

Awareness And Adoptability Of ICT Enabled Health Care: Customer's Perspective Across The Selected Hospitals In Trichy

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ABSTRACT

Globalisation is today one of the most important processes taking place all over the world influencing all facets of our contemporary life. The present globalisation is both accelerating and increasing in scope and its penetration touching our daily lives reach all corners of the world. The research is based on the descriptive method and data were collected using primary method of data collection. Convenience sampling methods were used to collect the data. Data were analysed using SPSS. The Results indicate 112 male respondents show high level of satisfaction and 22 respondents recoded low level satisfaction, and 84 female respondents registered high level of satisfaction. Out of the total, 130 respondents were satisfied at high level towards the reliability and 96 female respondents were highly satisfied towards reliability of the hospitals. Female respondents are highly aware and adoptable to ICT enabled health care than the male counterpart based on the sample collected in the study area. Therefore, we conclude that there is a tremendous opportunity to use ICT in health care.

KEYWORDS: Awareness, Assurance, Adoptability, Reliability, and Responsiveness,

I. INTRODUCTION

Globalisation is today one of the most significant processes which take place around the globe impacting all facets of our contemporary life. The impact of the present globalisation is both accelerating and growing in scope and its dissemination in our daily lives throughout the world. Globalisation is not an "out there" marvel but one that affects the daily lives of individuals whichever part of the globe they live in. Many authors have defined this concept multifariously.

To some, globalisation is seen as a process whereby national and international policy makers promote domestic deregulation and external liberalization.¹ The process of deregulation that was intensified in the 1990s involved the removal of barriers to international trade, foreign direct investment and short term financial flows.¹

Thus, organizations pay special attention to factors such as customer knowledge, customer relationships, and determination of methods for meeting customer satisfaction and for providing suitable goods and services to meet customer needs because Customer is the most important asset of organization. Peter Drucker claims that customer satisfaction is the goal and aim of all activities. "Increased competition, meeting customer satisfactions ...are new concepts that have strongly affected current world in a way that one cannot compete or even survive according old ideas in new world." There is no doubt that development of technology has increased customers' expectations to receive quality and on time services. Customers will no longer compromise on any quality of services. Service quality is increasingly becoming a major strategic variable (Robledo, 2001; Terziowski and Dean, 1998). And this construct has received increased scrutiny during the last few decades (Svensson, 2004).

Today, hundreds of information and communication technology (ICT) systems are used in healthcare organizations to serve physicians and other professionals in their daily work with patients. These systems cover a broad range of

¹Cornia GA. Globalization and health: results and options. Bulletin of World Health Organization. 2001;79(9):834-841. [PMC free article] [PubMed] [Google Scholar]

applications, from widely used electronic health records (EHR) and computerized physician order entry (CPOE) systems, to modern speech recognition technologies and mobile applications. Among other industries, healthcare has already profited extensively by the development of ICT. (L.W.P. Peute, 2008) "Although the technology-related benefits are obvious in theory, it seems that they are not clearly associated in the operating situations nor appeared in healthcare professionals' daily work. Indeed, what is known about the usability of the healthcare? Typically, researchers have applied traditional usability evaluation methods." (J. Kjeldskov, M.B. Skov, 2007) "Evaluation has focused on healthcare information systems, particularly on EHRs, and their use in clinical settings." (M.W.M. Jaspers, 2008) Additionally several articles have aimed at promoting the adaptation of the evaluation approach by describing instructions for usability activities in healthcare settings.

The results from the recent studies suggest that currently used healthcare information systems suffer from a high number of usability flaws which considerably hinder the use of computer systems. (P.J. Edwards, 2008) "The evidence is strong: an EHR system has been reported with 103 flaws related to the complexity of information, a poor relation to work activities, and lack of support for mobility; a commercial EHR in a large paediatric hospital has been reported with 134 flaws related to consistency, user control, flexibility, efficiency, and natural dialogue"; (L.W.P. Peute M., 2007) "a Computerized Physician order entry (CPOE) system has been reported with 33 flaws related to user interface and user interaction issues". This paper has made an attempt to investigate service quality dimension and patients' satisfaction towards the ICT enabled hospital in Trichy, Tamilnadu State.

