

## IMPLEMENTATION OF E-MANAGEMENT IN PUBLIC HOSPITAL AND CLINIC IN MALAYSIA

\*Cenysia Joimur

Rafiza Abdul Razak

Siti Soraya Abdul Rahman

Faculty of Education

Universiti Malaya, Malaysia

\*cenysiajoimur@siswa.um.edu.my

**Abstract:** E-Management is nowadays applied almost in every organization in order to ensure every tasks are well-performed. Meanwhile, Pharmacy Information System (PhIS) has been implemented in order to enhance the management at Pharmacy department apart from manual procedure which is paperless compare to previously in public hospitals and clinics in Malaysia. Thus, this study has been conducted in order to evaluate the implementation of e-management of Pharmacy Information System (PhIS) among the staffs at public hospital and clinic in Malaysia. The research was using quantitative data and about 500 questionnaires have been distributed and collected but according to the sample size needed, there were 310 respondents have been selected to whom fully completing the questionnaire. Based on the finding and analysis conducted, there were significant positive feedback among the staffs in term of preference in applying e-management in their facility. It concludes that the implementation of current e-management application have shown positive outcomes toward the task management in their facility.

**Keywords:** *E-Management, Pharmacy Information System, Public Hospital and Clinic Staffs in Malaysia*

### INTRODUCTION

#### *Definition of e-management*

E-Management refers to the electronic management involving the use of Information and Communications Technology (ICT) in the digital world aim to improve management in organization or workplace by streamlining any business or processes and improving the flow of information within facility.

By smart solutions using e-management, it is no mean that Information Technology (IT) should not be regarded as a means to deliver massive amount of information, but also to help users to fulfil their important objectives and vital tasks in organization and workplace (Huthaifa & Sammani, 2013; Radaideh, Horani & Harmain, 2004; Han & Gilbert, 2000).

#### *Definition of Implementation*

Implementation defines as a “specified set of activities designed to put into practice an activity or program of known dimensions” (Fixsen, Naom, Blase, Friedman, & Wallace, 2005, p. 5). On the other hand, the definition of implementation also refers to “active and planned efforts to mainstream an innovation” (Greenhalgh, Robert, MacFarlane, Bate, & Kyriakidou, 2004, p. 582).

#### *Changing towards E-management*

According to the changing towards implementation of e-management system, the government hospital and clinics in Malaysia has implemented the new hospital system which called as Pharmacy Information System (PhIS). It is a current information system that has been developed and implement to replace the previous Hospital Information System which has been introduced since 1994 to hospital management in private and government sectors in Malaysia. Besides that, the purpose of the system developed and implemented is also to encourage the usage of e-management in the health service and pharmacy management system (Ministry of Health, 2016).

Prior, there were many reports of confusion among users toward the concepts and terminology of Hospital Information System (HIS) thus the design and development of a new system to meet the requirement of government hospital and clinic in Malaysia. In 1999-2000 when it was first introduced to the subject of Total Hospital Information System (THIS), there are various articles reported on what a hospital information system is meant to be. At overall, HIS deals with IT, medical records (Sharon, Jennifer & Diana, 2012) and information

technology that has been implemented in various hospital, department setting and capacities including system applications analyst, in collaboration with the clinical and IT unit. However, there are many hospitals had been adapted after the implementation and usage of it.

However, instead of all the purposes of system implementation, there were various perceptions received from users during the training implemented on this system information usage. Based on the previous pilot study conducted by the researcher toward the system users (hospital and clinic staff) towards Pharmacy Information System in their facility; there were different perspective and feedback reported in using this new information technology which will be used to replace their current system or manual procedure. Approximately, one-third of the respondents were still not convince of using this software in their daily activities because of time consuming in using the e-management system. This presumption mostly reported from hospital staff to whom have been experienced in using the previous Hospital Information System (HIS) as stated in the study by Hafiza *et al.* (2011).

