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USE OF INFORMATION TECHNOLOGY IN HOSPITAL MANAGEMENT (A COMPARATIVE STUDYOF IRAN AND INDIA)

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ABSTRACT

The following article is based on the study of Information Technology and its levels of application and operability in Medicare centers as is obtainable in two countries, namely India and Iran. The study hopes to throw light on the present situation and level of implementation of IT in the two countries with the ultimate aim of improving healthcare delivery systems. It should be obvious that healthcare management is an information intensive task and IT is the buzzword of the present century. It should also be obvious that application of IT could benefit the management of healthcare in a way that could not have been imagined some time ago. This kind of study is therefore a must. The study throws up some interesting hypothesis based on the questionnaire and the data collected thereupon.

INTRODUCTION

Nowadays, institutes and organizations managements have understood very well that preserving their positions—either for improving organizational structure or reasonable and proper development of activities in other dimensions—is not possible without applying 'information management' methods and strategies. Thus, technology growth and development should be of prime importance to managers. If we consider information technology as a triangle, information systems (IS), office automation (OA), communications (CO), compose the three sides of it and the relationship between these three factors is known as information technology.

Official automation provides various official facilities for consumers like electronic calendar, documents, post and pictorial post. Communications talk about facts, ideas judgments, which all together can be found in any organization. Various communications like telephones, formal meetings, conferences, letters, reports and computer networks comprise of the system.

A comprehensive investigation of some countries reveals that information technology has a deep influence on hospital management. According to five management activities (programming, organizing, leading, coordinating and controlling) hospital management means those who dominate a social and medical organization called hospital in which adequate care of hygienic, therapy and prevention are represented.

The best way of applying information technology to knowledge management is probably a combination of two factors: on the one hand, the awareness of the limits of information technology and of the fact that any IT deployment will not achieve much, if it is not accompanied by a global cultural change toward knowledge values; on the other hand, the availability of information technologies that have been expressly designed with knowledge management in view.

In nursing management, information technology causes accurate programming of work shifts, accurate reports of real need of patients, easing and accuracy in nursing reports accumulation, more arranged relation with physicians, accelerating and easing of patient transfer, client responding and determination of vacant and occupied beds. One specific area of inter-professional activity that may bring nurses and doctors to work more closely together is that of clinical audit and the wards' managerial role has also changed and senior heads too have to pay close attention to costs and efficiencies.

In official and financial management, this causes prompt accessibility of hospital official and financial daily reports accompanied with on time recognition of deficiencies, removing daily problems of patient's and clients, proper programming for decreasing expenses, control of staff output and connecting the section and units in hospitals.

Characteristics and Advantages of Information Technology in Hospitals can be pointed out as: -

- Covering all hospital units and wards and connecting them to a computer network.
- Minimum hardware facility requirement.

- Complete supervision over staff activities for management
- Decreasing probable risk in everyday staff procedure.
- Decreasing paper use as means of transferring information.
- Capability of offering service, reception and discharge.
- High capability in recording and preserving patient files.
- Offering the most accurate and standard statistics and reports out of recorded information.
- Capability of hospitalization in units and keeping track of healthcare services of hospital.
- Capability of nursing and operation room.
- Covering financial and supporting affairs in hospital.
- Covering financial and accounting affairs in hospital.
- Decreasing costs/ increasing incomes.
- Decreasing average hospital stay index and increasing co efficiency of bed occupation.
- Accurate assessment of bed per patient cost/Easy estimation of hospital budget.
- Creating the best and the most opportune hospital management tools.
- Expediting the access to Para clinical information of patients (laboratory results, radiology, CT scan, Ultra sound).
- Optimization and facilitation in recognizing shortages purchase of equipments, drugs etc
- Upgrading the quality of healthcare services and increasing the satisfaction of service receivers through saving of time. Improvement of healthcare economy, increasing speed and precision in offering services.
- Creating facilities for researchers and students of medical science.
- Exchange of electronic files of patients inside and outside of a country for discussion about diagnosis and treatment of patients and making use of the experiences of other countries regarding the treatment of similar case patients.
- Creating internet and intranet connection for exchanging information among hospitals in different levels; city, country, international and holding distant scientific conferences.
- Creating a scientific management in hospitals (20-21).
- In an acute care hospital setting, the deployment of information technology is a substantial investment that a rational manager would undertake to maximize an institution’s utility, which will vary by its governance structure.

