

# A Study on Hospital Information System at a Tertiary Teaching Hospital

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## Abstract

The Global Hospital Information Systems market is forecast to grow at a Compound Annual Growth Rate of 10

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**Index terms**— Healthcare, Hospital Information Systems, Computers, Information Technology.

## 1 Introduction

he report published by Fierce Healthcare 2011 highlights the Global Hospital Information Systems Market is forecast to grow at a Compound Annual Growth Rate of 10% from 2010-2017 i.e. It was valued at US\$7.4 billion in 2010, and is forecast to grow at a Compound Annual Growth Rate of 10% to reach about US\$14.7 billion by 2017. The high growth forecast for the period 2010-2017 is significantly influenced by accelerated efforts from the public and private sectors around the world to contain rising healthcare costs and enhance quality of care (Fierce healthcare, 2011). The global data 2010 research report talks about global Hospital Information Systems Company market Shares where GE Healthcare and Siemens Healthcare are the two leading companies in the HIS market and together account for 24% of the total market share. GE Healthcare is the market leader with 12.9% of the market share, followed by Siemens Healthcare and Cerner Corporation with 11.7% and 8.9% respectively (Global Author ? : Vice Principal and Associate Professor Department of hospital management, Owaisi Hospital and Research Center, Hyderabad, 500058. E-mail : murtuza\_in21@yahoo.com, murtuzain21@gmail.com Author ? : Department of hospital management, Owaisi Hospital and Research Center, Hyderabad, 500058. E-mail : in\_searchofdestiny@hotmail.co.uk data, 2010). Healthcare organizations globally recognize the importance of investing in information technologies ??Seyed et al, 2011). HIS is one of the most common computer systems designed to support health care services. These systems have large computerized data bases which are intended primarily for communication, store health and administrative information. HIS has a different components and includes broad scope and level of systems from departmental (a system limited a specific clinical or financial domain) to knowledge based systems that provide diagnostic support and intervention for patient care activities (Al-Nashmi and Maha Eissa, 2003).

It is evident that the use of HIS offers tremendous opportunities to reduce clinical errors (e.g. medication errors, diagnostic errors), to support health care professionals (e.g. availability of timely, up-to-date patient information), to increase the efficiency of care (e.g. less waiting times for patients), even to improve the quality of patient care (D.W. ??ates et al, 2001) . Despite the substantial opportunities for improvement in patient safety, the development, testing, and adoption of information technology remain limited and numerous barriers exist (David W. Bates et al, 2003). There is an urgent need to take a fresh look at HIS from the perspective of the organizational structure of hospitals, the funding of such systems, and the role that physicians should play in their operation. Failing this, it is believed that HIS and its medically related components will continue to suffer serious developmental lags (Bruce A .et al, 1987) .

The latest information system technologies tools such as Clinical Data Warehouses (CDW), Clinical Decision-Support(CDS) systems, data-mining techniques, Online Analytical Processing (OLAP) and Online Transactional Processing (OLTP)), are used to maintain and utilize patient data intelligently, based on the users' requirements (Ashish Mangalampalli et al, 2007) II.

## 2 Methods

The study was conducted at a 1050 bedded tertiary care teaching hospital which is operational from 1996. Total of 8 departments of the hospital were studied for assessing the Hospital Information System. The present research is an Exploratory and qualitative in nature. The study is undertaken to know the current HIS and to take an overview of enhancements done. Extensive interviews for the sample of 100 fulltime employees which included Clinical, Non-Clinical and Administrative Staff of the hospital have been taken followed by a questionnaire to get a handle on the situation and understand the phenomena. The sampling method followed is convenient sampling.

The data is collected through questionnaire, observation & interviews. The questionnaire was constructed with emphasis on the content, clarity and simple language. The scoring done for was on a fivepoint scale. The scoring has been given according to the nature of the questions. Forced field analysis technique is used for data analysis to show how to plan and implement a solution or make necessary changes in HIS.