Subsequently, in order to standardize the implementation of the system, there might be a few changes in term of organizational structure to adapt with the current requirement in system application. This situation may challenge the status quo and it might challenge the values and perceived rights of hospital staff to whom work to use with it. As stated in a study by Nur Azzah, Noraziah and Noorhayati (2017) there were various issues and challenges reported among the hospital staff in certain facility in using the HIS. For some staff, this change is welcome as a challenge and new things that refresh their mind compare to another system (if have) used before and make them curious to know on how far it will benefit them in facilitating their job.

Here, employees continue to struggle with new technology because of continuously upgrading and advance level of technologies which reported from the pilot study conducted prior. Without any concern or consideration on how the socio-institutional environment in organization will response or react toward this changing style of management, it is worried that it might be able to give bad result which may influence negative behavioral towards change in their working environment, procedure related and absolutely unwanted impact in their professional development (Behavioural Change, 2016).

## PURPOSE OF STUDY

The purpose of the study is to investigate and develop a further understanding in regards to the implementation of e-management among staffs at public hospital and clinic in Malaysia in managing their job in line with the implementation of the new system of Pharmacy Information System. The perception will be looked into the various aspects of information system or e-management. The research conducted in order to answer the research question as below;

Is there any significance feedback among PhIS users' perspective toward the implementation of e-management in their facility?

## LITERATURE REVIEW

### *Theory and Application*

#### *Theory of Planned Behavior*

The theory of planned behavior (TPB) as theory of reasoned action (Fishben & Ajzen, 1975) used in the study which also predicts behavior over which people do not have complete volitional control. TPB accomplishes this by "including a predictor of behavioral intention and behavior called perceived behavioral control" (Notani, 1998, p. 248). Here, the trainees' behavior likewise surveyed and assess in light of the connection between the respondents' convictions on their perspective and acceptance toward the system application after the training done, observing the behavior intention seems influencing the trainees' motivation.

By referring to Chen and Tan (2004), the key success for the acceptance of e-management in this study, it was find that the compatibility variable is an antecedent of attitude among perceived usefulness, perceived ease of use, trust, and perceived service quality which have been implied in this study. Vijayasathy (2004) and Lin (2007) likewise demonstrate that compatibility affects attitude toward the acceptance of the e-management as apparatus.

### *Change Management in Pharmacy Information System (PhIS)*

The Health Ministry is currently implementing the change management of hospital system to Pharmacy Information System (PhIS) to provide a better and more efficient pharmacy system for patients. Its Minister Datuk Seri Dr S. Subramaniam, as reported by The Sun Daily (2016) said the system was developed to encourage the usage of Information Technology in the health service system involving tender management system and medicine and non-medical supply in all the ministry's facilities.

The system also involves online services on patient information, as well as drug prescription and dispensary – and it will be used almost 1,300 health ministry facilities in the country, including 137 hospitals, 802 clinics and 141 district health offices. “This system will help monitor the medical supply in the ministry's facilities, increase efficiency, manage the medical and non-medial inventory management and to ensure the medicine used are of good quality, safe and effective,” he said this in a statement. Subramaniam said that an efficient system is needed to cope with the increasing number of patients and medical prescription dispensary, which increases about 4% yearly. He said that PhIS is one of the terms in the privatisation of the medical laboratory and storage facility signed between Pharmaniaga Logistics Sdn Bhd and the health ministry between December 1<sup>st</sup> 2009 until November 30<sup>th</sup> 2019.

### **RESEARCH DESIGN**

The impact of e-management among hospital and clinic staff identified by their perspective and acceptance level among hospital staffs’ in which affecting their expectation of applying the Pharmacy Information System (PhIS) in managing Pharmacy administrative task in their workplace. The questionnaire (survey method) is also used as research instrument after considering the research questions and the scope of the study conducted.

This research design is using descriptive and inferential statistics as analyzing tools. The principal mode of enquiry for this study is in quantitative nature towards the evaluation of hospital staff’ perceptions in applying Pharmacy Information System (PhIS) in managing Pharmaceutical administrative task. The data were collected at one point by distributing the questionnaire survey as the main source of data collection among the respondents (Creswell, 2008).

