

**INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH
TECHNOLOGY****ROLE OF INFORMATION TECHNOLOGY IN HEALTHCARE SYSTEM
MANAGEMENT: A CRITICAL STUDY WITH SPECIAL REFERENCE TO
NAGPUR DISTRICT****Priti S. Korde^{*1} & Shweta S. Gulhane²**^{*1}Department of Business Management, RTMNU, Nagpur- 440001, India²Perna College of Commerce, Reshim Bagh, Nagpur- 440024, India**ABSTRACT**

There is a vast area which needs to work out the existing problem. The various healthcare sectors such as Hospitals, Private clinics, retail pharmacy shops, pathology labs and/or research institutes in the Nagpur District Jurisdiction will be taken up for the present study. Various areas of day-to-day working of these sectors if integrated through the information technology may improvise the services to patients/public.

KEYWORDS: Information technology, healthcare system, management.

I. INTRODUCTION

Traditionally lagging other industries, health care facilities such as hospitals are finally starting to catch up in computer use. For decades, computers were relegated to back-office administrative functions in hospitals, or as peripheral PCs to high-end imaging and radiology systems. Along came pressure from government regulations such as patient privacy and insurance portability (HIPAA) and Medicare/Medicaid information systems, along with advances in technology like medical billing systems and telemedicine. The biggest and more recent catalyst from the government and the health care industry is wider use of Electronic Medical Records (EMR) – digital versions of patients’ charts, and Electronic Health Records (EHR) – sharing of patients’ health records between medical facilities. Although customized health care software remains expensive, licensing flexibility and cloud-based approaches have made it affordable, and the cost of PCs has decreased significantly. As a result, hospitals of all sizes, from rural areas to large metropolitan centers, have gradually increased their computer use. They have done this to reduce costs, to be compliant with government regulations, and provide better care to their patients overall.

Hospitals today are bringing computers closer to the health care professionals and closer to the patients in order to increase efficiency, but also increase accuracy. Computers are often wall-mounted or deployed at all nurses’ stations within a hospital in order to ensure that patients’ charts are more easily accessible and updated more accurately. Computers may also be mounted on medical carts with secure medication dispensing systems that ensure that patients receive the right medications at the right time, every time – reducing the chance of error and increasing patient safety. These same computers mounted on carts can be used to interact with the patients at their bedside, displaying lab and radiological results, and engaging patients in private real-time discussions with their doctors regarding their diagnosis and treatment.

Other areas within the hospital are increasing their computer use as well. Laboratory facilities and radiological departments use PCs to conduct tests, but also enter results into patients’ medical records. Doctors may collaborate with other specialists and colleagues outside the hospital using telemedicine – a computer-based communication and data sharing system. Administrative departments, medical billing departments and the reception desk or information center all use PCs to keep the hospital running. Going forward, every department within a hospital facility will be using computers, with software that ties everything into one system within the hospital and external to the hospital: collaborators, insurance providers, laboratories, testing facilities, and patients themselves¹.

II. RESEARCH METHODOLOGY

The researcher has adopted analytical, descriptive and comparative methodology for this report; reliance has been placed on books, journals, newspapers and online databases and on the views of writers in the discipline of Competition law.

- To study the Life and Prices of IT Instruments used by Healthcare Centers
- To understand the satisfaction level of the patients on the instruments used for testing and the results of the test.

Life and Prices of IT Instruments

Price of the equipment's /instruments determines the quality and the durability or life of the equipment's or instruments. Table no. 1 shows the Life & Prices of IT Instruments used by Healthcare Centers. Data in the table no. 1 reveals that life of the instruments used by the healthcare centers in Nagpur city was in between 3 to 10 years. Most of the instruments' life was for 5 years and the life of very few instruments like CCTV Cameras and Colour X-ray was for little longer period i.e for 10 years.