II. STATEMENT OF THE PROBLEM

The distribution of benefits from ICT that created global imbalance is most glaring. Whereas global ICT market has surpassed US \$ 2 trillion in 1999 and expected to reach US \$ 3 trillion by 2004 developing countries accounted for a mere 2% of the revenues². In developing countries, communication of information is limited by unavailability of broadband access and where this is available it is too expensive for the majority to afford

²<http://www.intel.com/pressroom/kits/bios/moore.htm>. [30 September 2003].

ICT occupies poorly defined public policy processes. While the continent of Africa is still grappling with the most basic requirements of life such as food, education and shelter, the developed world is fast heading towards a globally networked information economy and society.³

Several authors have raised concern on the inadequacies of the existing routine health information systems in many of the developing countries. Data collected in developing countries has been reported to be incomplete, inaccurate and not timely, as a result it is usually not used for various reasons including that of poor quality and unreliable.⁴

Hospitals are incredibly complex institutions, uniting complex medical knowledge and expertise with basic and advanced nursing routines. Large hospitals often generate their own ecosystems throughout an area, with another whole range of functions and firms surrounding them (e.g., imaging, laboratory functions, and analysis, therapy and care homes). Introducing new or complex technologies often has significant follow-through effects in terms of adapting employment, training and staffing issues. Healthcare institutions can make significant investments in digital health, but may not fully realize the benefits, if other systems and processes fail to adapt. Therefore, this study is an attempt to know the performance of the ITC in health care industry in India

III. REVIEW OF LITERATURE

By definition, ICTs include electronic networks – embodying complex hardware and software - linked by a vast array of technical protocols (Mansell and Silverstone, 1996). ICTs are embedded in networks and services that affect the local and global accumulation and flows of public and private knowledge.⁵

According to a **United Nations report (1999)** ICTs cover Internet service provision, telecommunications equipment and services, information technology equipment and services, media and broadcasting, libraries and documentation centers, commercial information

³<http://www.uneca.org/adf99/summaries.htm>. [30 September 2003].

⁴Opit L. How should information on health care be generated and used? *World Health Forum*. 1987;(8):409–417. [Google Scholar]

⁵Mansell, R. and R. Silverstone (1996) *Communication by Design: The Politics of Information and Communication Technologies*. Oxford: OUP

providers, network-based information services, and other related information and communication activities.”⁶

Duncombe and Heeks (1999) simplify the definition by describing ICTs as an “electronic means of capturing, processing, storing and disseminating information”.⁷

Chowdhury (2000) writes that ICTs encompass technologies that can process different kinds of information (voice, video, audio, text and data) and facilitate different forms of communications among human agents, among humans and information systems, and among information systems.

They are about capturing, storing, processing, sharing, displaying, protecting, and managing information.”⁸

IV. INDIAN HEALTHCARE INDUSTRY AND EMERGING TRENDS

The Indian healthcare industry, unlike other industries, stands untouched by recession. There had been a steady growth in this sector.

According to a recent report from the India Brand Equity Foundation (IBEF), healthcare has become one of India's largest sectors, both in terms of revenue and employment. The industry is growing at an amazing pace owing to its strengthening coverage, services and increasing expenditure by the public and private sector.

The healthcare market can upsurge three-fold to Rs. 8.6 trillion (US\$ 133.44 billion) by 2022. In Budget 2021, India's public expenditure on healthcare stands at 1.2% as a percentage of the GDP.

India is witnessing growth of advanced diagnostic equipment and excellent infrastructure. Significantly low presence of physicians in rural and semi-urban areas has led to the limited access to proper healthcare facilities for the people living

in these areas. Telemedicine is considered to be one of the solutions to this lacuna in accessibility to health care services in rural and semi-urban areas. Growth of IT sector in India which plays crucial role in telemedicine has led to emergence of this sector in India. Tele radiology has emerged very fast with increasing number of foreign hospitals active in this space. Many hospitals have adopted the approach of public – private partnerships (“PPP”) to render services through telemedicine. Indian Space Research Organization has planned to set up telemedicine centres across the country by linking various district hospitals.