#### *Research Sample and Context*

##### *Sampling Procedures and Samples*

In this study, the sampling design used is a purposeful sampling where researcher selects participants who fits into a profile with the “logic of yielding insight and understanding of the phenomenon under investigation” (Bloomberg & Volpe, 2008). In this study only trainees who were eligible were purposively chosen to participate in this study. In this study, the samples are selected among the hospital staff specifically for Pharmacist, Assistant Pharmacist, Nurse and Medical Assistant. The number of participants are more than 500 respondents from different backgrounds.

However, there were just 310 respondents to whom completed the questionnaires form in the study and this amount enough to represent the population by referring to sample size recommended by Krejcie & Morgan. This paper intends to study from the view of users from different backgrounds of demographical profile, position, and ICT backgrounds in order to evaluate their perspectives in regards to the impact of e-management application in their facilities.

#### *Context of Study*

The participants of this study engaged in the Pharmacy Information System (PhIS) group collaboratively. The objective of the study were explained to the trainees to get their perceptions and intentions towards the usage of Pharmacy Information System (PhIS) in managing their daily task.

#### *Research Instruments*

In this study, data have been collected from questionnaire which includes trainees’ perception and acceptance towards the impact of using Pharmacy Information System (PhIS) as a tool to manage administrative task in their

facilities after implemented. Among the criteria of this questionnaire is that it is concerned with the affective, behavioral, and temporal aspects of technology integration in their facility.

### *Data Analyzing Instruments*

#### *Descriptive Statistics*

Descriptive statistics were chosen in this study because the raw data could simply and easily to visualize, especially if there was a lot of data. Descriptive statistics therefore enables to present the data in a more important manner, which permits less complex understanding of the data.

## FINDING AND DISCUSSION

This study has accomplished in order to produce positive feedback from each individual or at least acquire majority significance feedback of population in an organisation by referring to the e-management of system usage.

### *Demographical profile of respondents (Age)*

Respondents

Most of the respondents (48.7%) to whom took part in the study were among the young staffs in the age within 26-30 years old. There were 151 out of 310 respondents from the age range. It follows by respondents among 31-35 years old (16.5%) and there were just 0.6% respondents among the veterans staff in the age of 56-60 years old.

Table 1

#### *Frequency Rate of Instructional Management Preference (Information Management)*

Information Management		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	.6	.6	.6
	Disagree	5	1.6	1.6	2.3
	Neutral	61	19.7	19.7	21.9
	Agree	168	54.2	54.2	76.1
	Strongly Agree	74	23.9	23.9	100.0
	Total	310	100.0	100.0	

Based on table above, there are 115 from 310 of the respondents agreed that the system is easily understood in term of usage and application. These type of respondents usually among the younger users which are still energetic, technology users and ready to explore and accept the new thing. Here, the age factor could influence most of the positive feedback as majority of the younger respondents are between 26-30 years old which represents 48.7% of the respondents.

In term of information or e-management, table above shows that most of the respondents (54.2%) agreed that the PhIS features and functions has improve their information management dealing with their job after the PhIS implemented in their facility. It is because they could easily get more information whenever using system comparing to search it manually. As for example, they tend to know much information such as the total of medicine in their unit or store, stock tacking, checking the new batch, near expire batch of medicine and much more information accordingly.

Other than that, the trainee (according to their position and authorities as system user) were also eager to learn, identify and eliminate technical problems of health care systems, improve the efficiency and effectiveness of services in order to be more careful on evaluation of those systems. In other words, the teaching presence of information systems, as the key stage in the information system development life cycle (Yusof et al., 2008, Bavier, 2003) can help to assure the technical capacity of these systems, determine the effects of using the systems on users practices, and allow application of modifications as required (Ammenwerth et al., 2003; Pereira et al., 2011).

### *Research Implication*

#### *Practical Implications of Pharmacy Information System (PhIS) in Organization*

Various level of people within the organization including the top management, middle managers and other employees are always looking for information technology (IT). In general of Information System (IS) usage, Pharmacy Information System (PhIS) in particular, enables this various group of people to improve their services and products in their workplace. The use of IS in healthcare environment helps healthcare organizations to improve inventory and pharmaceutical processes, control cost and respond to the demand for quality care through systems such as clinical decision support, physician order entry, computerized surveillance and patient safety (Nur Azzah, Noraziah, & Noorhayati, 2017).

