Chapter 2 Literature Review

2.1 Introduction

This chapter is focusing on the literature review which provides basic idea and background of the research problems, supported by previous research literatures. The chapter focuses on the detailed Literature Review elaborated in separate four sections. The first section is dedicated for the literature review of the Academic Research. Second section reviews the literatures related to the Knowledge Management and its usage in various Universities and R&D organisations. Third section gives literature background of the Empirical research, to answer the questions - what is empirical research and how this research can be an empirical study? Finally the chapter ends with the last section, Essence of the Literature Review, which explains about the outcome of literature reviewed and the significance of the research problem.

The researcher has searched and collected the required literature from various types of online research data bases and publications like Scopus, IEEE-Explorer, ACM, Emerald, Elsevier, Google Scholar, Research Gate, Mendeley, etc. The researcher want to provide herewith more clear idea of literatures referred for this research with the help of statistics of the literatures. This includes the types of literatures and number of literatures of respective type. The Table 2.1 and the Figure 2.1 - Pie Chart shows the referred number of literatures and types of literatures during this research. This comprises total 54 Research Papers from reputed International Journals, 22 numbers of research papers from International and National Conference Proceedings, 13 articles from various magazines and newspapers, 23 number of reference books, 11 Doctoral Theses and 12 number of various National and International level Reports.
**Table 2.1 Number of Literatures Referred for this research**

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<thead>
<tr>
<th>Type of Literatures</th>
<th>Total Count</th>
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<tbody>
<tr>
<td>International Journal Research Papers</td>
<td>54</td>
</tr>
<tr>
<td>International Conference Proceeding’s Papers (IEEE, ACM, etc.)</td>
<td>23</td>
</tr>
<tr>
<td>Articles (from News Papers and Magazines)</td>
<td>13</td>
</tr>
<tr>
<td>Books</td>
<td>23</td>
</tr>
<tr>
<td>Ph.D. Thesis or Dissertation</td>
<td>11</td>
</tr>
<tr>
<td>National / International Reports</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>136</strong></td>
</tr>
</tbody>
</table>

**Figure 2.1 Number of Literatures Referred for this research**

- International Journal Research Papers: 54
- International Conference Proceedings (IEEE, ACM, etc.): 23
- Articles (News Papers and Magazines): 13
- Books: 23
- Ph.D. Thesis or Dissertation: 11
- Reports: 12

![Pie chart showing the distribution of literature types](chart.png)
2.2. Literature Review of Academic Research

2.2.1. Academic Research.

Academic Research is typically conducted in educational institutions. Free from hindrance that may characterize research done in industry, government agencies, or think tanks, such as pressure to turn a profit, instruction to work on specific subjects or promote a certain ideology, and structure to meet deadlines, academic research is a unique privilege and an extraordinary pursuit. A key to creating wealth of a nation is applied research, which, in turn, traces back to academic research. Developed nations have universities as powerhouse to country. Now developing countries are also trying to imitate themselves in the same way to develop universities for high quality research in the benefit of country. Indian government is also trying to put forward the same strategies through different policies.

Research is a sincere, comprehensive, intellectual searching for facts and their significance or inference with reference to the problem under study. Research is a symmetric activity to achieve the truth. Research is systematic work to create new knowledge or devise new applications of knowledge. Research in common parlance refers to search for knowledge. The concept of research is elaborated here, by means of definitions of research from different author’s point of views. “Research is a systematized effort to gain new knowledge”, by Redman and Mory. Robert Ross has stated “Research is essentially an investigation, a recording and analysis of evidence for the purpose of gaining knowledge”. The broad definition of research is given by Martyn Shuttleworth - "In the broadest sense of the word, the definition of research includes any gathering of data, information and facts for the advancement of knowledge."

In these definitions we can observe that research is mostly related to most important word that is knowledge. Research is systematized effort to gain new Knowledge, to create knowledge, advancement of knowledge, to verify and to expand existing knowledge and so on. Consequently, research most significant harvest is the knowledge; means research is mostly focusing on creation of knowledge in the particular
research subject or stream or area.

According to the researcher’s literature review, limited literature exists in the area of academic research. The researcher has gone through various online research databases like Shodh Ganga, Scopus, Inderscience, IEEE, Scirus, Google Scholar, but very few research articles and papers were found related to the academic research. From these research papers, researcher has included few research subject relevant research papers below.

Yunhong, X. U., Lin, J., Hao, J., Chang, Z., Ma, J., & Zhao, D., 2010, the authors have focused their research specifically on academic research. The authors have studied about the network based approach for discovering academic researchers’ shared interests. They have mentioned that the researcher’s interest or expertise is a kind of knowledge in organization, like university, research institute and research community. Effectively management of this kind of knowledge can facilitate communication of members in organization and improve their performance. They have explained that the Researchers’ cognitive limit and large amount of relevant information becomes a big challenge to discover researchers with similar interests. As per authors views, the social network based approach do not satisfy researchers’ needs, due to their failure to take into consideration the semantic information related to research interests. To solve this problem, they have proposed an integrated model based on ontology and social network analysis to the researchers with similar interests.