Table 1. Life and Prices of IT Instruments used by Healthcare Centers

Sr. No	Name of Instruments	Price (Rs.)	Life
1	Computer / Printer	40000	5 yrs
2	CCTV Cameras	1,50,000	10 yrs
3	Line up Mixer	1,00,000	3 yrs
4	Color X-ray	12,00,000	10 yrs
5	Sonography Machine	40,00,000	5 yrs
6	CT Scan	1,25,00,000	5 yrs
7	Pathology Related Instruments	1,80,000	5 yrs
8	Other Instruments	5,00,00,000	5 yrs

From the data in the table 1, it is also seen that healthcare centers in Nagpur city generally have Instruments related pathology, radiology, scan and DTP work namely Computer / Printer, CCTV Cameras, Line up Mixer, Color X-ray, Sonography Machine, CT scan, and Pathology Related Instruments.

From the observations on the data in table no.1 it can be concluded that healthcare centers in Nagpur city generally use instruments related to pathology, radiology, scan and DTP work and most of these instrument have life of 5 years.

Satisfaction on Instrument and Satisfaction with Result of Test

Technical specifications of the instruments used for testing and investigations play an important role in an accuracy of the results of the test. In the table no. 2 researchers has tried to understand the satisfaction level of the patients on the instruments used for testing and the results of the test. With the help of data in table no. 2 researchers has tried to establish relationship between satisfaction level of the patients on instruments used for testing and satisfaction on the results.

Table 2. Satisfaction on Instrument and Satisfaction with Result of Test

IT Instrument/ Tests	Satisfaction Level on Instrument	Satisfaction With Result		Total	Chi-Square
		Yes	No		
FSH	Fully Satisfied	1	0	1	Chi Square= 0.402; df= 1; Asym. Sig. 0.526
		100.0 0%	0.0%	100.0 %	
	Partly Satisfied	4 2	17	59	
		71.2 %	28.8 %	100.0 %	
LH	Fully Satisfied	1	0	1	Chi Square= 0.402; df= 1; Asym. Sig. 0.526
		100.0 %	0.0%	100.0 %	
	Partly Satisfied	42 17	59	59	
		71.2 %	28.8 %	100.0 %	
Beta HCG	Fully Satisfied	2	0	2	Chi Square= 0.818; df= 1; Asym. Sig. 0.366
		100.0 %	0.0%	100.0 %	
	Partly Satisfied	41 17	58	58	
		70.7 %	29.3 %	100.0 %	
Plorality	Fully Satisfied	1	0	1	Chi Square= 0.402; df= 1; Asym. Sig. 0.526
		100.0 %	0.0%	100.0 %	
	Partly Satisfied	42 17	59	59	
		71.2 %	28.8 %	100.0 %	
Urine Test	Fully Satisfied	16 4	20	20	Chi Square= 1.560; df= 2; Asym. Sig. 0.459
		80.0 %	20.0 %	100.0 %	
	Partly Satisfied	26 13	39	39	
		66.7 %	33.3 %	100.0 %	
	Not Satisfied	1 0	1	1	
		100.0 %	0.0%	100.0 %	
Thyroid Test	Fully Satisfied	1	0	1	Chi Square= 0.402; df= 1; Asym. Sig. 0.526
		100.0 %	0.0%	100.0 %	
	Partly Satisfied	42 17	59	59	
		71.2 %	28.8 %	100.0 %	
LH1	Fully Satisfied	1	0	1	Chi Square= 0.402; df= 1; Asym. Sig. 0.526
		100.0 %	0.0%	100.0 %	
	Partly Satisfied	42 1	59	59	
		71.2 %	28.8 %	100.0 %	
RSH	Fully Satisfied	1	0	1	Chi Square= 0.402; df= 1; Asym. Sig. 0.526
		100.0 %	0.0%	100.0 %	