This so-called Pharmacy Information System (PhIS) have transformed the management of administrative, information system, financial, inventory and pharmaceutical aspects of a hospital. It is important that hospitals adopt PhIS to improve their operations and services. This system was not only used to manage information efficiently and quickly. They are also used to provide a better access to the information, e.g. the patient's medical history. This is very helpful to healthcare providers in making any decision, particularly in a critical situation where only small margin of errors is allowed.

Moreover, PhIS manages all the information processing activities within hospital to achieve high-quality patients care services and medical research. In particular, public hospitals and clinics, particularly the hospitals, has complex system application. This public sector of healthcare provider has more unpredictable workflow than other hospitals or clinics. The government's hospitals and clinics have vast number of patients– from the high class to the lower level of society to whom wanted for medical treatments, dissimilar to the private healthcare's facilities that put concern more to the wealthy people who could afford to pay costly medical expenses.

In line with this situation, the vast number of patients in public healing centers may prompt perplexing and convoluted condition. This may likewise prompt the implementation of inefficient system; patients need to wait for quite a while before getting their medical services. This issue is identified with low quality of healthcare services provider in public hospitals. In fact, the statistics by the Ministry of Health shows increasing number of negligence cases reported between 2000 and 2008 (Ministry of Health Malaysia, 2009). Hence, Hospital Information System (PhIS) is hoped to improve the quality of healthcare services.

#### *Implication of e-management for the Facility (Hospitals and Clinics)*

The study has realized that the system performance during training among the staff at the Government's Hospitals and Clinics in Malaysia are quite adequate but from the response of most respondents on the system feature and functions, it needs further support from the supervision, facility and system management in order to meet their job requirement. Here, the management of hospital, particularly in Pharmacy department need to be more curious and continuously monitoring the PhIS performance. It is because insufficient support from their subordinates could in turn hindering good performance.

Other than that, the study also indicates that performance among the staff at the Government's Hospitals and Clinics in Malaysia needs to be more satisfy because of several complaints being made by the general public because of inability of some facility to reduce the waiting period during early implementation as reported in some facility if any issue dealing with system usage (Nur Azzah et al., 2017). Some of the staff have reported that they almost forgot what they have learned during training whenever the system implementation done because of the period of training and implementation was quite long for them. The system vendor and hospital management needs to be alert with this situation thus staff not to influence the staff motivation, skill and knowledge on using the system.

The study also established that in some instance, work regulations are not followed by the employees during the phase 1 implementation stage. They tend to go back using the manual procedure after fail to use the PhIS flow and such issue could be a big loss as too many expenses have been used by the government in order to develop, training and implement this system. The hospitals and clinics need to take seriously with such issue. Any problems dealing with the system usage needs to be clearly settle with the system's vendor and management. The study has realized that office facilities such as computers at the Government Hospitals and Clinics are not sufficient to facilitate good

performance. In this case, hospital management needs to prepare adequate device and instrument so that not interrupt with the facility's workflow and operation.

## CONCLUSION

To conclude, a further effort to enhance the impact of e-management towards public hospital and clinic in Malaysia is crucially needed by the organisation, specifically the PhIS users in this study. Issues to be addressed include the necessity to improve on some of the preconditions as stated by Herzberg, which therefore calls for improving certain specific baseline factors through; improvement on supervision of the employees at all levels among the staff at the Government's Hospitals and Clinics in Malaysia, the need to improve on the working conditions at their facilities especially for every level and to improve for the job security of the system's users. Other than that, management should also improve on the management of information system by guiding the employees through regular staff meetings and training. Once all of these aspects are improved, then the benefits and the goals of the system implemented as stated by Herzberg would fully achieved in the organisation and facilities.