The authors have mentioned that the many communities (virtual or face-to-face) emerge in academic contexts to support researchers sharing knowledge and communicating with each other. Some researchers have realized that communities work as a powerful platform for supporting knowledge management. They have given one live example of Scholarmate, which has been created and developed as a platform at University of Hong Kong to allow researchers to collect, share and discuss their works. Finally, they have proposed the network based approach could be extended and adapted to learn the profile of researchers, to support researchers doing research in an intelligent way. But the authors have not explained details of the network based approach and the
Scholarmate - system implemented in university of Hong Kong. And at what extent it was used there? What were the pros and cons of the Scholarmate?

Panda A. and Gupta R. K., 2014, p.156-169, they have published their research article focused on academic research in management domain, for making it more relevant; they have given few suggestion through this research study. The authors of this paper have revisited the rigour-relevance debate on industry oriented research in light of recent developments and with special reference to the management research scenario in India.

The authors have presented an overview of the rigour and relevance debate to argue that the gulf between rigour and relevance needs to be bridged to make academic research more relevant to business organizations and practitioners. They urge academic scholars to reach out to the practitioners and collaborate with the corporate world to take up problem solving research. The authors have presented a number of suggestions for both academic scholars and business schools to ponder. Academic scholars need to take up the responsibility of making academic research more relevant Business Schools need to craft an eco-system that fosters a vibrant research culture in business schools in India. The authors have focused approach of academic research with the industrial collaboration for the economic development of India; and given suggestions for the same. But there is scope of study to find the various problems and challenges faced by faculty researchers, needs and requirements of research scholars.

2.2.2. Current Status of Academic Research in India

India is having huge history of research in various subjects and streams. The following paragraphs taken from the research paper Modern academic research in India goes back to 1784 when Sir William Jones established the Asiatic Society of Bengal in Calcutta for promoting oriental studies. But the English rulers primarily set up teaching institutions. And they were mainly interested in applied areas and field sciences like archaeology, botany, geology, trigonometric survey, and zoology. The greatest academic
recognition for such endeavors came in 1902 when Sir Ronald Ross won the Nobel Prize for his work done in India on the lifecycle of malarial parasites. (Chatterjea, A., & Moulik, S. P., 2006)

Other distinguished European and Indian scientists working in India were elected Fellows of the Royal Society FRS. This list includes Prof. Homi J. Bhabha (Physicist, Indian Institute of Science (IISc) Bangalore; later founded Tata Institute of Fundamental Research in Bombay with J. R. D. Tata’s help; became chairman of Indian Atomic Energy Commission), Sir Shanti Swarup Bhatnagar (Chemist, University of Punjab; later became Director of Council of Scientific and Industrial Research), Sir J. C. Bose (Physicist/ Botanist; later founded Bose Institute in Calcutta), Sir Alfred G. Bourne (Zoologist, University of Madras, IISc Bangalore), Sir K. S. Krishnan (Physicist, IACS, University of Dacca; later became Director of National Physical Laboratory), Prof. Prasantha C. Mahalanobis (Statistician, Presidency College Calcutta; later founded Indian Statistical Institute), Prof. Panchanan Maheshwari (Botanist, Universities of Dacca and Delhi; D.Sc. from University of Allahabad.), Mr. Srinivas Ramanujan (Mathematician, University of Cambridge), Prof. Birbal Sahni (Botanist, University of Lucknow), and Sir John L. Simonsen (Chemistry, Presidency College Madras; he and Prof. P. S. Mac Mahon were instrumental in the establishment of the Indian Science Congress Association in 1914). Many talented academicians including classical scholars, social scientists, geographers, historians, linguists, musicologists, philosophers, and experts in other branches of knowledge, attained name and fame for their scholarly work. (Chatterjea, A., & Moulik, S. P., 2006)

The Indian Research has been contributed lot in global research history. But now the status of India, as per modern research scenarios the standard – globalisation, quality of research, economic growth, global competitiveness, high impact international research publications and high tech infrastructure are the indicating factors towards the quality of nation in the world. The different institutions are doing collection of data and research for World Rankings of the countries. In these indicators for year 2010 to 2015, what is rank of India? Here it is discussed in short, for getting idea of the current status of Indian
research, according to research articles, ranking of research institutes and universities.

The well-known research organization in the world, Thomson Reuters, have published research report, and relevant article in daily newspaper ‘Times of India’, on date March 11, 2011, which clears the picture of research contribution of various countries through the research report. The article, titled with ‘The Study of India’s Research output and Collaboration’, highlights the India's global contribution in research. As per this article, our contribution in worlds research output was just 3.5% ( ) which is very less as compare to research output given by another country like Japan, Taiwan, UK, US and so on. This report was also submitted to the department of science and technology has discipline wise data on India’s abysmally low research output. In this report they have mentioned about the field wise Research percentage of India. In report it was also declared that only 2.4% of global research on computer sciences was from India in 2010 while the world share moved to three emerging research economies - China 15%, Korea 6.3% and Taiwan 5.7%. India's global share of research in economics stood at 0.7% in 2010 while in social sciences it was worse - 0.6%. Indian higher education is faced with powerful dilemmas and difficult choices - public/private, access/equity, uncertain regulation, different teaching standards and contested research quality as per the report. But in this report it was also mentioned that, India has a long and distinguished history as a country of knowledge, learning and innovation. In the recent past, however, it has failed to realize its undoubted potential as a home for world class research.

