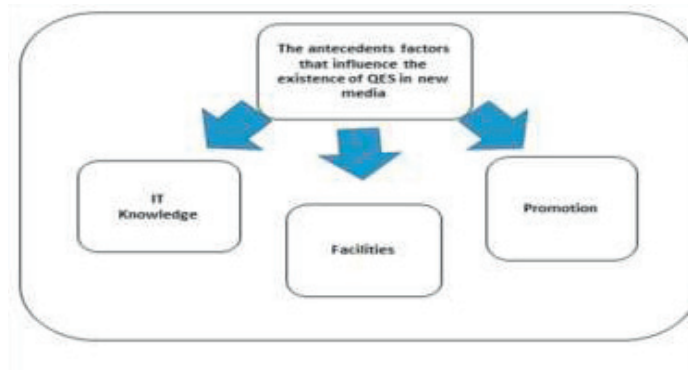


Fig. 2. The factors that influenced the existence of QES in new media
Source: Adoption from Bingimlas (2009); Yameena Tamkeen (1998); Torkzadeh & Koufteros (1994); Cassidy & Eachus (2003); Kramarae (2001); (Laudan & Laudan (2004); Siowek- Lee Gan (1998).

Knowledge is information about a particular field or expertise available to individuals. To explore technology, it is better if you have a basic knowledge of technology. In the absence of basic knowledge, then, it can take quite some time to learn and understand. Knowledge and information is the basis for many products and services (Laudan & Laudan, 2004). Furthermore, Laudan and Laudan (2004) explain that knowledge and information about a product, such as computer games, require a lot of knowledge. This statement is supported by Siowek Gan (1998); who adds that if the new staffs joining the organization do not have knowledge of basic computer skills, it will interfere with the planning done by the organization to ensure that all employees fully utilize the available technology equipment.

Technology facilities need to be promoted and encouraged from time to time. Lack of encouragement or Promotion of ICTs adoption by the hospital management may lead to a general lack of awareness of the presence of

information technology equipment. This is in line with the opinion of Rogers and Shoemaker (1971), namely that a lack of awareness of the presence of new technology innovation is due to lack of awareness among consumers. Suganthi, Balachandher and Balachandran, (2001) assert that the user or customer should be informed regularly about new things to ensure the promotion of the introduction of a new technology is easy to accept. Bingimlas (2009) lists many ways to encourage staff to use technology in the organization of facilities such as: providing sufficient time such as increasing the daily lesson time; providing more training courses in dealing with new devices, modern technologies and new pedagogical approaches; and continued technical support. Thus, the organization has to revise the syllabus of lessons for employees who are required to attend planned courses. Furthermore, Yameena Tamkeen (1998) and Torkzadeh and Koufteros (1994) add that special training and education programmes should be developed and loaded on the internet for the fast growing numbers of literate and semi-literate groups. Thus, time is also given to staff to learn the new systems. Berge (2001), Kramarae (2001), O'Malley and Mc Craw (1999) and Garland (1993) unanimously state that the administrative management organization should allocate special time for staff to explore the field of IT other than to send selected employees on courses.

5. Malaysia as a case study: The background of hospitals under research

Selayang Hospital is a hospital located in Selangor, one of the states in Malaysia. It is one of the hospitals under Vision 2020, as outlined by former Prime Minister Datuk Seri Dr. Mahathir Mohammad to be one of the world class hospitals, and currently it is equipped with advanced information technology systems. This hospital consists of 960 beds with 20 clinical disciplines, in order to administer efficient secondary as well as tertiary treatment to the patient. Sultanah Bahiyah hospital has been officially in operation since 29 September 2007, following the complete transfer to a new building from the old building complex previously known as Alor Setar Hospital. It is situated only six kilometres from the Alor Setar city centre, the capital city of Kedah Darul Aman, one of the states in Malaysia. Sultanah Bahiyah Hospital consists of 856 beds, 12 Operation Theatres, 6 Day Care Operation Rooms, and 12 Maternity Rooms. Furthermore, Putrajaya Hospital is situated at the Malaysia Government administrative area in Putrajaya. It consists of 278 beds, and is also one of the chosen hospitals to be included in the project of Hospital Information and Communication Technology (HICT) where it is also fully managed with THIS, in keeping with its location within the Multimedia Super Corridor. Furthermore, Queen Elizabeth Hospital is one of the government hospitals in Malaysia. It is located at Kota Kinabalu, Sabah, one of the states in Malaysia.