[ICMTEST]
 ICTM Value: 3.00

	Partly Satisfied	42 71.2 %	17 28.8 %	59 100.0 %	
HIV	Fully Satisfied	5 100.0 %	0 .0 %	5 100.0 %	Chi Square= 2.156;df= 1; Asym. Sig. 0.142
	Partly Satisfied	38 69.1 %	17 30.9 %	55 100.0 %	
	Fully Satisfied	7 100.0%	0 .0 %	7 100.0 %	
LFT	Partly Satisfied	36 69.2 %	16 30.8 %	52 100.0 %	Chi Square= 5.449; df= 2; Asym. Sig. 0.066
	Not Satisfied	0 0.0%	1 100.0 %	1 100.0 %	
	Fully Satisfied	6 100.0 %	0 0.0%	6 100.0 %	
KFT	Partly Satisfied	37 69.8 %	16 30.2 %	53 100.0 %	Chi Square= 4.991; df= 2; Asym. Sig. 0.082
	Not Satisfied	0 0.0%	1 100.0 %	1 100.0 %	
Blood Test	Fully Satisfied	21 91.3 %	2 8.7%	23 100.0 %	Chi Square= 7.177; df= 2; Asym. Sig. 0.028
	Partly Satisfied	21 60.0 %	1 4 40.0 %	35 100.0 %	
	Not Satisfied	1 50.0 %	1 50.0 %	2 100.0 %	
Hemoglobin	Fully Satisfied	2 66.7 %	1 33.3 %	3 100.0 %	Chi Square= 0.039; df= 1; Asym. Sig. 0.884
	Partly Satisfied	41 71.9 %	1 6 28.1 %	57 100.0 %	
TSH	Fully Satisfied	1 100.0 %	0 0.0%	1 100.0 %	Chi Square= 0.402; df= 1; Asym. Sig. 0.526
	Partly Satisfied	42 71.2 %	1 7 28.8 %	59 100.0 %	
PS	Fully Satisfied	1 50.0 %	1 50.0 %	2 100.0 %	Chi Square= 0.478; df= 1; Asym. Sig. 0.489
	Partly Satisfied	42	1	58	

[ICMTEST]
 ICTM Value: 3.00

		6			
		72.4 %	27.6 %	100.0 %	
CBC	Fully Satisfied	1	0	1	Chi Square= 0.402; df= 1; Asym. Sig. 0.526
		100.0 0%	0.0%	100.0 %	
	Partly Satisfied	42	1 7	59	
		71.2 %	28.8 %	100.0 %	
BP	Fully Satisfied	14	1	15	Chi Square= 6.716; df= 2; Asym. Sig. 0.035
		93.3 %	6.7%	100.0 %	
	Partly Satisfied	29	15	44	
		65.9 %	34.1 %	100.0 %	
	Not Satisfied	0	1	1	
0.0%		100.0 0%	100.0 %		
Sugar	Fully Satisfied	14	0	14	Chi Square= 10.342; df= 2; Asym. Sig. 0.006
		100.0 0%	.0 %	100.0 %	
	Partly Satisfied	28	14	42	
		66.7 %	33.3 %	100.0 %	
	Not Satisfied	1	3	4	
25.0 %		75.0 %	100.0 %		
CSF	Fully Satisfied	1	0	1	Chi Square= 0.402; df= 1; Asym. Sig. 0.526
		100.0 0%	.0 %	100.0 %	
	Partly Satisfied	42	17	59	
		71.2 %	28.8 %	100.0 %	
Serum Lipase	Fully Satisfied	1	0	1	Chi Square= 0.402; df= 1; Asym. Sig. 0.526
		100.0 0%	00.0 %	100.0 %	
	Partly Satisfied	42	17	59	
		71.2 %	28.8 %	100.0 %	
Semen Analysis	Fully Satisfied	1	0	1	Chi Square= 0.402; df= 1; Asym. Sig. 0.526
		100.0 0%	0.0%	100.0 %	
	Partly Satisfied	42	17	59	
		71.2 %	28.8 %	100.0 %	
Sonography	Fully Satisfied	6	2	8	Chi Square= 7.988; df= 2; Asym. Sig. 0.018
		75.0 %	25.0 %	100.0 %	
	Partly Satisfied	37	1 2	49	
		75.5 %	24.5 %	100.0 %	
	Not Satisfied	0	3	3	
0.0%		100.0	100.0		