The GRUP (Global Research University Profiles) is a comprehensive database and benchmarking tool covering 1200 research universities in the world. The GRUP serves as an estimating tool and allows universities to analyze and estimate their ranks in Academic Ranking of World Universities based on their actual or expected data on one or a series of indicators. It helps universities to understand their current ranking performance and forecast their future positions in the world according to their planned goals. In 2013, some 520 universities reported their data on students, academic staff and resources. GRUP 2013 also includes those data for 1,200 universities that were used to calculate the Academic Ranking of World Universities for year 2013, including alumni
and staff winning Nobel Prizes and Fields Medals, Highly Cited Researchers, papers in Nature and Science and SCIE/SSCI papers. According to GRUP & Academic Ranking of World Universities – year 2013 ranking, there is **no any Indian institute or university in first 500 top universities.** The top most Indian institutes, **Indian Institute of Technology, Bombay & Burkee is ranked 500+ ranking.** As per University Research Excellence Frame Work 2014, there is **no any Indian Institute or University is ranked among 154 institutes.** (Kounteya Sinha (1st Oct. 2012), Thomson Reuters (2010), UHE – Overview (2014) **The Times World University Rankings** year 2013-2014 rankings, Indian Institute of Technology, Bombay & Rurkee are **ranked in range of 351-400.** In recent rankings of year 2014-15 **Indian Institute of Science and Punjab University ranks in 276-300.** As per the **World Economic Forum's (WEF);** The Global Competitiveness Report 2013–2014; the India Ranks in 148 countries, depending upon different factors are given below, which we can relate it to academic research:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Indicator Factor</th>
<th>Rank of India in 148 Countries</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Global Competitiveness:</td>
<td>60</td>
</tr>
<tr>
<td>2.</td>
<td>Basic Requirements</td>
<td>96</td>
</tr>
<tr>
<td>3.</td>
<td>Efficiency Enhancer</td>
<td>42</td>
</tr>
<tr>
<td>4.</td>
<td>Innovation &amp; Satisfaction</td>
<td>41</td>
</tr>
<tr>
<td>5.</td>
<td>Higher Education &amp; Training</td>
<td>91</td>
</tr>
<tr>
<td>6.</td>
<td>Quality of scientific research institutions</td>
<td>37</td>
</tr>
<tr>
<td>7.</td>
<td>University-Industry Relationships</td>
<td>47</td>
</tr>
</tbody>
</table>

As per the reports observations the developing countries like Israel, Korea, Bahrein are far ahead than us in these rankings.

Chatterjea, A., & Moulik, S. P., 2006, have focused their research on Doctoral Education and Academic Research in India. The authors mentioned in their research paper that, the state of doctoral education and academic research in India is poor and the country has negligible representation among the world’s great universities. They have mentioned the few probable causes for the status of research in terms of resources,
facilities, opportunities granted to Ph.D. students, faculty quality, financial resources, academic leadership and other issues are explored and also they have given some suggestions for improvement are provided.

The research paper is focusing on the world status of research of India and trying to propose the probable causes, but there is no any significant evidences provided by analyzing data to confirm the reasons for the current status of the research of India.

Shetty, P. K., Hiremath, M. B., Murugan, M., & Sreeja, K. G., 2010, p.355-361, in referred research paper, the authors have done analysis of ten different Indian state universities related to research and higher education scenario during period of year 2000 to 2006. The authors have given the ranks to the university basis on the research publications in various peers reviewed national and international journals. In analysis authors found that, the Calcutta University was ranked first with 664 & Sikkim Manipal University ranked 10th or last with 5 average number of research articles per year. They have mentioned the faculty versus research publication ratio, which varies from 1:0.05 to 1:1.9 in these selected universities.

The authors have concluded with suggestions for Indian universities, universities were needed to be dynamic and adoptive to the changing needs and priorities of the society and should provide an arena of freedom to young innovative minds, the need for high level of funding for research, including contractual research. They have mentioned the need of the necessary and inevitable quantitative expansion of higher education, it is equally important to improve the quality of higher education. They have mentioned that the institutions of higher education would find it difficult to meet the challenges of globalization of higher education if one fails in this front. The authors states that the NAAC is promoting awareness of the urgent need of quality up-gradation of Colleges and Universities.

The research was strongly focusing on the research and higher education in ten Indian state universities and analysis was done on basis of research publications and research funds. But in conclusion they have focused on quality of higher education in
colleges and universities. They have not focused on the reasons or lacunas where actually the universities were lacking behind; in which areas colleges and universities were facing challenges like research, infrastructure, facilities, etc. this would be a main focus for improving the quality of research and higher education.

Now days, Higher Education and Academic Research facilities are provided by total 712 Universities and Institutions in India. (www.ugc.ac.in, 5th May 2015) Maximum number of central, state and private universities and institutions are working on academic research through research oriented programs like Ph.D., M. Phil. and post graduate degrees. Every year thousands of students enrolling for these courses. But the literature review, the researcher get idea that, there is need of more facilities, infrastructure and resources for researchers and quality oriented interdisciplinary and pure research to improve the status of India's global research contribution.

2.2.3 Challenges in Academic Research in India:

We have seen in previous topic, that the status of research contribution of India is poor; means we can say that, as per reports and rankings, the facilities available in top rank countries like US, UK, Japan, China, etc.; India is lacking behind; means that the academic research is having more challenges in India. Actually, very negligible literature is available in the topic of academic research or research and challenges or issues of problems related to academic research. Here we have tried to put some reviews, to point, what type of challenges are faced by researchers in India?

