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PhD [Information Science]: Proposed Model and Historical background with future Potentials in Indian Context

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Abstract: Information Science [IS] is a Science of Sciences. Information Science [IS] is actually combination of Information Fundamentals, Technological Fundamentals and Social Science Fundamentals. Information Science [IS] and its flagship programme is treated as MSc- Information Science [IS] around the world. Information Science [IS] programmes are in demand regarding its job and research development due to interdisciplinary characteristics. Information Science [IS] with PhD Degree available with several flavors around the world. Though, in India Information Science [IS] programmes are offered in some of the institutes only. The common programme is MSc- Information Science [IS]; where as PhD- Information Science [IS] is very uncommon and rare. This paper is talks about Information Science [IS]; its characteristics, role and need. Paper also mentions potentiality of PhD Information Science in Indian context; which includes general requirement, structure of coursework, and flavor as proposed course moreover several portion of the paper has directly derived (may matched with) from the doctoral thesis of the researcher.
Keywords: PhD- Information Science [IS], Information Science [IS], India, Degree, Academics, Information Science and Technology [IST], Doctor of Philosophy.

Introduction

Information Science [IS] is an interdisciplinary domain and may be treated as field of fields incorporated with Computing Technologies, Information Studies, Management Science, Information Technologies, Cognitive Sciences and Psychology and so on [1, 2, 5]. Information Science [IS] programmes mainly available with two flavors, in first foci it is mainly available with traditional Information and Knowledge Management tools which includes indexing, abstracting, cataloguing, classification, documentation practice. Graduate and skilled under these foci mainly avail job such as Librarian, Information Officer, Information Manager, Documentation Expert, Reference In-Charge, Cataloguer and so on. Where as in second approach, Information Science [IS] concentrated in Information and Communication Technology. However, Information Science [IS] under this scheme keeps a balance between Information-Technology and Society or People interaction. Information Science [IS] in this style deals with Database Technologies, Networking Technologies, Communication Technologies, Multimedia Technologies, Multimedia Technologies, Image Processing and RFID Technologies and so on. However, the second approach based Information Science [IS] also deals with Information Fundamentals to fulfill main aim of Information Science which is information collection, selection, organization, processing, management and dissemination, but it takes the help of Information Technology and Computing[3, 4, 6].

Objectives

The main aim and objectives of this study is includes, but not limited to:-

- To learn basic about Information Science [IS] and its characteristics and features;
- To find out Information Science [IS] education trend at a glance;
- To learn about PhD degree in Information related topic in India;
- To find out main problems of Information Science [IS] PhD programme in India;
- To learn about proposed PhD- Information Science [IS] programmes at a glance;
- To find out main outcome of PhD- Information Science [IS] course initiation in India.

As an educational programme, Information Science nomenclature is comparatively less popular in India than that of western countries and abroad. Even Information Science (IS) in India is too biased and deals with misconceptions. The academic world of computing and Information Studies (including LIS) still claims that, Information Science (IS) is a modern and advance

nomenclature of their respective field[7, 8, 16]. However the Information Scientist around the world examines Information Science as a different field with unique identification and interdisciplinary knowledge cluster. The Computing professionals consider Information Science (IS) as their field; as today's IS programmes are truly technological but it is important to note that the IS programmes also include some K.O papers/ gradients. So, these are the main differences that exist in between Information Science and Computer Science [9, 12].

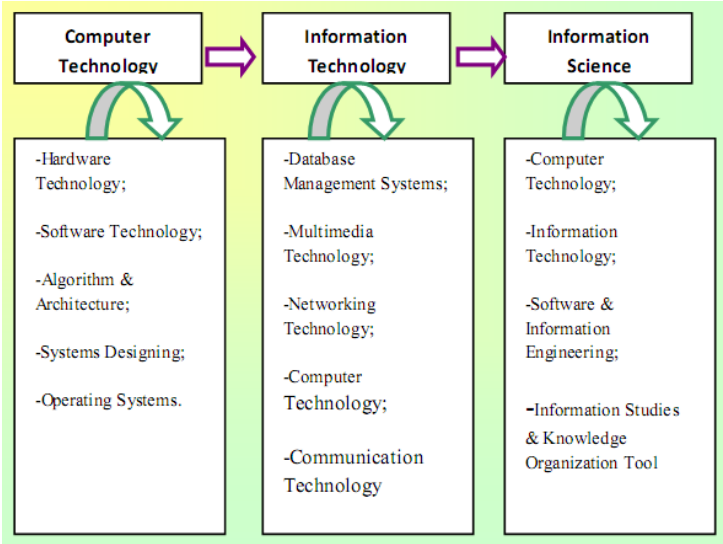

Fig: 1:- The Broad Spectrum of Information Science including its Bigger Gradients [10]