At the moment, Hospital Information System is used for laboratory result reports, medical orders, medicinal observations and similar things in many countries. Finally in a comparative

exploration, utility, role, knowledge level and use of information technology tools in hospital management are regarded thoroughly in present research.

The term 'information explosion' is a familiar adage of the 21st century. IT being at the service of health science have strengthened the steps of man and paved the way of knowledge. The pace of health science advancement is so high that the distance between developed and developing countries is striking. Hospitals are part of the most complicated and specialized units in the health care systems. Hospital services require lots of information. Inefficiency of manual methods and the necessity of applying IT are thus inevitable. These factors include:-

- The growth in medical research,
- Creation of new methods in medical education,
- The technological development in medical equipments,
- The increase in the specialization level of the staff,
- The increase in patients' expectations from hospitals,
- Change in the hospital management science,
- The necessity for communication among medical centers,
- The development of insurance industry
- Change in the repayment methods

There have been striking advancements in computer network development in the world. Computers and advanced technology can eliminate many restrictions of handwritten files and documents and solve many problems in order to improve communication, information and capacity of patient care.

Now, by computerizing patient files, information concentration there is no shortage of physical space. It facilitates study and accessibility to the contents of computer files. It decreases the heavy responsibility of a physician. It also helps him in decision-making process (33).

According to existing researches, the tendency to apply IT in different countries is on the rise. The reason for this is the many advantages of IT including the speed and ease in data transfer, the storing of large amount of information, economizing on time, decrease in expenditure, and precision in work. In Iran and India, too, IT has entered many hospitals.

Information Technology in Iran

The 1950s was the time when computer first used in the hospitals of Iran and it had only financial and accounting application. An apparent example of that was Shahid Rejaee Hospital's in Tehran of providing salary slip and preparing accounting bills and documents. In the 60s there was no remarkable development in application of the computer in clinical centers. In the early 70s computer systems were used in reception, laboratory and outpatient. In the late 70s in some centers including Shafa Hospital of Kerman city, Hospital Information System was used in which all clinical, financial and administrative units were connected to each other through web and network. At the moment, Hospital Information System is completely used for laboratory result reports, medical orders, medicinal observations and similar things in many countries.

IT in India

The Government of India is convinced that building an Information Technology Infrastructure for Health will efficiently address all information needs of different stakeholders. As part of this Endeavor, the Department of Technology (DIT), Ministry of Communications and Information Technology (MCIT), has undertaken the initiative to prepare the ground for the Information Technology Infrastructure for Healthcare (ITIH) in India.

In India, the software boom started somewhere in the late1990s. Most of the Indian software companies at that moment offered only limited software services such as the banking and the engineering software. The business of software boom started with the emergence of Y2Kproblem.

Impact of IT in India

In the last five years the Indian IT Industry has recorded a C.A.G.R (Compounded Annual Growth Rate) of more than 40.5%, which is almost double the growth rate of the IT industry in many of the developed countries.

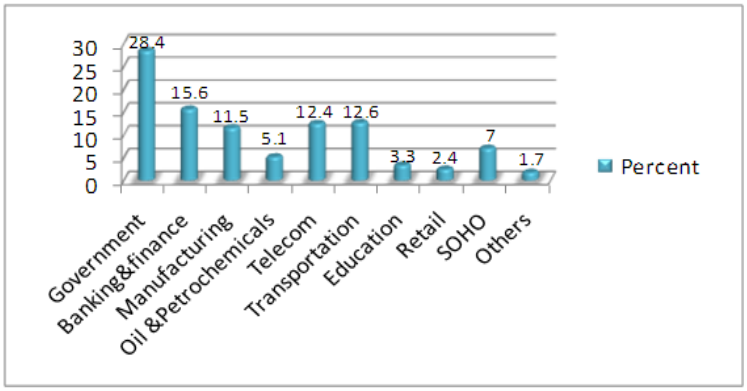

Fig.1: The impact of IT in India

The overall success of the IT industry in India has to some extent managed to spill over to other industries in the country. The Indian economy has grown at an average rate of 6.0% a year in the last five years. In India, the success of software industry can be attributed in no small measure to the excellent teamwork between Government and Industry.

The statistical description

In this paper, the collected data of the research has been described and the relevant ablest, diagrams and graphical presentations have been provided.