Ho, A. P., Woods, P. C., Aziz, A. A., & Sin, N. M., 2013, p. 88-105, the authors have published research paper, specifically focusing on the lecturers as knowledge workers, and self-management of their intellectual capital growth for development of lecturers from a teaching to a research-teaching fusion. The authors mentioned this as a Malaysian case study in the period of year 2003 to 2005. They have conducted this case study in an institution of higher education that was in the process of upgrading its status from being a college to that of a university college. A part of that change involved
lecturers having to make a shift from being mainly concerned with teaching, to doing research as well. They have collected qualitative data in this pursuit. They have done comparison of the empirical evidence and theoretical frameworks on knowledge worker motivation, which led to findings that suggests the three main factors of culture, career and commitment, underlie that motivation. As far as the breakdown on task definition and contribution was concerned, lecturers were significantly in favour of doing research as a value-adding activity in their work; expressed an acceptance of anything up to a 50:50 research-teaching fusion and visualised themselves as embarking on PhD studies within a specific time-frame.

The authors have concluded that additional factors to self-management were needed to make an impact on bringing about the needed change. In this particular case, the lecturers’ self-management of their intellectual growth and development towards research oriented behavior would not by itself, break the stalemate created by their perceptions of the forces for and against doing research. The authors have focused to study the significance of the lecturer's towards research-teaching fusion which was shown positive, but there is scope of study to know the problems, views and aspects of lecturers to avoid involving in research and motivate the knowledge workers for intellectual development and self-management of that towards research.

Baptista, A. V. 2011, p.3576-3581, the author has focused their research on topic challenges to doctoral research and supervision quality in a theoretical approach. This paper attempts one main thing: to reflect and systematize the main challenges that doctoral research and supervision are facing nowadays, and particularly in what concerns their quality. Firstly, the author has approached the Bologna Process. She reviews the main ministerial documents and will highlight the key aspects that contribute to this reflection, particularly from an educational and political perspective. Thereafter, she revised international studies. They may present and synthesis other points of view concerning this issue of supra-national character and importance.

The author has highlighted few challenges influencing the ways doctoral supervision and its quality, purposes and value are being understood. The challenges
mentioned: (i) the emergence of new and other types of doctoral students and programmes; (ii) the development and understanding of research careers; (iii) the increasing need to discuss financing procedures; (iv) the necessity to promote more mobility actions at this level; (v) the definition of learning outcomes, even though flexibility and diversity have to be assured; (vi) the development of generic skills and inter- as well as transdisciplinary studies within the doctorate; (vii) the growing concern about originality of the thesis or the research which is developed at this level; (viii) the definition and continuous questioning and ‘revision’ of doctoral supervisors’ competences and responsibilities; (ix) the urgency, in many European countries, of being established regulation and frameworks about the quality of supervisory practices and experiences; and (x) the necessity to develop training programmes which can suitably respond to both doctoral supervisors and students’ needs. Bearing in mind the constant changes and challenges regarding this and other educational issues, it is essential that doctoral education, research and supervision are regularly rethought, and that perspectives and findings are shared to stimulate an engaged debate regarding this subject.

Marginson, S., 2010, p. 6962-6980, the author has worked on the research topic focused on Higher Education in the Global Knowledge Economy. The author focused his paper draws on (1) recent research for policy papers prepared for the OECD on globalization and higher education, and the internationalization of higher education in the Asia-Pacific region, (2) case studies of leading research universities in eight Asia-Pacific nations, and (3) comparative data from the OECD, UNESCO and the World Bank.

In summary, the authors has concluded with six conclusions: 1) the character of research and the distribution of research capacity are the most crucial elements in determining both the nature of the world-wide environment in higher education, and the potential of individual nations and institutions within it. 2) In a higher education world with one dominant national system and many others, the regional (cross national) level of organization takes on a special importance. 3) Education and research in one country can affect others. These cross-border externalities can be positive (for example the flow of information, ideas, knowledge and short-term people movement) or negative (for
example ‘brain drain’). However, in policy making there is little recognition of these externalities at both national and multilateral levels. 4) This in turn has led to multilateral neglect of the need for capacity building in the developing world. Cross-border imports are not sufficient in themselves to constitute an effective strategy of capacity building in emerging economies. Building national capacity is the most important single element, in particular building research capacity. 5) The ultimate measure of the global worth of higher education and research—above and beyond their contribution to particular nations and regions—lies in their contribution to the common human story, and particularly to the solution of the major problems facing people in all countries—climate transformation and global warming; the need for secure supplies of water and food; energy and its more efficient and ecological harvesting and use; infrastructures; world-wide pandemics and other health issues; and poverty and illiteracy. The ultimate question in this sector, as in all others, is the future world order, the extent to which real global inter-dependence is reflected in the governance and cultural arrangements. Higher education and research carry much of the future potential of humanity and their benefits are maximized when they flow freely across the world. Nevertheless higher education and research will remain nested in national policy settings for the foreseeable future, and must meet national and local goals as well as making a global contribution. The capacity of its systems and institutions to operate effectively

This higher education setting posed an unprecedented challenge to both national policy and multilateral decision making. It calls for a new level of complexity of thinking, and of multiplicity of commitment and engagement. And the stakes are high. Higher education and research have unprecedented opportunities to do well in the world.