## REFERENCES

- Ammenwerth, E., Kaiser, F., Wilhelmy, I., & Hofer, S. (2003). Evaluation of user acceptance of information systems in health care: the value of questionnaires. *Stud Health Technol Inform.* 2003; 95:643–648.
- Bavier K. (2003). *Evaluation of a pharmacy HIT system.* Durham (NC): School of Nursing, Duke University; 2003.
- Behavioral Change Models. (January 6, 2016). Boston University School of Public Health. <http://sphweb.bumc.bu.edu/otlt/MPH-Modules/SB/SB721-Models/SB721-Models5.html> [Retrieved on 14/2/2016].
- Bloomberg, L.D. & Volpe, M. (2008). *Completing your qualitative dissertation: A road map from beginning to end* (1st ed.). Thousand Oaks, CA: SAGE Publications Inc.
- Chen, L.D. & Tan, J. (2004). Technology Adaptation in E-commerce: Key Determinants of Virtual Stores Acceptance. *European Management Journal*, 22(1), 74-86.
- Creswell, J. W. (2008). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (3rd ed.). Upper Saddle River, NJ: Pearson Education, Inc.
- Fishbein, M. & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research.* Reading, MA: Addison-Wesley.
- Fixsen, D. L., Naoom, S. F., Blasé, K. A., Friedman, R. M., & Wallace, F. (2005). *Implementation research: A synthesis of the literature.* Tampa, FL: University of South Florida, Louis de la Parte Florida Mental Health Institute, The National Implementation Research Network.
- Fixsen, D. L., & Blasé, K. A. (2009). Implementation: The missing link between research and practice. *NIRN Implementation Brief #1.* Chapel Hill: The University of North Carolina, FPG, NIRN.
- Greenhalgh, T., Robert, G., MacFarlane, F., Bate, P., & Kyriakidou, O. (2004). Diffusion of innovations in service organizations: Systematic review and recommendations. *Milbank Quarterly*, 82(4), 581- 629.
- Hafiza, S.N., Shah, S.S., Jamsheed, H., & Zaman, K. (2011). Relationship between rewards and employee's motivation in the non-profit organizations of Pakistan. *Business Intelligence Journal*, 4(2), 327-329.
- Han, C.Y. & Gilbert, J.E. (2000). *A Smart e-School Framework*, White paper.
- Huthaifa, A.E. & Sammani A. A. (2013). E-Management: Configuration, Functions and Role in Improving Performance of Arab Institutions and Organization. *International Journal of Computer Applications*, (0975 –8887), 80, 6, October 2013.
- Krejcie, R.V. & Morgan, D.W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30, 607-610.
- Lin, H.F. (2007). Effects of extrinsic and intrinsic motivation on employee knowledge sharing intentions. *Journal of Information Science*. Vol 33, Issue 2, pp. 135 - 149 First Published April 1, 2007. <https://doi.org/10.1177/0165551506068174>.
- Notani, A. S. (1998). Moderators of Perceived Behavioral Control's Predictiveness in the Theory of Planned Behavior: A Meta-Analysis. *Journal of Consumer Psychology*, 7(3) (247).
- Nur Azzah, A.B, Noraziah, C. & Noorhayati, M.J. (2017). *Challenges in the implementation of hospital information systems in Malaysian public hospitals*, in Zulikha, J. & N. H. Zakaria (Eds.), *Proceedings of the 6th International Conference on Computing & Informatics* (pp. 636-642). Sintok: School of Computing.

- Pereira, I.M, Gaidzinski, RR, Fugulin, F.M, Peres, H.H, Lima, A.F, Castilho, V., et al. (2011). *Computerized nursing staffing: a software evaluation*. Rev Esc Enferm USP. 2011;45 Spec No:1600–1605.
- Radaideh, M., Horani, S. and Harmain, H., 2004, E-School Administration System, a book chapter (Chapter XII), e-Collaboration and Virtual Organizations, Idea Group, Hurshey, USA, 2004, pp. 276-304.
- Sharon, S.C, Jennifer N. E., & Diana, R. (2012). *Using Electronic Health Records to Improve Quality and Efficiency: The Experiences of Leading Hospitals*. July 2012.
- Vijayasathya, L.R. (2004). Predicting consumer intentions to use on-line shopping: The case for an augmented technology acceptance model, *Information & Management*, 41(6), 747-762.
- Yusof, M.M, Papazafeiropoulou, A., Paul, R.J., Stergioulas, L.K. (2008). Investigating evaluation frameworks for health information systems. *Int J Med Inform*. 2008;77(6):377–385.