The primary data collected from India and Iran pertaining to the research topic. For the collection of information 16 Hospitals are chosen selecting 8 Hospitals from each county on random basis. From these16 Hospitals 300 respondents were selected to administer the questionnaires. Out of this 300 respondents. 50% of them from India and 50% from Iran.

Gender

The gender of the participants was ascertained. In the table 4.4, out of the 300 participants in India and Iran, 183 (61%) are female and 117(39%) are male.

Table1: Frequency distribution of gender in India & Iran

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Female	183	61.0	61.0	61.0
Male	117	39.0	39.0	100.0
Total	300	100.0	100.0	

Position

The official position of the participants in the Hospitals was ascertained. According to the table out of 300 participants 16 of them were head of the Hospitals, 15 of them were hospitals

managers, 15 of them were nurse managers, 15 of them were official managers, 18 of them were financial managers, 13 of them were internal managers, 55 of them were supervisors, and 153 of them were head of wards.

Table 2: Frequency distribution of positions in India & Iran

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Head of the Hospitals	16	5.3	5.3	5.3
Manager of the Hospitals	15	5.0	5.0	10.3
Nurse managers	15	5.0	5.0	15.3
Office managers	15	5.0	5.0	20.3
Financial managers	18	6.0	6.0	26.3
Internal managers	13	4.3	4.3	30.7
Supervisors	55	18.3	18.3	49.0
Heads of the ward	153	51.0	51.0	100.0
Total	300	100.0	100.0	

Both in Iran and India it is found that the heads of the wards are familiar with IT, supervisors follow this. It is necessary to have these positions filled with people who are familiar with IT as these are very important in the management of hospitals. These positions are essential to maintain the information about the patients in the respective wards.

Hypothesis

1) The extent of familiarity and application of IT in the Hospital Management of India and Iran are not the same.

2) The impact of IT on the responsibilities of Hospital Management of India and Iran is not the same.

3) The impact of IT on decreasing the costs of Hospitals in India and Iran is different.

4) The extent of attraction and recruitment of IT experts and IT trained Workforce and their impact on the Hospitals of India and Iran are different.

5) The extent of facilities for applying IT in the Hospital of India and Iran is different**.**

6) The extent of IT impact on the quality of services in the Hospitals of India and Iran is different**.**

Table 3: Group statistics Hypothesis number oneWith regard to the extent of familiarity and application of IT in the Hospitals management of India and Iran are not the same

	Code	N	Mean	Std. Deviation	Std. Error Mean
1	India	150	25.4533	12.42458	1.01446
2	Iran	150	20.5400	5.98615	.48877

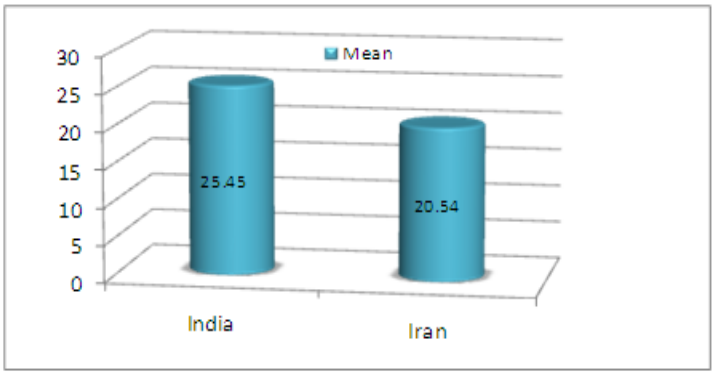

Fig. 2: Mean Representations India & Iran

With regard to the figure there is a significant difference between Iranian and Indian Hospitals (t<0.0001) meaning that Indian Hospitals have a higher mean to the extent of familiarity and application of IT in the Hospitals management than the Iranian Hospitals.

With regard to the impact of IT on the responsibilities of Hospitals management of India and Iran there is a degree of difference.