Jasimuddin, S. M., Connell, C., & Klein, J. H., 2005, p. 62-76, the authors have done research on the Challenges of Navigating a Topic to a Prospective Researcher, especially focusing at the Knowledge Management Research. The authors have discussed that exploring a researchable topic and narrowing it down sufficiently to make it workable is a first task in any scientific research. They mentions that it is particularly difficult when there searcher is a no voice, because s (he) is unlikely to be properly aware
of what the essential issues and the research question(s) in the field are.

The authors have potentially of interest to novice researchers and researchers new to a field and proposed a set of guidelines for narrowing down the research topic to workable size. They have made few recommendations through this research; to construct a navigation map, researcher can use fully formulate research question(s). The authors have just focused on one problem that is navigating research topic, but lots of problems are there in front of new researchers that is constructing title to the report writing. This can be focused to study more to provide proper solutions and easy availability of set of knowledge.

Sahota, P. C., 2009, the author has worked on Research Regulations in American Indian/Alaska Native (AI/AN) Communities, with the view of the considerations of legal policies and practices in India. The author in his research paper specifically focused on two factors, first, the need for ethical and legal considerations for AI/AN communities in regulating Research and second, different mechanisms AI/AN communities might use to regulate research, such as Institutional Review Boards (IRBs), Community Advisory Boards (CABs), and other forms of research review committees, are presented. But Author has not provided the procedure oriented approach to these regulations. He can focus on both the things that mean how it can be implemented.

Rajasekhar, T. B., 2003, June, p. 2003, the author has done research on improving the visibility of Indian Research for Indo-US Workshop on open digital libraries and its interoperability. The author has explained that studies were indicates that research published in Indian sources is poorly cited compared to research published in international sources. They have also mentioned the key challenge is to reciprocate the information flow in India and significantly improve the access to it. They have proposed that institutional level open access publishing model as a possible approach to improve the situation. They have also explained the challenges and issues related to the situation of India during 2003. Finally, the author concluded that this paper is largely in an Indian perspective, they believe that research, development, implementation and deployment of OAP systems will be of significant interest to both the countries that is US and India.
The author has focused on the status of research in perspectives of international publications and its citations. They have not considered the issues related to researchers, that means researcher’s needs, challenges, problems and issues.

Prayuth, C., Kanokorn, S., & Pornpimon, C., 2014, p. 662-669, the authors have focused their research paper on challenged strategies for driving to success in research with respect to the Khon Kaen University. The authors have studied various research strategies of research and mentioned three aspects of strategies i.e. the product, research environment, and recognition, which were associated with 3 tasks i.e. the instruction, budget resource and staff management, and research management. They have given suggestions and recommendations, based on their findings that’s are, the Administrators from both of the University Council and the university should pay attention to, and continue to support for development of structure, research management system for constructing body of knowledge, technology, and innovation to be useful by emphasizing the excellence, serving to the needs of local and community, constructing and developing the high potential researcher in universal level trough process of Learning management. They have also recommended for further research should conduct research in order to develop indicators, for application challenges strategies for driving to success in research of Khon Kaen University, to be effective research university.

The authors have studied the strategies and then given few recommendations and suggestions but in this paper they have not given details about the strategy aspects and aspect’s task, and they have not considered the individual researchers challenges or problems during their research.

Peer, L., & Green, A., 2012, p. 151-162, the authors have done their research work on the open data repository for research community, focusing the different level of challenges, process and lessons in building it. The authors have mentioned that during year 2009, the Institution for Social and Policy Studies (ISPS) at Yale University have begun building an open access digital collection of social science experimental data, metadata, and associated files produced by ISPS researchers. This digital repository was created to support the replication of research findings and to enable further data analysis.
and instruction. They have described the process of creating the repository, discussed prospects for similar projects in the future, and explained how this specialized repository fits into the larger digital landscape at Yale.

The authors are focused on challenges, process and lessons, from their live experience of building the open access repository, but actually they have not considered, what are the needs, problem & challenges of researchers? And what type of data they are searching for? According to that the data types and data bases structure should be designed.

Rajashekar, T. B., 2004, June, p. 154-157, in the research article, the author has mentioned the key challenge is to reciprocate the information flow in India and significantly improve the access to it. He has proposed that institutional level open access publishing model as a possible approach to improve the situation. He has explained the challenges and issues related to the situation of India during 2003. The author has focused on the status of research in perspectives of international publications and its citations. They have not considered the issues related to researchers, that means researcher’s needs, challenges, problems and issues.

Mohan, V., Visakhi, P., & Ravi, S., 2011, p. 48-60, the authors have worked to evaluate the coral reef research in India using bibliometric tools for the period 1900-2000. The data has been extracted from "Bibliography on Indian coral reefs". The authors have examined the authorship pattern, productivity on individual scientists and also identified the various countries - participation. And also analyzes the forms of communication, journals productivity and identified criteria for selection of the core journals for library. They have suggested to create a database on coral reef and to develop, marine science at national level that would facilitate easy use of all categories of people.