V. OBJECTIVES

1. To analyse the awareness and adaptability of ICT in health care management systems in Tamilnadu.
2. To collect relevant literature and conceptual framework on ICT and healthcare management.
3. To assess the nature and magnitude of Information and Communication Technology (ICT) in hospitals in Tamil Nadu.

VI. RESEARCH METHODOLOGY

This study conducted with the help of Help of descriptive method of research. Primary method of data collection was employed. The population for this study comprises all the people availing treatment in selected hospitals in Trichy. A total of 4 private hospitals were selected it has around 1600 patients among which 450 patients were randomly approached with 250 agreeing to take part in the study, resulting in a response rate of 55%. The questionnaires were administered in an interview format to ensure as high a response rate as possible. The statistical package for the social sciences (SPSS) version 19.0 was used to analyse the data collected. Analysis consisted of the computation of descriptive statistics in order to examine the patients' satisfaction towards the various dimensions awareness and adoptability were studied.

⁶United Nations Economic Commission for Africa (ECA) (1999) 'An Overview of ICT Trends and Policy in Africa.' May 1999, UNECA, Addis Ababa <http://www.un.org/Depts/eca/adf/>

⁷Duncombe R. and R. Heeks (1999) 'Information, ICTs and Small Enterprise: Findings from Botswana', IDPM Manchester Working Paper No. 7, November 1999. <http://idpm.man.ac.uk/idpm/diwpf7.htm>

⁸Chowdhury, N. (2000) 'Information and Communications Technologies and IFPRI's Mandate: A Conceptual Framework.' Sept. 18, 2000. <http://www.ifpri.org/divs/cd/dp/ictdp01.pdf>

VII. ANALYSIS AND INTERPRETATION

Table 1

Demographical background of the respondents

S.No	Frequency	Percentage	Mean	Median	Mode
Gender					
Male	144	57.6	1.42	1	1
Female	106	42.4			
Total	250	100.0			
Age(Completedyearsonly)					
Upto25years	23	9.2	3.38	4	4
26yearsto30years	45	18.0			
31yearsto35years	51	20.4			
36yearsto40years	74	29.6			
41yearsandabove	57	22.8			
Total	250	100.0			
Educationalbackground					
UptoUG	76	30.4	2.34	2	1
PG	56	22.4			
Professional	75	30.0			
Others	43	17.2			
Total	250	100.0			
Experience(Frequencyofvisitedhospital)					
Upto3years	43	17.2	2.68	3	3
4yearsto6years	58	23.2			
7yearsto9years	84	33.6			
10yearsandabove	65	26.0			
Total	250	100.0			

Sources: Primary data

The above table describing that demographical background of the respondents, it shows that there are 57.6% of the respondents were male and 42.3 % were female. Age wise classification of the respondents shows that the highest 29.6% of the respondents were in that are range of 36 years to 40 years, following which 22.8% of the respondents were in the age range of 41 years and above 9.2% of the respondents were in the age range of up to 25 years. With respect to the educational background of the respondents its show that 30.4% of the respondents were undergraduate it includes all discipline like arts, science and engineering,224% of the respondents

were post graduate,30% of the respondents were professional and others category consists of 17 % of the respondents which includes illiterate, studied polytechnic and other streams. The experience of the respondents shows that the highest 33.6% of the respondents were having an experience treatment with the hospital ranging from 7 years to 9 years,26% of the respondents were in the experience range 10 years and above, 23.2% of the respondents having an experience range between 4 years to 6 years. In addition, the table explains that mean, medium and mode value for the demographical background of the respondents.

