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Acceptance of HMIS by Healthcare Professionals of Private Sector Hospitals of Pakistan

I. A. UJAN++, A. BHUTTO*, M. M. RIND, M. A. SUHAIMI

Institute of Information Technology, International Islamic University Malaysia.

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Abstract: As many of the high-end functions and services have been increasingly supported by the expansion of information technology (IT), it has become salient to explore any factor that may make individuals more prone to use it. When it comes to the user, technological and contextual features, there may be quite a difference in settings that are professional and those that involve day-to-day business.

We collected the data from Shaukat Khanum Memorial Cancer Hospital and Research Centre, Lahore and MAROOF International Hospital, Islamabad. A seven-point Likert-type scale from "strongly agree" to "strongly disagree" was used to measure all the items. Because of the chances of getting a response set on the items measuring a specific construct, the sentences were negatively worded for half number of items and were placed in a random alignment on the respective questionnaire.

Investigation of the factors that may play an important role in making the professionals in healthcare department more prone to accept health information system was carried out in the present study. It was found that when the data from the healthcare professionals was compared with that of the user population taken in a previous research, the former group differed in a number of significant areas when it came to making decisions regarding technology acceptance.

1. INTRODUCTION

"The health information system (HIS) provides the under pinnings for decision-making and has four key functions: data generation, compilation, analysis and synthesis, communication. The health information system collects data from the health sector and other relevant sectors, analyses the data and ensures their overall quality, relevance and timeliness, and converts data into information for health-related decision-making." (World Health Organization, January 2008) On the other hand, the technology acceptance is defined as ''an individual's psychological state with regard to his or her voluntary or intended use of a particular technology'' In general, results of previous related studies reveal that a person's intent to make use of a particular technology would determine his or her future use of the program or application." (Gattiker, 1984).

The HIS maintains that it aims to make progress in the current system of healthcare through the improvement of the workflow in terms of its reportage. The procedures meant to ease the health care situation are also conducted under the HIS. However, a number of literature suggests that certain roadblocks are being encountered by the adoption and implementation of health information systems and technologies. (Black, *et al.*, 2011). noted some of the strengths and weaknesses of the application. In addition, he emphasized that the inadequacy of extensive and comprehensive research in the particular field remains a big challenge (Black, *et al.*, 2011). Andre et al (2009) stated that the attitude and behavior of the physicians towards the application is more perplexing than the technical difficulties in actuality. They backed this statement by specifying that clients' attitudes are major factors in the successful implementation of the application.(André, *et al.*, 2009) Roadblocks in the implementation was categorized by Shefter into three types namely environmental, technical, and personal. Of the three, the barrier pertaining to the personal could be resolved through outright planning and proper preparation as numerous past studies suggest the correlation of knowledge skills, attitude, and practices to the direct usage of computers and technology in general. (Shefter, 2006).

Shaukat Khanum Memorial Cancer Hospital and Research center (SKMCHandRC*)* is a modern tertiary-care cancer focus located in lahore, Pakistan with a referral base from all over the country and adjoining areas. Hospital opened in 1994 and provides full administration cancer care to the penniless who com-pries approximately 70% of the cancer patient population. To support this endeavor, the hospital's parent trust raises philanthropic donations (appr3oximately US $20 million a year) from inside the nation and from the Pakistani diaspora. This 180 bed hospital has 1800 employees and sees in excess of 6000 new cancer patients each year. In addition, the hospital has a nationwide chain of phlebotomy focuses to give

++ Corresponding author iujan@yahoo.com
Institute of Information and Communication Technology, University of Sindh, Jamshoro, Pakistan

diagnostic laboratory administrations to the general population. In 2011, there were in excess of 142,000 OPD, 7600 hospital admissions, 7800 surgical operations, 54,600 patients for chemotherapy, 44,500 radiation treatments, 144,000 imaging strategies and 3.25 million lab-oratory tests. The pathology laboratory gets specimens for testing from 90 destinations from all over Pakistan. In perspective of the size and complexity of the operation, utilization of computing for automation, quality assurance, safety and compelling financial management is a natural advancement. (Imran *et al.,* 2015)