The authors have focused on the research publication database and institute level database of publication, and then they have suggested creating database for it. But basically why less publications are there and what is actual needs of researchers is not considered, which can point the highlighted area for improvement of Indian research.
2.3 Literature Review of Knowledge Management

2.3.1 Effective use of Knowledge Management

Scholl, W., König, C., Meyer, B., & Heisig, P., 2004, 19-35, the authors have published their research paper on the future of knowledge management. The authors have explained that the field of knowledge management (KM) is highly estimated in research and practice but at the same time relatively diffuse and scattered into diverging concepts, perspectives and disciplines. On that background, it was the aim of this Delphi study to give more structure to the field of KM and to get an outlook on worthwhile developments for the next ten years. They have used survey and questionnaire method for data collection from the KM experts and practitioners. According to this, the future of knowledge management lies in a better integration into the common business processes, a concentration on the human organization - interface and a better match of IT - aspects to human factors whereas IT aspects rank low on this agenda. There are no broadly agreed theoretical approaches though something can be gained from the related organizational learning field; in general much more interdisciplinary and empirical research is needed. There are also almost no broadly agreed practical approaches besides communities of practice.

The authors have concluded with that the future of knowledge management lies in a better integration in the common business processes. And also they have mentioned that, for the better future of KM, much more interdisciplinary and empirical research is needed. Hence there is scope of empirical study in various streams and fields for better use of knowledge management for the benefits of society or for socio – economic development of county.

Bouthillier, F., & Shearer, K., 2002, the authors have done exploratory and empirical study of different organizational knowledge management processes and systems to understand and to prepare empirical evidences of the knowledge management versus information management. The authors have presented a typology of methodologies that are employed in various organizations to illustrate what may be
considered as the particular nature of Knowledge Management to show potential differences with Information Management. In the first section of this article, they have discussed the concepts associated with the management of information and knowledge and in the second part; they have provided a description of the conceptual framework used for the study. Finally, they have concluded with the results of the study that mentioned; the Knowledge management, really means facilitating the sharing of tacit knowledge. Despite the fact that other KM processes were part of the KM projects, sharing was the primary emphasis of all case studies. KM practices could benefit from the skills already held by information professionals. These skills include the identification of knowledge needs, helping to distinguish between information and knowledge, and will facilitate a broader and more inclusive KM initiative.

The authors in this article concluded that, the Knowledge Management is not just a label for the Information management, but it is a new emerging stream of management, which should be focused by different private and public organizations and KM in different communities like the academic, business communities, and governments. Hence there is scope of study to know how academic community is effectively using KM in various levels of education? How can it be more effective? And so on.

Dagnino, G. B., & Longo, M. C., 2012, p. 1-31, the authors have done research work on research Knowledge creation and application in high-technology firms in significance with the role of communities in the Italian experience. The authors have focused this research paper to contribute to the advancement of firm knowledge theory and practices by emphasizing and assessing the substantial role of communities of practice in generating new knowledge and promoting its application in high-technology firms. They have attempted to highlight and discuss some critical research areas in the growingly influential management literature and practice on community deployment.

They have observed that communities are capability enhancing and capability developing repositories that, if properly used by members, can be supportive in improving firm performance. The authors have finally concluded that communities can be beneficial in advancing learning and innovation in firms, they have tried to fix some
initial guideposts in this direction, an empirical pathway is yet to travel before confirming that its reached a consolidation and a true maturity in the exploration of the crucial strategic link between communities and performance in this important stream of study. Hence authors have studied about the community, knowledge creation and its impact on firm's performance but there is lot of scope to study the knowledge management of a community in the high-tech firm for the benefit of community or society.

Jennex, M. E., Smolnik, S., & Croasdell, D., 2007, January, p. 193c – 193c, the authors have presented their research work on knowledge management, focusing specifically on defining Knowledge Management Success. The authors initially discussed about the HICSS conferences and have mentioned that there is no general agreement on definitions of Knowledge Management (KM) and Knowledge Management Systems (KM System) success. They have presented this research paper as an exploratory research study to begin and facilitate a debate that will hopefully lead to a consensus definition of KM and KM System success. They have followed expert panel approach and two exploratory surveys, to approach the KM and KM System success definition. They have presented agreement as well as of disagreement, which can serve as a good starting point for further discussions on KM and KM System success.

The authors finally concluded that, it was difficult to reach any conclusions with this research; no hypotheses were proposed or tested; because purpose of this research was to start a focused discussion on KM and KM System success. The authors have taken good effort to define KM and KM System success; but it is now giving any proper solution for the research problem. Just discussion is not a matter but at last what output actually produced is important. There is scope of more deep study in these aspects.

Peachey, T., & Hall, D., 2005, January, p. 254c-254c, the authors have focused his research on Knowledge Management and the leading Information Science Journals research publication. The author has analyzed trends and gaps in Published Research during year 2001 to 2003. The articles have been classified into five constructs from two knowledge management frameworks. He have produced results from analysis indicates
that the majority of knowledge management research has examined the construct of knowledge transfer and approximately one third of the research is empirical in nature. Trends of published KM research, gaps, and inconsistencies in the examined literature were found.

The authors have mentioned that research has raised a number of interesting questions about the research effort by researchers. Many of these articles proposed concepts that form an excellent foundation for further investigation. He mentioned that the concept of knowledge management is more detailed than currently understood by many of our colleagues and practitioners alike. Knowledge management is more than regeneration or integration of other, more mature topics such as expert systems or decision support systems. Additional research in the other core constructs, while framed under the topic of knowledge management, will serve to enhance the understanding of the breadth of knowledge management and ensure it remains a significant research topic in the future.