Table-1: Related and Full-fledged nomenclature and it's availability in Indian university/ institutions

University/ Institutes	Availability of Bachelor Degree	Availability of Masters Degree	Availability of PhD Degree
BIT Mesra, Jharkhand	No	Yes, MSc-IS	Yes, PhD-IS
IEM,WB, WBUT	No	Yes, MSc-IS	In Process
Techno India,WB, WBUT	No	Yes, MSc-IS	In Process
KITM, Buniadpur, WBUT	No	Yes, MSc-IS	No Planning
DITM, Jalpaiguri, WB,WBUT	No	Yes, MSc-IS	No Planning
DLIS, Madras University	No	Yes, MSc-IS run from 2003-07	Yes In LIS
ISiM, Mysore University	No PGD is available	Yes MTech-ISM (higher than MSc)	Yes In Information Sciences
MET, Mumbai University	No	Related Master in Information Management is available	In University Faculty; not with Information Science nomenclature
SRM University	Yes, Related BSc-ISM	No	In University Faculty; not with Information Science nomenclature
MCIS, Manipal University	No	Yes, MSc-IS	In University Faculty.
DDE, Kurukhstra University, Hariyana	Yes, Related- Bachelor in Information & Management	No	No

In many LIS Schools in India, Information Science (IS) name is common but it is focused with Library approach. Other institutes like- MCIS-Manipal University, completely concentrate their MSc-IS as a

new nomenclature of Computer Science with Information Fundamentals [10, 11, 15].

In India, Information Science (IS) is offered only in 6-7 institutes/universities with Masters Degree level [4]. BIT-Mesra is the first Indian University offering MSc-IS since 1993 with a unique interdisciplinary computing focused but Information included curriculum. Apart from this, WBUT also offers MSc-IS courses from 2007 at IEM, Saltlake, Kolkata, WB and recently some other professional colleges are also started MSc-IS programme under the affiliation from WBUT; these institutes are MCIS-Manipal, Techno India, WB, KITM, Buniadpur, WB , DITM, Jalpaiguri and so on [17, 18].

MCIS also offers MSc-IS with complete computing concentration; while MSc-IS programme initiated by Madras University was focused on traditional K.O tools and Information Management gradients and some IT orientation [9, 19, 20].

However for this reason (may be) from 2009 they renamed their MSc-IS as MSc-LIS. The IS as Engineering programme is offered by VTU, Karnataka by its affiliated colleges as BE (Bachelor of Engineering) -Information Science & Engineering with full computing and information systems concentration. Apart from this, ISIM, University of Mysore offers M. Tech Information Systems and Management which is related to Information Science as this programme deals with IT and Computing with Information Concentration [14, 22].

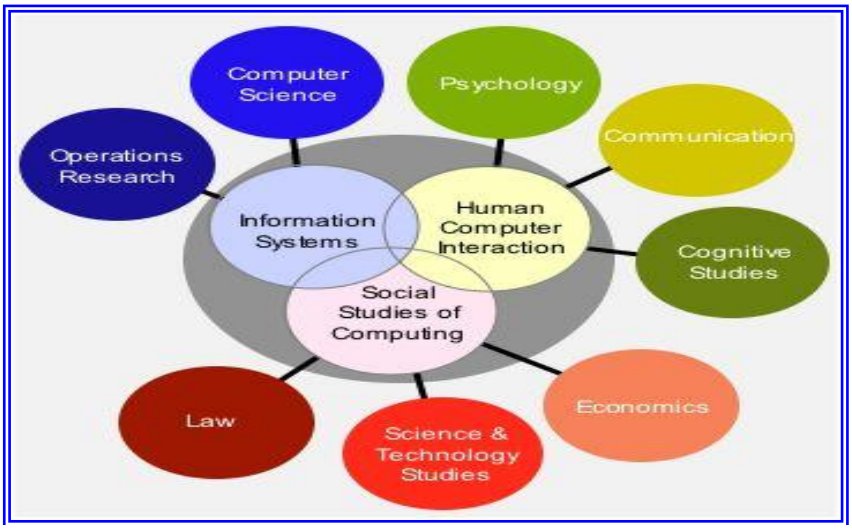

Fig-2: Shows the Interdisciplinary broader connection of Information Science [23]