Table 4: Group statistics Hypothesis number two

	Code	N	Mean	Std. Deviation	Std. Error Mean
1	India	150	15.0400	8.48440	.69275
2	Iran	150	11 .2333	4.68672	.38267

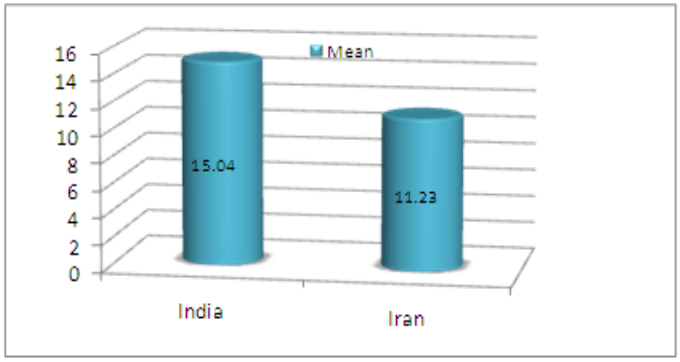

Fig. 3: Mean Representation of India & Iran

With regard to the figure there is a significant difference between Iranian and Indian Hospitals (t<o.0001) meaning that Indian Hospitals have a higher mean in hypothesis. This translates into higher impact of IT on responsibilities in India than Iran.

With regard to the impact of IT on decreasing the cost of Hospitals in India and Iran are different.

Table 5: Group statistics Hypothesis number three

	Code	N	Mean	Std. Deviation	Std. Error Mean
1	India	150	14.2333	7.86839	.64245
2	Iran	150	10.6667	3.82620	.31241

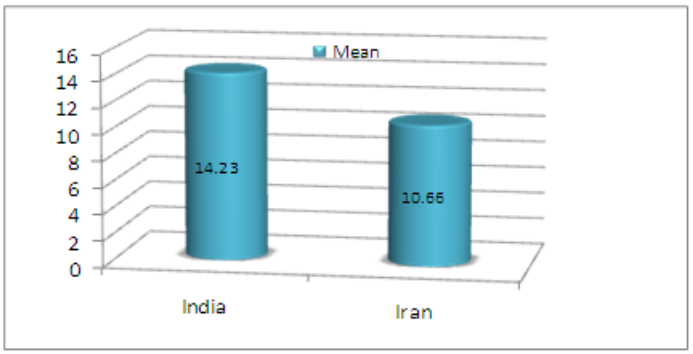

Fig. 4: Mean Representations India & Iran

With regard to the figure there is a significant difference between Iranian and Indian Hospitals (t<0.0001). Meaning that Indian Hospitals have a higher mean in the impact of IT on decreasing the costs of Hospitals.

About extent of attraction and recruitment of IT experts and IT trained work force and their impact on the Hospitals of India and Iran are different.

Table 6: Group statistics Hypothesis number four

	Code	N	Mean	Std. Deviation	Std. Error Mean
1	India	150	14.5467	7.49012	.61157
2	Iran	150	10.9867	4.29451	.35064

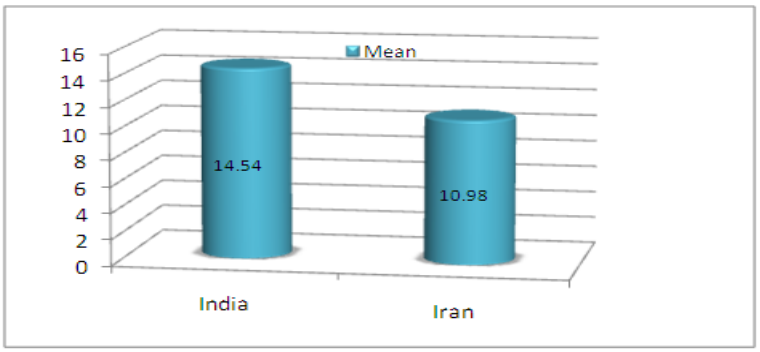

Fig. 5: Mean Representations of India and Iran

With regard to the figure there is a significant difference between Iranian and Indian Hospitals (t<o.0001) meaning that Indian Hospitals have a higher mean in hypothesis the extent of attraction and recruitment of IT experts and IT trained work force.

This hypothesis states that the extent of facilities for applying IT in the hospitals of India and Iran is different.