Tripathi, S. P., Bhave, S., & Nandedkar, T., March 2013, p. 207-214, have done research on effectiveness of knowledge management practices in Electronic Industries. The authors have mentioned that, the emergent patterns of literature and research as well as practice in the field imply the central role of knowledge as the essence of the firm. From the knowledge based perspective of the firm, the firm can be seen as a knowledge system engaged in knowledge creation, storage, transfer, and application. Authors have mentioned their findings that knowledge management is one of the key factors determining the success of any electronic organization and also contributes in higher productivity in organizations. Several studies in the area of KM reveal that several factors act as barriers and facilitators to KM are universal to all organization. The study is being done to determine various KM practices being used presently in the electronic industry of Indore. The study is exploratory in nature and focused on specific areas.

The authors have done research on effective use of Knowledge Management in Electronics Industry. They have mentioned the practical evidence that, KM is playing important role in success of industry. There is scope of study to know about the, KM
model used by companies, KM factors, KM system and needs of end users.

Tijerino, Y., Masaki, H., & Igaki, N., 2006, December, pp. 212-215, the authors have introduced the academic support system - AcadeMix Juice - Web Platform for Exchange of Academic Knowledge. The authors have introduced, a participative architecture, which attempts to overcome the cultural hierarchical barriers that prevent communication, collaboration and exchange of academic materials in Japanese institutions of higher learning among undergraduates, graduates and faculty. This system has been developed for promoting participative interactions among its users. The authors mentioned that, AcadeMix Juice have promoted interdisciplinary interaction and collaboration among its users through inter-field collaborative summarization.

The authors have tried to take benefit of popularity of internet in the educational field, because scope of e-learning is increased. They have proposed that, the primary goal of AcadeMix Juice was to take advantage of Web and the Internet infrastructure to promote openness and exchange across hierarchical barriers in the Japanese university environment through participative interaction. This type of research can make an important path for improving academic interactions. This can be useful to make use of internet and infrastructure in various functions, in academic institutions and universities.

2.3.2. Use of Knowledge Management in Research and Development

Joseph, B. K., 2009, the author has studied the role of Research and Knowledge Management in the development of country, African countries. The author explained that many countries in the world have appreciated the role of research and Knowledge Management (KM) in their socio-economic development. He have done an ad hoc survey looking at endeavours done towards establishing research as a public good in Botswana, Zambia and Malawi. He has established the niche of research and effective knowledge management as a tool toward shaping a nation on the competitive edge in the global value chain. He has again mentioned that incorporation of the research and knowledge management agenda into national policies was not an easy thing, due to lot of evident
challenges, he have studied as case studies of few African countries.

The author has focused on national strategies for the relation of research and knowledge management, in a view of national socio-economic development point of view, through few countries case study. For the effective use of knowledge management for research, in research community’s point of view is most important for the development of research and then national level development.

Marjan Laal, 2011, p. 455-459), the authors has written his review article on Knowledge management in higher education and focused on the basic concepts of knowledge management (KM) in higher education (HE) institutes, and which gives a summing up of previous scientific works to ensure providing an effective and efficient understanding of it for an ever-changing environment.

The author has concluded finally that successful KM depends on processes that enhance individual and organizational ability, motivations, and opportunities to learn, gain knowledge, and perform in a manner that delivers positive results. Organizational processes that focus on these three attributes will lead to an effective management of knowledge. Universities have significant opportunities to apply knowledge management practices to support every part of their mission—from education to public service to research. An institution wide approach to KM can lead to exponential improvements in sharing knowledge; both explicit and tacit, and the subsequent surge benefits. Using KM techniques and technologies in higher education is as vital as it is in the corporate sector. Hence the author implies that the KM can play important role in Higher Education and Research. We need to focus on more use of KM in institutions and universities.

Jasemi, M., 2012, the author worked on research and developed knowledge Management Model and then implemented it as a Knowledge Management System. The authors have described, this live experience in research paper, titled “Knowledge Management Practices in a Successful Research and Development Organization”. They have mentioned that, although KM literature is full of excellent works and KM models are designed, but still this field suggests the need for more practical and comprehensive models. The authors explained that, applying the developed KM models was difficult
because, knowledge is intangible, involves delicate managerial works. They have mentioned challenges faced by them during implementation of KM System. They have presented the conceptual model of a successful and currently applied Knowledge Management System in research and development organization.

The authors have studied the literature and concept of the knowledge management in this research paper and proposed a conceptual model of Successful Knowledge Management System for a Research and Development Organization. The authors have also mentioned that this proposed model currently has been implemented in research organization successfully. The authors have represented their live experience of development of Knowledge Management Model and its implementation as Knowledge Management System for a research and development organization. They have not explained in this paper the detail KM model factors, KM System, challenges they have faced during implementations and solutions. Hence there is scope of study in this area, and in view of academic research too.

Keskin, S., 2013, p. 233-239, the author has studied the social networks, focusing its use in communication and management of knowledge in research and development. In this study, it is argued that social network analysis proves useful as a potential method to analyze, evaluate, and influence processes of knowledge generation and communication. Author has been presented social network’s potential usefulness as a knowledge management tool. But then they have mentioned that, further research and experience are needed with methods of social network analysis in business practice. Social network analysis is a good tool to analyze, evaluate, and influence processes of knowledge generation and communication. Knowledge Management tool for research and development organization concerned, then the different issues must be considered like intellectual property rights, security, knowledge format, sharing, storing, accessing, and so on. The author has not mentioned any point regarding this issue; hence there is scope for study.

