A SURVEY ON LACK OF ADOPTION OF ELECTRONIC MEDICAL RECORDS BY PHYSICIANS AT TEACHING HOSPITALS IN SRI LANKA

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Introduction

Patient records have been stored in papers for centuries and have consumed increasing space and notably delayed access to efficient medical care. The paper-based medical records are illegible, ambiguous, incomplete, unavailable, fragmented and poor in quality. In contrast, Electronic Medical Record (EMR) stores clinical information of each patient electronically, enables instant availability of his medical information to all providers in the healthcare chain and assist in providing coherent and consistent care. EMR is viewed as having a great potential for improving quality, continuity, safety and efficiency in healthcare, they are being implemented across the world.

Despite the high expectations and interest in EMRs worldwide, their overall adoption rate is relatively low. Although, the complete EMR system does not currently exist in Sri Lanka, portions of the medical records are being computerized. The government hospitals focus on automating the in and out patient care units. However, there has been little interest in leveraging the success of EMRs in Sri Lanka. The slow rate of adoption suggests that resistance among physicians must be strong as they are the main frontline user-group of EMRs. Therefore, it is very important to study the factors that affect the acceptance and use of EMRs in the medical practices.

This study focuses on adoption of EMRs by the physicians who work at Teaching Hospitals in Sri Lanka. It applies Unified Theory of Acceptance and Use of Technology (UTAUT). UTAUT integrates eight theories related to technology acceptance into one comprehensive model to assist in exploring the factors that affect the adoption of technology by its users. In summary, the UTAUT model explains that Behavioral Intention (BI) and the Facilitating Conditions (FC) affect the Actual Use (AU) of a system while Performance Expectancy (PE), Effort Expectancy (EE) and Social Influence (SI) affect BI.

Methodology

This study follows a systematic approach to seek evidence by assessing the association between the variables that measure BI and AU and FC and AU of EMRs, measuring the strength of the relationship between constructs and determining the factors affecting BI and AU of EMRs. The analytical model can be viewed as two sub modules:
Model A: **Determination of factors that affect BI**
Model B: **Determination of factors that affect AU**

The study is limited to physicians working only at 21 Teaching Hospitals in Sri Lanka. However, the study includes the physicians (Consultants and Medical Officers) who use EMR at one of the units in the selected hospitals. Hence, population of interest is 505.

The sample was collected in two phases: first, the physicians who use EMR were selected through a snow ball sampling technique and second, 237 physicians were randomly selected for this study. Primary data were collected through the distribution of questionnaires which had 33 questions, out of which, 24 items reflecting the major constructs of UTAUT. The questionnaire was developed in English. Each item was measured using a five point Likert scale where,

1: corresponds to strongly disagree,
2: disagree,
3: neutral (neither disagree nor agree),
4: agree and
5: strongly agree.

The data were collected from December 2014 to march 2015, and analyzed using SPSS 20. Chi- square test, correlation test and regression analysis were performed to identify the factors that affect the adoption and use of EMRs by physicians at Teaching Hospitals in Sri Lanka.

Results and Discussion

The constructs in this study yield the Cronbach's Alpha values, such that confirming a high level of reliability for the construct with this specific sample, as their respective statistics fall well above 0.70. Therefore, all constructs in the model have adequate reliability. This analysis confirms the validity of the UTAUT model by showing strong connection for items belonging to the same construct. The study achieves the response rate of 87.7%, which is fairly high. It also achieved a sample with gender balance (males - 51.5% and females - 48.5%). Out of all respondents, 34% represented the Consultants while 66% represented Medical Officers (General Physicians and Medical Interns). Ninety-five respondents are of 31 – 40 years while, 75 in 41- 50 years, 48 in 20 – 30 years and 10 above 50 years.

The results indicate that, most physicians believe that, using EMRs will help them attain gains in job performance. At the same time, closely 80% of physicians agreed that the system is easy to use. In addition, it is notable that the physicians believe that the important others would want them to use the system in their medical practice. The external pressure towards using a new system could possibly be from the hospital administration or peer. Similarly, the physicians agree that the resources and technical support is available to use the EMR in their workplace. In general, physicians are using the EMR system that is implemented in the hospital that they are working at.

The Chi-square test was used to check whether there is a statistically significant association between variables that measure the major constructs BI, FC and AU. The results indicated that the variables that measure the constructs BI and FC are associated with the variables that measure AU, considering a pair at any given time. The Pearson's correlation analysis yields the strength and direction of association that exists between two variables. The test for Pearson's Correlation Coefficient suggests that all the correlations are significant ($p<0.05$ in all cases), confirming all hypotheses to be true. Moreover, the Pearson's Correlation value for the constructs in this research model is high, indicating a positive relationship between the constructs.

Outcome for Model A indicated that only Performance Expectancy (PE) and Effort Expectancy (EE) significantly affect the Behavioral Intention (BI) to use the EMR system in the healthcare settings of Sri Lanka. Social Impact (SI) does not significantly affect the BI in the presence of PE and EE. Similarly, Model B was regressed and it provided evidence that only BI significantly affects the Actual Use (AU) of the EMR system. Overall, it can be concluded that, BI affects the AU of the EMRs, whereas PE and EE significantly affect the BI of the physicians to use the EMR at the Teaching Hospitals in Sri Lanka.

Conclusions and Recommendations

Recording of patient information in many hospitals in developing countries has been on papers. The study attempts to identify the factors that affect the adoption of EMRs by the physicians who work at Teaching Hospitals in Sri Lanka. The research model was underpinned to the UTAUT. The theory aims to explain the user intentions to use a new technology and related usage behavior by integrating significant elements across eight prominent user acceptance models, and formulates a unique measure with core determinants of users' behavioral intention and usage of a technology in place. The results indicate that BI significantly affect the AU of the EMR system while only PE and EE significantly affect the BI of the physicians to use the EMR system in the healthcare settings of Sri Lanka.

The present study provides evidence that UTAUT model is an adequately valid and reliable instrument to measure usage behavior of users. However, further investigation is still needed. For example, longitudinal observation in different healthcare settings is encouraged. Although the UTAUT model appears to have been acceptably robust across studies and user groups, the model should not be considered as the final instrument to determine the Information Technology acceptance and usage.

References

Kulathilaka, S. (2013) "eHospital – Dompe" project – the story of the transformation of a district hospital in Sri Lanka. *Sri Lanka Journal of Bio-Medical Informatics.* 4(2), 40–43.

Miller, R., West, C., Brown, T., Sim, I., & Ganchoff, C. (2005) The value of electronic health records in solo or small group practices. *Health Affairs.* 24, 1127-1137.

Venkatesh, V., Morris, M.G., Davis, G.B., & Davis, F.D. (2003) User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly.* 27, 425-478.