Research in Information Field

Nomenclature as Information Science [IS] not at all offered in most of the universities. Though Information Science [IS] related field also conducted in various departments such as Mass Communication, Library and Information Science, Computing and so on. The topic and research conducted under the Department of Library and Information Science may be treated as one foci of Information Science as it deals with Information. According to the top expert and existing study, LIS mainly conducted Traditional foci/ topic of Information Science [IS]. A research conducted by R Madasamy and R Alwarammal found that total 171 research thesis awarded/generated during 2003-2008 period. It also noted that the largest stakeholder of PhD thesis production/ awarded that time was Andhrapradesh with 15.9 % where Karnataka State stands second position and Madhyapradesh in Third with percentage of 14.1 and 11.7 respectively [12, 15, 20]. While the minimum awarded states are Jammu and Kashmir, Mizoram with only 2 PhDs during 6 years of research period [2003-2008]. They found that, Dr. Ramesh Babu conducted highest number of theses with 7 in numbers and with 40%.

The self guided research was 4.0% and 7 as numbers. Andhra University, Vishakhapatnam stands 1st with highest PhD production with 8.0% and 14 in numbers; where as Karnatak University, Dharwad got second position with 7.6 % and 7 in numbers. Most of the universities produced single PhD awarded and the percentage was 33.9 and 58 in numbers.

As far as subject wise distribution is concerned Information Source and Services scored 16.9 % with 1st position and 14.6 for Use Studies domain. Information and Communication Technology scored 4.7 % and 08 Theses in numbers out of 171 theses output during 2003-2008.

PhD Information Science [IS]: Model approach and curriculum

In this paper PhD- Information Science [IS] presented as proposed course for future I-Schools

believes in Information and Computing interaction [17, 22]. Here Information Science [IS] programmes may be offered after PG Degree and with the degrees of Information related domain such as MSc/MCA-Information Science [IS]/ Information Technology/ Information Systems/ Information and Communication Technology/ Software Engineering and related domain. However, paper and credit transfer may be granted to the students and professionals with Higher Degrees such as MTech/MPhil in respective field. Students from traditional information field like Documentation, Information Studies, LIS may also gained or allow to pursue proposed proposed PhD- Information Science [IS] Programmes [18, 21].

Here a model PhD- Information Science [IS] curriculum is presented with 2 years course work and 2 years Research Work schedule. The common paper for initial year i.e. First and Second Semester are as follows:-