Initially hospital installed a network with 250 nodes of 10 MBS before December 1994. This system provided email, registration and scheduling of patients, some parts of Pharmacy and radiology covered. Other clinical and non-clinical systems are not included because of non-availability of Information Technology experts in Pakistan. Later in year 1999 several clinical sections were used some software's. In other hand non clinical sections like finance wing used locally developed Software. (Imran *et al.,* 2015)

MAROOF International Hospital is a hospital is one of the best patient's care hospital at capital of Pakistan. Hospital provides best healthcare facilities, with best infrastructure. Hospital is world class standard because the management believe on "Every small detail is important" There are seven operation theaters furnished with latest technology, able to provide for surgical operations. The staff in out-patient and in-patient departments is friendly and provide best care. (http://maroof.com.pk/)

The hospital has a patient coordination department that coordinates with doctors, nurses, and interpreters who serve the patients. (http://maroof.com.pk/)

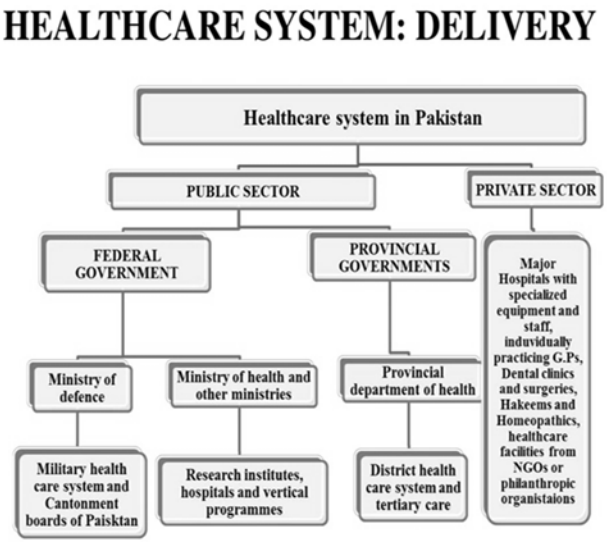
The Pakistani government's Minister of Health Affairs and Services have allocated a budget equivalent to Rs 9863 million for 2013 and 2014. These budgets are higher than the revised budget estimates for 2012 and 2013 by 25.7% and 24.9%, respectively. The apportionment of the national budget for hospitals and healthcare services are under such classification. According to report released by Dr Haroon Khan, President, eHAP, Pakistan," health care has suffered from a history of neglects and considered as severely underperforming. Yet healthcare is crucial to build a prosperous and stable economy and society. Only 27% of the population enjoys full health care services, and the remaining 73% had not benefited from health care services." (Imran *et al.,* 2016)

In Pakistan public sector and private sector healthcare facilities are available. From which 80% of OPD patients are treated by the private sector. Welfare and community hospitals are also providing the health services of patients from low income sector. Health sector problems be able toimprove after introducing information technology in the healthcare sector of Pakistan, and will be trained healthcare professionals to get the best benefits from these resources for evidence-based medicine. There are 133933 doctors registered in Pakistan Medical and Dental Council (PMDC)in year 2007. In 2010 the country had only 54 qualified health information. In aself-determining research descriptionis stated: "Pakistan does not have an institutional mechanism for healthcare service quality control, hospital accreditation or provider credentialing except for the PMDC, which serves the role of registration only." (Imran *et al.,* 2016)

Measures

The elements that were utilized to facilitate the program in each presented model were based and mostly assumed from related and highly relevant research. It also came with the essential verification and modifications with the use of words to suit the medical context for the clients. Elements that were used to gauge the perceived worth of the application were derived from Davis (] F.D. Davis, 1989) while the elements on behavioral control and attitude were gathered from the works of Taylor and Todd. (Taylor, and Todd, 1995)

A seven-point Likert-type scale from "strongly agree" to "strongly disagree" was used to measure all the items. Because of the chances of getting a response set on the items measuring a specific construct, the sentences were negatively worded for half number of items and were placed in a random alignment on the respective questionnaire. This ensured that there won't be any ceiling or floor effect by balancing out the questionnaire and establishing random placement.