6. Quantitative methods

In this research, the researcher used quantitative methodology. The survey questionnaire is one of the approaches available to those interested in quantitative methods. Most empirical research underpinned by positivism develops a hypothesis based on theory, collects data through surveys and tests the hypothesis by using a statistical package (Ryan et al., 2002). Through this method, questionnaires are distributed to the nurses as an instrument to collect data. Reviews also use methods such as the research done by Neuman (2000), and can provide an overview of research on perceptions of society in general. In addition, this method requires only a selected group, or samples, to represent the population.

6.1. Test hypotheses

Data were analyzed using a multiple regression technique to test H_1 , H_1 (a), H_1 (b) of the relationship between antecedent factors and QES. Multiple regression technique was chosen because it is able to run a test between two or more variables simultaneously. Furthermore, multiple regressions are also able to show the relationship between free and bound variables in total (Greene, 2003).

H_1 : All antecedent factors will have positive relationship on QES in New Media.

H_1 (a): Facilities will have positive relationship on QES in New Media.

H_1 (b): Promotion will have positive relationship on QES in New Media.

H_1 (c): IT knowledge will have positive relationship on QES in New Media.

7. Results

7.1. The relationship between antecedent factors and QES

The hypotheses deal with all antecedent factors will have positive relationship on QES in hospital among nurses. Since the first test finds a significant positive relationship between the antecedent factors that influenced the existence of QES in hospital (Facilities, IT Knowledge, Promotion), further tests are generated to test whether the specific factors that influenced the existence of QES in hospital. All individual factors have a positive relationship with QES. It is predicted that the positive relationship Facilities has an impact on QES. Researcher also predicts that IT Knowledge has a positive impact on QES. In order to test these hypotheses multiple regressions are used. In each regression model, the factors that support the acceptance of ICT in organization are regressed against the three that the factors that support the acceptance of ICT in organization, i.e. Facilities, IT Knowledge and promotion.

Table 1: Summary of Relationship between antecedent factors and QES

Variable	QES				
	B	SE	β	t	P
Facilities in Hospital	.239	0.052	.273	4.580	.000*
IT Knowledge	.259	0.055	.257	4.696	.000*
Promotion	.213	0.075	.183	2.843	.005*
R ²	= 0.313				
Adjust R ²	= 0.306				
Overall Model F	= 43.792*				
Degree of Freedom	= 291				

*p < 0.05.

The overall pattern of results in Table 1 indicates a significant relationship between the antecedent factors with QES. Results show that all the antecedent factors that influenced the existence of QES in hospital are significant predictors for QES F (3, 292 = 43.792, p < .05) and R² = 0.313

These results are supported by past research such as that of Suganthi, Balachandher and Balachandran, (2001) Schilke (2001) Bingimlas (2009); Yameena Tamkeen (1998); Torkzadeh and Koufteros (1994); Cassidy and Eachus (2003) as well as provide support for the current hypothesis that the antecedent factors that influenced the existence of QES in hospital are significant. The test reveals that all three factors are significant predictors of QES for nurses in hospital. The part of main investigation aim is to determine the antecedent factors that influenced the existence of QES in hospital. As mentioned earlier, we predict that Facilities, IT Knowledge and Promotion will be significant predictors relationship with QES among the nurses in hospital. Table indicates that for Facilities t (292) = 4.580, p < .05, IT Knowledge t (292) = 4.696, p < .05, and Promotion t (292) = 2.843, p < .05 have significant impact on QES with almost 31.3% variance in QES. All the results of hypothesis are accepted.

Below are summary of results for hypotheses testing:

H₁: There is a positive relationship between overall antecedent's factor and QES- Accepted

H₁ (a): There is a positive relationship between Promotion in hospital and QES- Accepted

H₁ (b): There is a positive relationship between Facilities and QES- Accepted

H₁ (c): There is a positive relationship between IT Knowledge and QES.- Accepted

Thus, the antecedent factors influenced the existence of QES in new media.

8. Discussion and conclusion

This study has served to explain that antecedent factors (IT Knowledge, Promotion and Facilities) have significant relationships with QES in New Media. The facilities factors have the strongest relationship to QES in

new media, followed by IT Knowledge and Promotion. Therefore, the management of the hospital must give emphasis to one major aspect, so that the efficiency of hospital services can be improved. This finding has noteworthy implications. Although, Laudan and Laudan (2004) explain that another important aspect needed for a person to be able to use ICT Facilities is IT skill, without the skill and knowledge, the existing high technology equipment will be useless and meaningless. It would be a waste of effort and money on the part of the government to equip the public health management system with the latest IT technology if the personnel who are front runners in using the system are left without knowledge. A similar scenario happened, as stated by Siowek Gan-Lee (1998), namely that the lack of IT knowledge among the workers will cause a hindrance to an organisation managed fully by ICT based system.