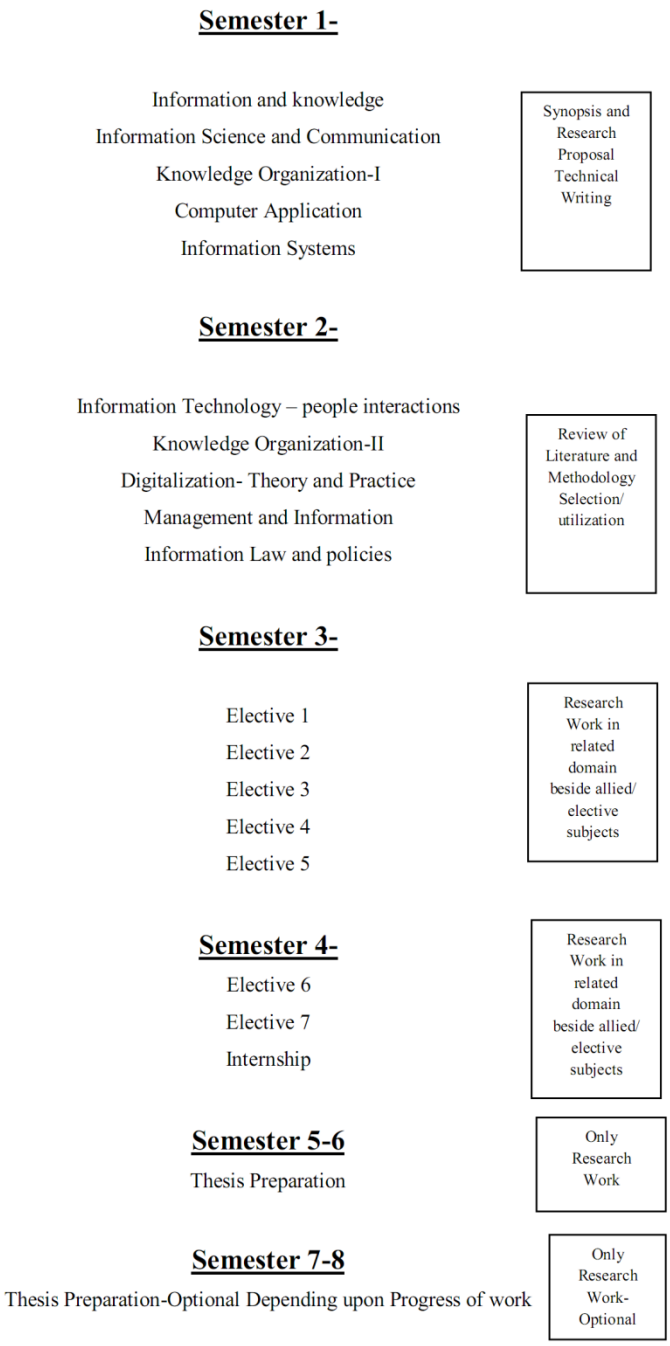

Fig-3: The proposed structure of PhD-Information Science- first two year's work

While next year i.e. Third and Fourth Semester specialization may be chosen depending upon researchers' interest and field of proposed research work. The specialization and area of research may be

from Database Technology, Multimedia Technology, Cloud Computing, and Usability Engineering and so on. The following paper may be helpful during specialization or research interest selection.

Though the specialization of PhD-Information Science is as follows; it is essential to take the elective according to research interest and thesis preparation:-

PhD-Information Science [Cloud Computing]

Elective 1- Dynamic Computing
Elective 2- Cloud Computing
Elective-3 CISCO and Cloud Computing
Elective- 4 Cloud Service Provider and Management
Elective- 5 Cloud Security
Elective- 6 VPN and Cloud Computing
Elective- 7 Cloud in Information World

PhD-Information Science [HCI/ Usability Engineering]

Elective 1- Basics of Usability Engineering
Elective 2-Human Computer Interaction through Usability Engineering
Elective-3-UE for Information Systems
Elective-4-UE Practice-Dynamic Web Development
Elective-5-AJAX, PHP, Mobile Interface Designing
Elective-6-Intelligent Interface
Elective-7-Trends in HCI and Information World

PhD-Information Science [Database Management Systems]

Elective 1-Data and Database
Elective 2-Oracle 11i
Elective-3-SQL and Microsoft
Elective-4-Multimedia DBMS
Elective-5-Distributed DBMS and Data Mining
Elective-6-ERP and Data warehousing
Elective-7-Data Analysis and Information Intelligence

PhD-Information Science [Multimedia Systems]

Elective 1-Multimedia-Basics
Elective 2-Multimedia and 2D
Elective-3-3D World
Elective-4-Multimedia Software Practice
Elective-5-Multimedia Information Systems-Design and Development
Elective-6-Multimedia and HCI
Elective-7-Advance Multimedia

PhD-Information Science [Business Informatics]

Elective 1-Management Information Systems
Elective 2-Information Systems Management
Elective-3- Business Informatics-Basics
Elective-4-Retail Informatics
Elective-5-E Commerce-Theory and Practice
Elective-6-E Commerce- Advanced with SAP
Elective-7-Business Intelligence and ERP

PhD-Information Science [Virtualization technology and Digitalization]

Elective 1-Digitalization
Elective 2-Virtualization
Elective-3-Cloud Computing
Elective-4-Cloud Computing and Security
Elective-5-Digitalization Software
Elective-6-CISCO and Virtualization
Elective-7- Trends of Virtualization and Digitalization

Findings

- Information Science may be a wonderful alternative than IT and it boost with both technological and knowledge management gradients;
- Specialization needs better collaboration among the department;
- PhD-Information Science specialization may solve industrial problem for professionals as from the beginning they are aware about concerned specialization.
- Information Science may start as MTech-PhD integrated degree by inclusion of equal distribution of knowledge gradients;
- IS with Engineering needs qualified faculty members and experts.
- Total 171 research thesis awarded/generated during 2003-2008 period in Information related domain but offered from LIS wings;
- Andhra University, Vishakhapatnam stands 1st with highest PhD production with 8.0% and 14 in numbers.

Suggestions

- Still Information Science is mistakenly considered as Computer Science thus we need to make aware community, particularly knowledge community about the benefit of Information Science [IS];
- Adequate gradients from each subject need to be include in Information Science;
- Proper advancement is possible by merging some information related domain.
- Various unusual and non traditional jobs may be possible from PhD-Information Science programme like-Traditional Information Management and Computing related job, thus in many cases PhD-IS with adequate specialties may serve as adjunct professorship and work or job.

Conclusion

Information is considered as prime mover of the society. Information Science is virtually responsible for

the overall development of Information Infrastructure of an organization and enterprises apart from traditional Information Foundation for the all round development of Information Science[02, 07, 14]. Ultimately, this digitalization can be helpful for removing Information Divide and Digital Dive properly and may turn a country like India into true Information and Knowledge Economy based nation. Thus specialization in PhD-Information Science may be a wonderful solution to make better Information-Technology-People interaction, many ways [09, 13, 20].

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