[ICMTEST]
ICTM Value: 3.00

X-Ray/ Color X- Ray	Fully Satisfied	12	0%	1	%	Chi Square= 15.470; df= 2; Asym. Sig. 0.000
		92.3%	7.7%	13	100.0%	
	Partly Satisfied	31		1	42	
		73.8%	26.2%	100.0%	100.0%	
	Not Satisfied	0		5	5	
0.0%		100.0%	100.0%	100.0%		
BTCT	Fully Satisfied	0		1	1	Chi Square= 2.572; df= 1; Asym. Sig. 0.109
		0.0%	100.0%	100.0%	100.0%	
	Partly Satisfied	43		1	59	
		72.9%	27.1%	100.0%	100.0%	
Creatinine	Partly Satisfied	43		1	60	No Statistical Calculation possible
		71.7%	28.3%	100.0%	100.0%	
Kidney Test	Fully Satisfied	1		1	2	Chi Square= 0.478; df= 1; Asym. Sig. 0.489
		50.0%	50.0%	100.0%	100.0%	
	Partly Satisfied	42		1	58	
72.4%		27.6%	100.0%	100.0%		
Lever Test	Fully Satisfied	0		1	1	Chi Square= 2.572; df= 1; Asym. Sig. 0.109
		.0%	100.0%	100.0%	100.0%	
	Partly Satisfied	43		16	59	
72.9%		27.1%	100.0%	100.0%		
CT Scan	Fully Satisfied	8		0	8	Chi Square= 4.289; df= 2; Asym. Sig. 0.117
		100.0%	0.0%	100.0%	100.0%	
	Partly Satisfied	33		1	48	
		68.8%	31.3%	100.0%	100.0%	
	Not Satisfied	2		2	4	
50.0%		50.0%	100.0%	100.0%		
Endoscopy	Partly Satisfied	43		1	58	Chi Square= 5.233; df= 1; Asym. Sig. 0.022
		74.1%	25.9%	100.0%	100.0%	
	Not Satisfied	0		2	2	
0.0%		100.0%	100.0%	100.0%		
ENT		43		1	60	No Statistical
				7		

[ICMTEST]
ICTM Value: 3.00

Check	Partly Satisfied	71.7 %	28.3 %	100.0 %	Calculation possible
	Fully Satisfied	1 33.3 %	2 66.7 %	3 100.0 %	
ECG	Partly Satisfied	42 75.0 %	1 4 25.0 %	56 100.0 %	Chi Square= 5.007; df= 2; Asym. Sig. 0.082
		0 0.0%	1 100.0 0%	1 100.0 %	
	Not Satisfied				
Spite Test	Partly Satisfied	43 71.7 %	1 7 28.3 %	60 100.0 %	No Statistical Calculation possible
2D Echo Doppler	Fully Satisfied	2 100.0 %	0 0.0%	2 100.0 %	Chi Square= 0.818;
		41 70.7 %	17 29.3 %	58 100.0 %	
	Partly Satisfied				df= 1; Asym. Sig. 0.366

Data in the table no.2 and results of the chi-square test draw following inferences.

III. FINDING AND CONCLUSION

In case of FCH, LH, Beta HCG, Plorality, Urine test, thyroid test, LH1, RSH, HIV, KFT, Hemoglobin, TSH, PS, CBC,CSF, Serum Lipase, Semen Analysis, BTCT, Kidney test, Lever test, CT Scan, ECG, 2D Echo Doppler, there was no association between the level of satisfaction of the patients on instruments and their satisfaction level on the result of the test.

In case of LFT, Blood tests, BP tests, Sugar tests, Sonography, X-ray and Color X- Ray and Endoscopy, there was strong and significant association between the level of satisfaction of the patients on instruments and their satisfaction level on the result of the test.

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