Table 2

Gender	N	Awareness		Reliability		Responsiveness		Assurance		Adoptability	
		Mean	S.D	Mean	SD	Mean	SD	MeanSD	Mean	SD	
Male	144	6.29	3.50	6.29	2.36	7.27	2.66	7.27	2.66	5.99	2.97
Female	106	6.50	3.45	6.48	2.26	7.49	2.87	7.49	2.87	6.39	3.07
Total	250	6.38	3.48	6.37	2.31	7.36	2.75	7.36	2.75	6.16	3.01

Mean analysis between gender and various dimensions of awareness and adoptability of ICT in Health care
Sources: Primary data

The above table describing that gender wise respondents' opinion towards the various dimensions of awareness and adoptability, it shows that female respondents highly satisfied towards the acceptable dimension in the hospital than the male respondents based on the mean score that is 6.29. With regard to the reliability the highest 6.48 mean score were registered for female respondents, with respect to service responsiveness female

respondents have recorded high level of satisfaction than the male respondents. With regard to assurance the highest score registered by female respondents. Empathy concerns the highest mean score show for female respondents therefore there is high level of satisfaction exist among the female respondents. And their respective standard deviation presented.

Table 3 Respondent's level of satisfaction on awareness and adoptability of ICT in Health care

Gender	Awareness		Reliability		Responsiveness		Assurance		Adoptability	
	High	Low	High	Low	High	Low	High	Low	High	Low
Male	122	22	130	14	131	13	105	39	119	25
Female	84	22	96	10	96	10	73	33	75	31
Total	206	44	226	24	227	23	178	72	194	56

Sources: Primary data

The above table representing that gender wise respondent's satisfaction towards various dimension of awareness and adoptability it shows that, with regards to tangible service the 112 male respondents show high level of satisfaction and 22 respondents recoded low level satisfaction, and 84 female respondents registered high level of satisfactions. Out of the total 130 respondents were satisfied at high level towards the reliability and 96 female respondents were highly satisfied towards reliability of the hospitals. Service responsiveness

is concerns there are 131 respondents were highly satisfied and 96 female respondents too highly satisfied whereas 23 respondents were recorded low level of satisfaction. With respect to service assurance there are 105 male respondents were highly satisfied and 73 female respondents too highly satisfied. Adoptability concerned, there are 119 male and 75 female respondents were highly satisfied and 25 male and 31 female respondents registered low level satisfaction

Table 4: Structure equation modelling for awareness and adoptability

Dimensions		Dimensions	Estimate	S.E.	C.R.	P	Statistics
Overall	<---	Awareness	-.013	.075	-.172	.863	P>0.005 Not significant
Overall	<---	Adoptability	.082	.062	1.331	.183	P>0.005 Not significant
Overall	<---	Assurance	.048	.071	.678	.498	P>0.005 Not significant
Overall	<---	Responsiveness	-.017	.076	-.220	.826	P>0.005 Not significant
Overall	<---	Reliability	-.039	.072	-.537	.591	P>0.005 Not significant

Sources: Primary data

The above table indicates that structural equation modelling showing awareness and adoptability in the using ICT in the Health care. It indicates that all the variable has not significantly

correlated to each other's. The overall awareness, adoptability, assurance, responsiveness and reliability. Assuming the order of the dimension varies as in the questionnaire. For all the

dimensions p value is greater than .005. Therefore, there is no significant relationship between

awareness and adoptability of ICT in health care.