Therefore, QES in new media are necessary to ensure that the nurses are comfortable and able to receive and use the facilities provided. This is meaningful, as without the existence of adequate Facilities such as computers with a high quality system, not all employees will be able to take advantage of Electronic facilities. In addition to focusing on programs and providing adequate IT Knowledge, promotional aspects should also be given significant emphasis. Bingimlas (2009) lists many ways to encourage staff to use technology in the organization of facilities such as: providing sufficient time such as increasing the daily lesson time; providing more training course in dealing with new device, modern technologies and new pedagogical approaches; continued technical support. Thus, the hospital management in Malaysia itself should continue to intensify by holding a promotion campaign to publicise the services available.

This view is aligned with Suganthi et al.'s (2001) opinion that the nurses should be updated regularly through Promotion about new changes introduced to their working environment to ensure their acceptance of the information technology system. Promotion is an important step to introduce any new system prior to its implementation. As we understand it, accepting a new thing is a common hardship for many people as well as adapting to new environment especially trying for something which is out of their elements or comfort zone. According to Rogers and Shoemaker (1971), lack of awareness regarding the presence of new technology innovation is due to the lack of awareness among the staff and this could easily be due to the lack of Promotion. Additionally, the facility should have complete facilities, which are abundant over time, in line with the speed of change in the world of technology. Moreover, the most important aspect, IT knowledge, should be available to every staff nurse so that they can appreciate all the facilities of ICT-oriented management system completely.

References

- Beatson, A., Lings, I., & Gudergan, S. (2008). Employee behaviour and relationship quality: Impact on customers. *The Service Industries Journal*, 28(2), 211-223.
- Black, B. (2001). Does corporate governance matter? A crude test using Russian data. *University of Pennsylvania Law Review*, 149(2), 2131-2150.
- Bryslan, A., & Curry, A. (2001). Service improvements in public services using SERVQUAL. *Managing Service Quality*, 11(6), 389-401.
- Burgelman, R. A., Christensen, C. M., & Wheelwright, S. C. (2004). *Strategic Management of Technology and Innovation*. Boston, USA: McGraw-Hill.
- Ilhaamie, A. G. A. (2007). Amalan Pengurusan Sumber Manusia Berteraskan Kompetensi dan Kualiti Perkhidmatan dalam Organisasi Awam di Malaysia: Kesalingan Bergantungan Tugasan Sebagai Penyederhana. Unpublished PhD. Thesis. Universiti Sains Malaysia.
- Kramarae, C. (2001). *The third shift: Women learning online*. Washington, DC: AAUW Educational Foundation.
- Parasuraman, A., Zeithaml, A. V., & Berry, L.L. (1988). SERVQUAL: A multiple item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64(1), 12-40.
- Prabha R-M., Soolakshna D. L-B., & Perunjodi, N. (2010). Service quality in the public service. *International Journal of Management and Marketing Research*, 3(1), 37-50.
- Schilke, R. A. (2001). A case study of attrition in web-based instruction for adults: Updating Garland's model of barriers to persistence in distance educational. Unpublished doctoral dissertation, Northern Illinois University, United States.
- Suganthi, R., Balachandher, K. G., & Balachandran, V. (2001). Internet banking patronage: An empirical investigation of Malaysia. *Journal of Internet Banking and Commerce*, 6(1), 437-446.
- Torkzadeh, G., & Koufteros, X. (1994). Factor validity of a computer self-efficacy scale and the impact of computer training. *Educational and Psychological Measurement*, 54(3), 813-821.
- Yameena T. (1998). *Proceedings from Commonwealth on Barriers to Information and Communication Technologies Encountered by Women*. New Delhi: India.
- Zeithaml, V. A., & Bitner, M. J. (1996) *Services Marketing*. New York: McGraw-Hill.
- Zeithaml, V. A., Parasuraman, A., & Berry, L. L. (1990). *Delivering Quality Service*. New York: The Free Press.
- Wisniewski, M. (2001). Using SERVQUAL to assess customer satisfaction with public sector services. *Managing Service Quality*, 11(6), 380-388.