Research approach

This research was carried out to determine the factors which affect the acceptance of health information systems and to map out the correlations among these elements. Other theories and frameworks in technology acceptance have developed a health information system acceptance. Given its consistency to the topic, this study made use of the quantitative approach to be able to validate hypotheses in the models. Hussey and Hussey (1997) stated that the process on positivistic or quantitative approach is carried out to review the literature to form a theory and hypotheses

2. RESULTS AND DISCUSSIONS

Reliability and validity of constructs

Aspects such as the constructs in each presented and reviewed model were examined and assessed under three factors namely reliability, convergent validity, and discriminate validity. The first factor was evaluated through Cronbach's values. These values were tabulated as seen in Table 1; most of these were above or approximate to 0.96. This only indicates that the value is a widely-accepted level for an exploratory study. However, despite the confirmation from Taylor and Todd, the level of perceived behavioral control displayed a 0.55 value in terms of reliability. This value is under the commonly required value.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.959	.960	26

Reliability Statistics Table I Item Statistics

	Mean	Std. Deviation	N
BI1	5.11	1.797	100
BI2	4.97	1.743	100
BI3	5.03	1.789	100
BI4	4.59	1.848	100
BI5	5.01	1.654	100
PU1	5.28	1.712	100
PU2	5.08	1.656	100
PU3	4.99	1.592	100
PU4	4.88	1.725	100
PU5	4.94	1.656	100
PU6	4.87	1.968	100
PU7	3.41	1.859	100
PEOU1	4.88	1.816	100
PEOU2	4.92	1.625	100
PEOU3	4.90	1.925	100
PEOU4	4.90	1.778	100
TSE1	5.03	1.605	100
TSE2	5.00	1.608	100
TSE3	5.03	1.566	100
TSE4	5.05	1.641	100
TSE5	4.69	1.751	100
TSE6	4.53	1.630	100
AT1	4.66	1.799	100
AT2	4.42	1.849	100
AT3	4.46	1.893	100
AT4	4.65	1.749	100

The **(Table 2)** shows the results of descriptive statistics of each item used in questionnaire, here mean and standard deviation was presented. Behavoural Intension construct lowest mean score was item BI4 was 4.59band highest mean was BI1 5.11. In Perceived usefulness PU7 was lowest mean value 3.41 and PU1 was5.28 highest. Perceived ease of use construct the lowest mean value of item PEOU1 which was 4.88 and highest value was PEOU2 4.92. When we show the results construct Technology self-efficacy the value 4.53 which belongs to item TSE6 was lowest and 5.05 of TSE4 was high. In Attitude construct the lowest mean value was item AT2 4.42 and highest in AT1 4.66.

The value of the Pearson correlation range from -1 to +1, with negative numbers representing a negative correlation (as one variable increases, the other variable decreases) and positive correlation (as one variable increases, the other also in increases). The closer the value is to -1 to +1, the stronger the association is between the variables. As in table all values of Pearson Correlation are +1, so we can have said that all variable has strong relationship in each other

According to (Table 3) Perceived usefulness and perceived ease of use have significant factor to accept Health Information System in selected hospitals. Perceived usefulness was significant with Attitude and Behavioral intention. Observed the strong effect via attitude on behavioral intention, perceived usefulness is influences on healthcare professionals to accept Health Information Technology.

Correlations Table 2 Descriptive Statistics Item Statistics

		BI	PU	PEOU	TSE	ATU
BI	Pearson Correlation	1	.806**	.633**	.795**	.494**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	100	100	100	100	100
PU	Pearson Correlation	.806**	1	.769**	.810**	.494**
	Sig. (2-tailed)	.000		.000	.000	.000
	N Pearson	100	100	100	100	100
PEOU	Correlation	.633**	.769**	1	.679**	.635**
	Sig. (2-tailed)	.000	.000		.000	.000
	N Pearson	100	100	100	100	100
TSE	Correlation	.795**	.810**	.679**	1	.523**
	Sig. (2-tailed)	.000	.000	.000		.000
	N Pearson	100	100	100	100	100
ATU	Correlation	.494**	.494**	.635**	.523**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	100	100	100	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

3. CONCLUSION

The results and findings of the study have given quite a few significant theoretical implications. The results imply that the proposed model of the health information acceptance shows that it can be used as a predictor and rational. It should be noted that the given research made use of an extended TAM model placed in a new setting of the health information system acceptance, included in which is the technological self-efficacy factor. Therefore, the integration of the external factors with the TAM is not only theoretically probable but yields also empirical significance.

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