Table 7: Group statistics Hypothesis number five

	Code	N	Mean	Std. Deviation	Std. Error Mean
1	India	150	14.1000	7.45974	.60908
2	Iran	150	10.4733	3.49246	.28516

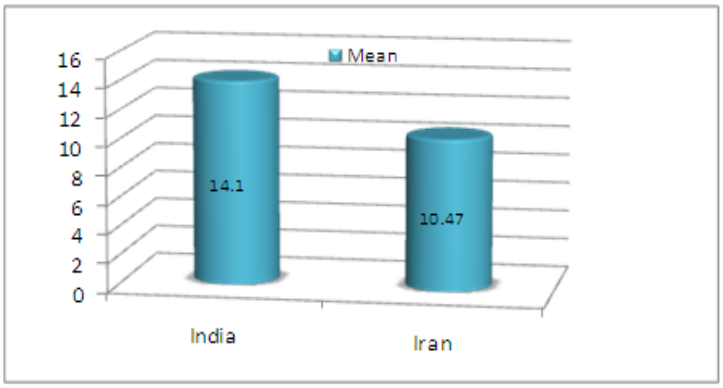

Fig. 6: Mean Representations of India and Iran

With regard to the figure there is a significant difference between Iranian and Indian Hospitals (t<o.0001) meaning that Indian Hospitals have a higher mean in hypothesis the extent of facilities for applying IT in the Hospitals of India than the Iranian Hospitals.

This hypothesis states that the extent of IT impact on the quality of services in the Hospitals of India and Iran is different. To this end as many as eight questions have been developed.

Table 8: Group statistics Hypothesis number six

	Code	N	Mean	Std. Deviation	Std. Error Mean
1	India	150	19.1133	9.81954	.80176
2	Iran	150	14.1800	4.58487	.37435

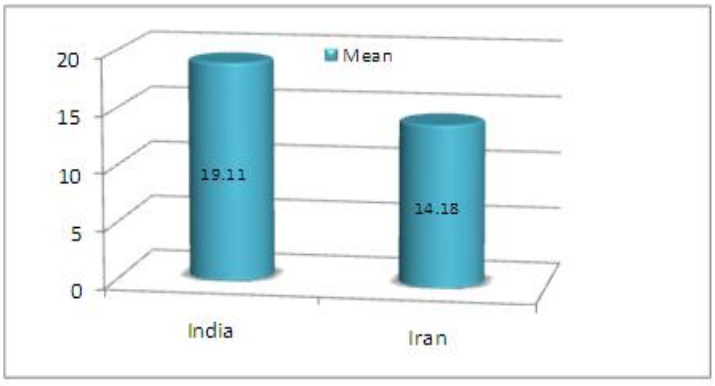

Fig. 7: Mean Representations of India and Iran

With regard to the figure there is a significant difference between Iranian and Indian Hospitals (t<o.0001) meaning that Indian Hospitals have a higher mean in hypothesis the extent of IT impact on the quality of services in the Hospitals.

CONCLUSION

Health care is an information intensive industry and remains highly fragmented and inefficient in comparison to other industries. However, major changes are underway. The rapidly rising costs of health care, along with an increasing concern for the quality of care and the safety of patients, are driving health care organizations to use information technology (IT) to automate clinical care operations and their associated administrative functions.

Among its other functions, IT is now being used for electronic medical records, order management and results reporting, patient care management, and internet access for patient and provider communications. It also provides automated billing and financial management. Additional steps could include financial incentives (e.g., payment policy or loans) and expanded efforts to standardize records formats, nomenclature, and communication protocols to enhance interoperability. The use of IT also helps consumers choose providers by allowing insurers and others (including Medicare services) to post information on providers including, in some instances, comparative quality information.

Infusion of information technology in hospitals varies with the type of technology. Infusion is greatest in administrative and financial applications such as patient registration, billing and payroll. Clinical applications, such as computerized provider order entry for drugs or other items (e.g., lab work) and electronic health records, are less visited areas. Infrastructure technologies build the base that other technologies work from. At the end of the day, achieving the benefits of these technologies for improvements in quality of care appears to hinge on the same factors that pose a risk to successful implementation.

Both the private and public sectors have engaged in numerous efforts to promote use of IT within health care institutions and across care delivery settings. Ultimately, the IT system that will be used and be of benefit to the hospital and its staff will be the one that caters to their specific requirements. They can be used simply as a passive tool to store patient information or can include multiple decision support functions, such as individualized patient remainders and prescribing alerts. When purchasing IT, providers must consider multiple functions and literally hundreds of applications offered by numerous vendors.

The above study is of comparison between the present state of IT and its implementation in two countries namely India and Iran. The area of study is limited to one state in India and therein again a limited part of the state. The area of study in Iran is also limited but compares favorably with the extent of area studied in India. While at the higher end of the spectrum India is ahead in the implementation of IT in the hospitals, the situation at the average level at times is in favor of Iran. This only means that given a certain push Iran could also come up in the field of IT qui.