III. The key findings from the questionnaire were as follows From Table-1 It is found that only 30% of the respondents agreed that present HIS is good and 41% agreed the present HIS is moderate and 29% had indicated the HIS to be poor. Table-2 shows that 32% of the sample disagreed that HIS is not User Friendly to that of 53% of sample agreed that the present HIS is User Friendly, it was also found out that 30% of sample said that HIS is not helpful in Inter-departmental communication and 50% agreed that HIS helps in better communication., it was found out that 66% of staff agreed that HIS helps in Decision Making whereas 20% disagreed, it was found out that 76% of sample agreed that HIS helps in better work efficiency and 22% of the sample disagreed, more over 66% of sample agreed that the Utilization of Resources is effective but 20% disagreed that the utilization of resources is not effective, other findings were 40% of sample agreed that the present HIS helps in better process flow but where as 36% of the sample disagreed to it, 42% of sample agreed that HIS contributes in planning and 36% disagreed to this, 42% of sample agreed that HIS plays a vital role in cost containment and 34% of sample disagreed that the present HIS is not effective in cost containment, 57% of the sample agreed that HIS plays a key role in Quality Assurance, whereas 22% disagreed to it, 78% of sample agreed that Training is needed for better use of HIS, but 12% of sample disagreed that training is not essential, 92% of sample agreed that there is a need of fully integrated system whereas, 6% of sample disagreed that a fully integrated system is not needed, Volume XII Issue X Version I department but 18% of sample disagreed that they don't need to seek help from IT department for HIS, 76% of sample says that non-existence of computers as wards effects the performance of HIS and 10% of sample disagreed to it, 76% of the sample agreed that there is a need of a new and better system but 10% of sample disagreed. Motivating Forces are those forces affecting a situation that are pushing in a particular direction; they are positive forces. In terms of improving the effectiveness in working of HIS the forces that are categorized based on User Friendliness, Enhanced Communication, Decision Making, Work Efficiency, Resources Utilization, Better Process Flow and Quality Assurance.

## 3 Discussions

Hindering Forces are negative forces that decrease the driving forces which lacks in the effectiveness in the operations of HIS. The restraining forces include Training for Employees, Fully Integrated System, Seeking Help, Cost Containment and Non-Existence of Computers.

## 4 Conclusions

The Global Hospital Information Systems Market is forecast to grow at a Compound Annual Growth Rate of 10% the high growth forecast for the period is significantly influenced by accelerated efforts from the public and private sectors around the world.

Hospital Information system is one of the most common computer systems primarily used for communication, store health and administrative information with tremendous growth opportunities towards patient care reducing clinical errors, support health care professionals, increase the efficiency of care improve

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Figure 1: ?Figure 1 Figure 2 :