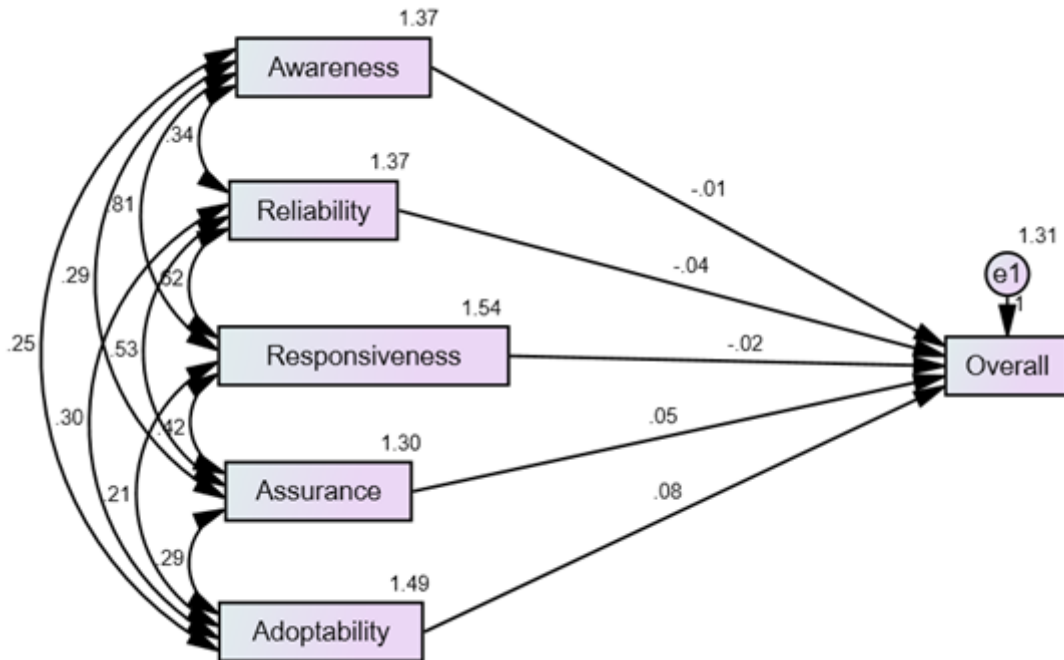


Fig: 1 – Awareness and adoptability of ICT in health Care

From the structure equation modelling it is found that the calculated CMIN/DF (Chi-square Minimum /Degree of Freedom) value is 4.25 The fit between the data and the proposed measurement model can be tested with a Chi-square Minimum /Degree of Freedom (CMIN/DF) test where the probability is lesser than or equal to 5 which indicates that the model is fit. Here GFI (Goodness of Fit Index) and AGFI (Adjusted Goodness of Fit Index) values are positioned at 0.752 and 0.653 respectively. The calculated CFI (Comparative Fit Index) value is 0.000 and also it is found that RMSEA (Root Mean Square Error of Approximation) value is 0.231.

VIII. CONCLUSION

This study examines the awareness and adoptability of ICT enabled health care services in Trichy. A total of 4 private hospitals were selected it has around 1600 patients among which 450 patients were randomly approached with 250 agreeing to take part in the study, resulting in a response rate of 55%. The Results indicate 112 male respondents show high level of satisfaction and 22 respondents recoded low level satisfaction, and 84 female respondents registered high level of satisfactions. Out of the total 130 respondents were satisfied at high level towards the reliability and 96

female respondents were highly satisfied towards reliability of the hospitals. Female respondents are highly awarded and adoptable ICT enabled health care than the male counterpart based on the sample collected in the study area. Therefore, we conclude that there is a tremendous opportunity to use ICT in health care.

REFERENCES

- [1]. Andaleeb S. Caring for children: A model of healthcare service quality in Bangladesh. *International Journal of Medical Informatics* 1992; 20: 339–345.
- [2]. Babakus EM. Adapting the SERVQUAL Scale to Hospital Services: An Empirical Investigation. *Health* 1992; 6: 26.
- [3]. Edwards KF. Evaluating usability of a commercial electronic health record: a case study. *International Journal of human - Computer studies* 2008; 718-728.
- [4]. Guy PA. *Big Pharma can still find big value E- Health*. Boston: Boston Consulting Group, 2001.
- [5]. Kleiner KD, Akers R, Burke BL, Werner EJ. Parents and physicians' attitude regarding electronic communication in paediatric practices. *Pediatrics*. 2002; 109(5):954–956. [Google Scholar]

- [6]. Kjeldskov JM, Skov BJ. Longitudinal study of usability in health care: does time heal? *Health technology and informatics* 2007; 181-191.
- [7]. Nhampossa JL. Globalisation and Localisation of Information Systems for District Health. Case study from Mozambique. 2000. [September 20 September 2003]. Downloaded from <http://www.ifi.uio.no>.
- [8]. Peute LWPM. The significance of a usability evaluation of an emerging laboratory order entry system. *International Journal of Medical Informatics* 2007; 157-168.