REFERENCES

1. Journal of Hospital management, (2005), vol. 21, Sharefeyan: Information management in healthcare.
2. Ali reza Aliahmadi (2003), Information Technology and Applicatio(book).
3. Mahdi Tahrani(2006), Information Technology Management(book).
4. Journal of international affairs, (2002), vol., 36, McFarland & Co, Erthics and Information technology.
5. Tofeghi Shahram, (2002), presenting the Proper Model for Designing Management I S. (book).
6. Ali reza Aliahmadi, (2003), Information Technology and Application. (Book).
7. Luciano Floridi, (2005). 'Is Information Meaningful Data?' Philosophy and Phenomenological Research, (book).
8. Ambrose, Stanley H. (2001--02). "Paleolithic Technology and Human Evolution (Article).
9. Journal of Universal Computer Science, vol. 3, no. 8 (2007), Using Information Technology to Support Knowledge.
10. The Computer Journal vol. 50 Computer programming, List of basic computer programming topics.
11. First Monday peer-reviewed journal on the Internet (2006), vol. 35 Internet history and related information, including information from many creators of the Interne.
12. David M. Kroenke, (2005) Database Processing: Fundamentals, Design and Implementation (book).
13. Callaghan, J. (2002), "Inside Intranets & Extranets: Knowledge Management and the Struggle for Power"(book).
14. Kathy Schwalbe (2003,) Information Technology Project Management(book).
15. R.C. GOYAL (2000) "Hand book of Hospital personnel management".

16. Journal of Universal Computer Science, vol.3, no. 8(1997), 835-842 Information Technology for Knowledge Management.
17. Lillian Burke, Barbara Weill (2004) Information Technology for the Health Professions, 2nd Edition (book).
18. Journal hospital management (2007) vol, 27, Aghajani, Scientific Bases and Report on Successful Practice of Automation Hospital Information Technology (Article).
19. John P. Glaser Summary of The Strategic Application of Information Technology in Health Care Organizations: (book) Davarpanah, Ahmadand Mansori Raza (2006) Information hospitableness system (Article).
20. Branko G Celler (2003), Using information technology to improve the management of chronic disease(Article).
21. Joseph Tan (2002), Strategic IT application in health care Publisher: ACM Press (book).
22. Mekonnen G/Egziabher(2004) Information Technology: Its Uses in Tourism Industry(book).
23. Crandall, L. A. & Coggan, .I. M. (2007). Impact of New Information Technologies on Training and Continuing Education (Article).
24. Journal of mine vol, 37 (2000). Medics Informatics in the United States, History of IT in mine.
25. Arron Parke (2001) Information technology in agriculture (book).
26. Imaneyan (2007), Information Technology in Hospital of Iran(Article).
27. Tofeghi Shahram, (2002), Presenting the Proper Model for Designing Management I S. (Article).
28. Krzysztof Zielinski, Mariusz Duplaga, David Ingram (2005) Information Technology Solutions for Healthcare (book).
29. Mike Dent (1996) Professions, Information Technology and Management in Hospitals (book).
30. David E Redman (1997) The impact of information technology on hospital management information systems: A comparative study (book).
31. Chicago, IL: HIMSS (2004) Healthcare Information and Management Systems Society.
32. Know India Profile. NIC (2005). Retrieved on 2007-06-17.
33. Country profile: India. British Broadcasting Corporation (9 January 2007). Retrieved on 2007-03-21.
34. Country Profile: India (PDF). Library of Congress - Federal Research Division (December 2004). Retrieved on 2007-06-24. (5 paragraf).

35. Matthew, K.M. (2006). Manorama Yearbook 2003. Malayala Manorama, pg 524. ISBN 81-89004-07-7. (6pppppp).
36. Tribes: Introduction. Ministry of Tribal Affairs, Government of India. Retrieved on April 12, 2007.
37. Census of India 2001, Data on Religion. Census of India. Retrieved on April 12, 2007. (6PPpppp).
38. United Nations Statistics Division. Composition of macro geographical (continental) regions, geographical sub-regions and selected economic and other groupings. Retrieved on 2007-05-16.
39. Dr. Suryanath U. Kamat, Concise history of Karnataka, 2001, MCC, Bangalore (Reprinted 2002).
40. Demographics of Karnataka 2005, Volume 2: 9 December 2005.