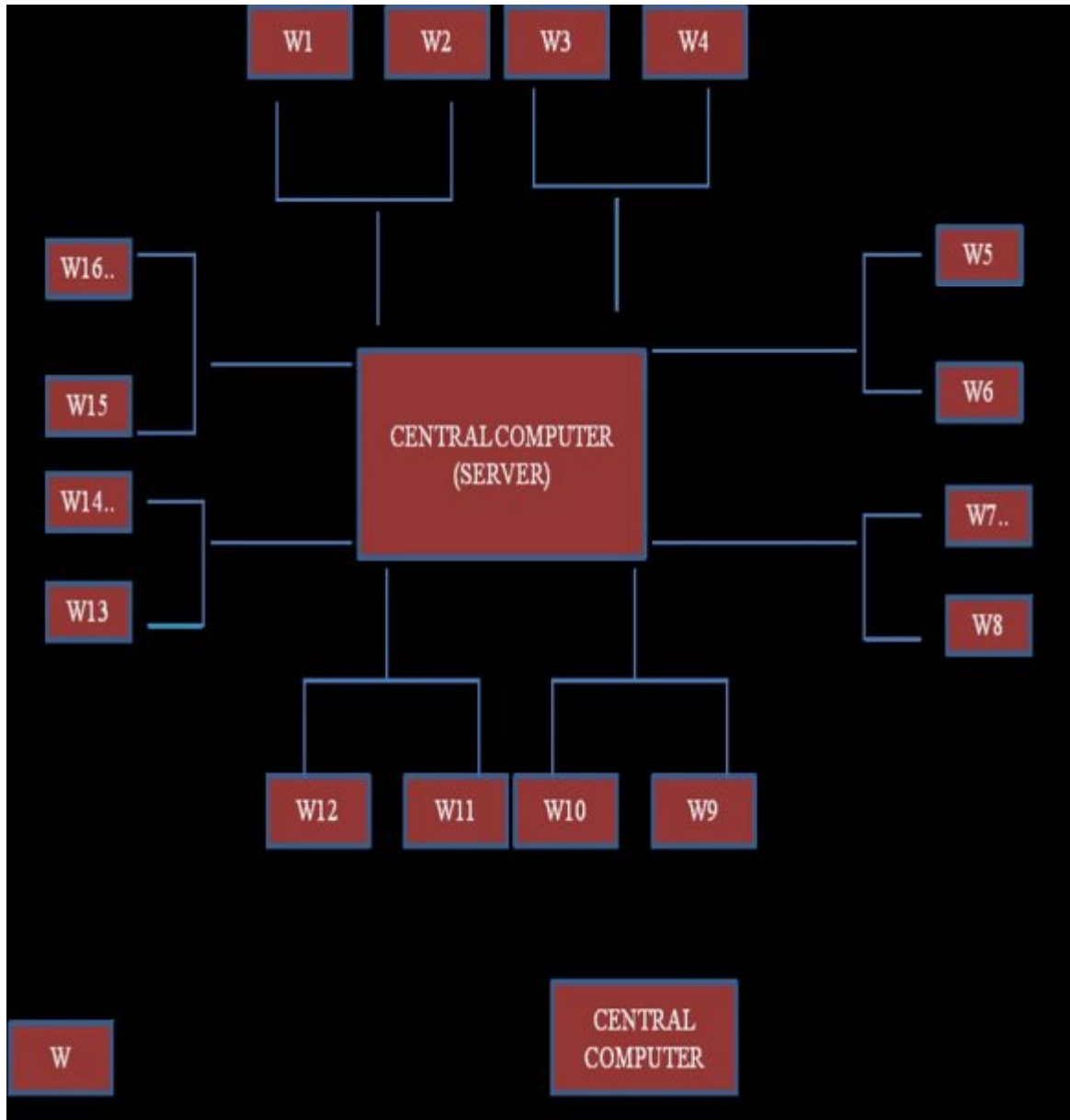


Figure 2:

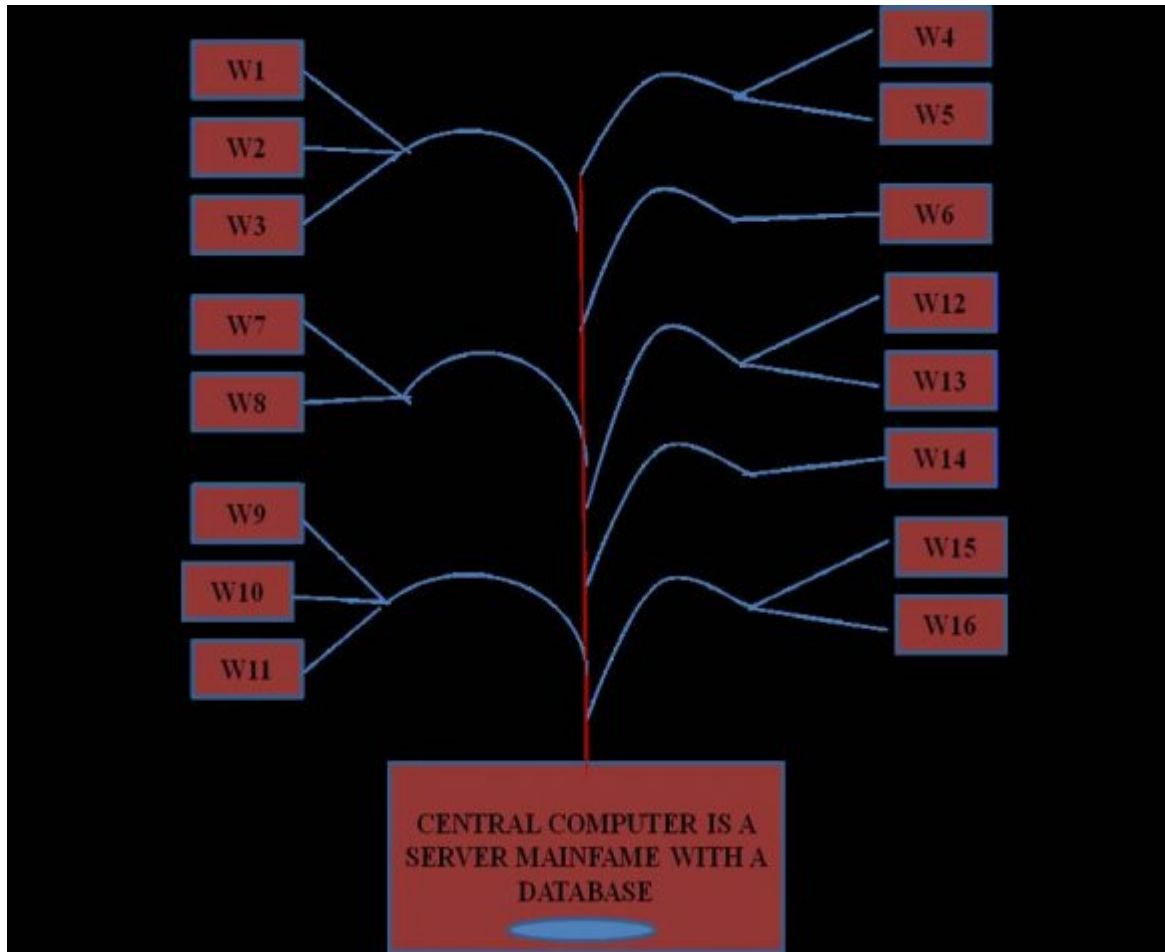


Figure 3:

1

Category (n=100)	Good	Responses Moderate	Poor	Total
Administrative Staff	13	12	5	30
Clinical Staff	8	12	10	30
Non Clinical Staff	9	17	14	40
Total	30	41	29	100

Figure 4: Table 1 :

## 4 CONCLUSIONS

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Questions	Strongly Dis- agree	Disagree	Neither Agree Nor Dis- agree	Agree	Strongly Agree
HIS User Friendliness	10	22	14	26	28
HIS In Enhancing Communication	8	22	20	26	24
HIS In Decision Making	4	16	14	38	28
HIS In Work Efficiency	4	18	2	36	40
HIS Helps In Utilization Of Resources	6	14	14	32	34
HIS Helps In Better Process Flow	6	30	24	32	8
HIS Contribution In Planning	8	28	22	22	20
HIS Role In Cost Containment	8	26	24	20	22
HIS Role In Quality Assurance	10	12	21	28	29
Training For Better Use Of HIS	8	4	10	34	44
A Fully Integrated System	2	4	2	20	72
Seeking Help from IT Department	4	14	8	56	18
Non-Existence Of Computers At All The Wards Effects HIS Performance	6	4	14	28	48
Need For A New And Better System	4	6	14	38	38

Figure 5: Table 2 :

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Motivating Forces	Field Analysis
User Friendliness	Hindering Forces
Enhancing Communication Fully Integrated System	Training
Decision Making	Seeking Help
Work Efficiency	Cost Containment
Resources Utilization	Non-Existence Of Comput- ers
Better Process Flow	
Quality Assurance	

Figure 6: Table 3 :

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Figure 7: Table - 3

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Figure 8: Table 4 :

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[Seyed Jamaledin Tabibi, Amir Ashkan Nasiripour, Reza Baradaran Kazemzadeh, Ali Akbar Farhangi and Parvin Ebrahimi ( )] ‘Effective Factors on Hospital Information System Acceptance: A Confirmatory Study in Iranian Hospitals’. *Middle-East Journal of Scientific Research* Seyed Jamaledin Tabibi, Amir Ashkan Nasiripour, Reza Baradaran Kazemzadeh, Ali Akbar Farhangi and Parvin Ebrahimi (ed.) 2011. 9 (1) p. .

[Global Hospital Information Systems (HIS) Opportunity Assessment, Competitive Landscape and Market Forecasts to Global data] ‘Global Hospital Information Systems (HIS) Opportunity Assessment, Competitive Landscape and Market Forecasts to’. <http://www.marketreports> *Global data*, 2010. 2016.

[Mangalampalli et al. ( )] ‘High end clinical domain information system for effective healthcare delivery’. Ashish Mangalampalli , Chakravarthy Rama , Raja Muthiyalian , Ajeet K Jain . *International Journal Of Electronic Healthcare* 2007. 3 (2) p. . (Aparna Mudganti Parinam.)

[Bates and Gawande ( )] ‘Improving Safety with Information Technology’. David W Bates , Atul A Gawande . *New England Journal of Medicine* 2003. 348 p. .

[Bruce et al. ( )] ‘In Developed Countries, the Golden Age of Medicine Is at Hand for the Patients’. A Bruce , James B Friedman , Martin . *Journal of American Medical Association* 1987. 258 (17) p. .

[David et al. ( )] ‘Reducing the frequency of errors in medicine using information technology’. . W David , M Bates , L L Cohen , J M Leape , M M Overhage , T Shabot , Sheridan . *Journal of American Medical Informatics Association* 2001. 8 (4) p. .

[Fierce Healthcare ( )] *Research and Markets: Hospital Information Systems (HIS) -Global Opportunity Assessment, Competitive Landscape and Market*, Fierce Healthcare . 24/01/12. <http://www.Fiercehealthcare.com/> 2011. (press -releases/research-and-marketshospital-information-systems-his-global-opportunityas-0)

[Eissa ( )] *The role of vendors in health information systems implementation: Assessing the perception of healthcare executives and vendors*, Al-Nashmi & Maha Eissa . <http://proquest.umi.com> 2003. University of Pittsburgh (Available at)