Stefan Güldenberg, Karl-Heinz Leitner, have done research work on the strategic processes in Research and Development Organizations, in Knowledge Management point
of view. They have stated that, the study was aimed to look more closely at the nature of strategic processes in R&D organizations and considering their interrelationship with knowledge creation processes according to the SECI-model of Nonaka and Takeuchi (1995).

They have studied, to understand if in these knowledge-based organizations the nature of strategic processes considers the specifics of the knowledge production process and therefore stand in line with the knowledge management process. Finally, they have concluded that, the majority of the examined R&D organizations follows, very classical, formal and inflexible strategic planning processes, and institutionalized ex-post strategic learning processes are very rarely to be found. Finally they have proposed that due to inflexible strategic processes, most knowledge management projects in R&D organizations still fail to attract the degree of top management attention and commitment they deserve.

The authors have studied the strategic process of four R&D organizations, and explained the need of effective use of knowledge management, but they have not expressed about any type of knowledge management model and knowledge management system, hence there is scope of study.

Paghaleh, M. J., 2011, p.13-16, the author has worked on importance of Knowledge Management in research and development process of research and development organization. The author have given the importance of human resources Management in research and development process in research and development organizations the community of human resources due to environmental conditions and personality of researchers and scientific views are different from those of other communities. They have focused on human resources and knowledge sharing in R&D organization, role of KM in sharing knowledge and progress of R&D organization. Finally concluded the human resource strategies are most important in implementation of Knowledge Management.

The author has focused on the Human Resource Strategies and importance of Knowledge Management in R&D organization. There is scope of study to know the
what, why and how of the human personality, behavior, needs, issues and required strategies to convert them for knowledge management success.

Armbrecht, F. M., Chapas, R. B., Chappelow, C. C., Farris, G. F., Friga, P. N., Hartz, C. A., ... & Whitwell, G. E., 2001, p.28-48, the authors have done research work on 19 leading companies, to study the knowledge flow and Knowledge Management of R&D process of these companies. They have arranged group sessions, personal interviews and questionnaire to collect data from different level knowledge workers. The survey was based on different aspects like industry, size, KM program specifics, KM drivers, KM implementation, KM metrics, organizational culture, environment and etc. focusing to the role of knowledge Management in research and development. They have mentioned that this study was specific to three points i.e. to identify the model of knowledge flow in R&D process, to highlight the aspects of knowledge management that are unique and important in R&D process, to catalog the better practices that are used by knowledge managers for knowledge flow and knowledge creation throughout organization. Finally, they have reported their findings in three parts that is, they describes the flow of knowledge in R&D and its opportunities and requirements in R&D process; the basic three culture enablers means Infrastructure, Information Technology and KM applications, which affects the KM performance. And lastly they have suggested holistic approach to implement KM in R&D process.

The authors have done fruitful study of 19 leading companies for knowing the Knowledge Flow model and Knowledge Management aspects and organizational culture for the R&D process. Hence there is a scope of study to know the knowledge flow model and knowledge management applications and organizational culture view of the R&D process of corporate world and effective use of these all concepts in academic research environment for research community in different universities.

Ermine, J. L., 2010, p.293-306, the author has done research through, three case studies research centers from three different countries (France, Brazil, and Canada). The author has studied the methods and tools for Knowledge Management in Research Centers. He mentioned that, in the Knowledge Based Economy, research centers,
whether industrial or public, play a fundamental role. In terms of Knowledge Management, the research centers organizations have a special status, because their production is knowledge. The author was focused, to design a pertinent methodology for Knowledge Management considering the specificity of knowledge production by research centers. This methodology is based on a suitable model to describe that knowledge production. The reference model is built on knowledge flows between the organization and its knowledge workers, and a subsystem called “Knowledge Capital”. He has proposed a methodology through his research based on two tools that is, the first is knowledge map that can represent a comprehensive model of the Knowledge Capital of the organization, The second tool is a grid for criticality analysis (Critical Knowledge Factors), which evaluates the knowledge domains of the organization and suggests appropriate actions to be put in place for the most critical domains.

The author has concluded finally that, aim of the methodology was to provide a set of recommendations to build a KM plan of actions to preserve, share and make evolve the Knowledge Capital. The methodology has been elaborated through constant feed-back with practice, and has been validated in many real cases in various countries. Three case studies (France, Brazil, and Canada) are succinctly described to exemplify the effectiveness of the methodology. This research has proposed a methodology for different types of research centers like industrial or public, but there is scope of study to validate the methodology specifically for academic research centers and institutes, which are the most important part of research and development of any country. And also need to find the correct methodology for knowledge management for academic research centers.

Ondari-Okemwa, E., 2006, p.63-72, the author has studied the Knowledge Management System of nonprofit Research Organization, that is International Livestock Research Institute (ILRI); to establish how a non-profit research organization may build its internal knowledge base; to dispel the view that knowledge management is only possible in knowledge-based economies of the developed regions; to demonstrate that
good knowledge management practices are possible in a non-profit research organization; and to establish the nature of the critical challenges of establishing and running a successful knowledge management programme in a non-profit research organization. He has mentioned that, the Knowledge is fast becoming a source of competitive advantage that makes a difference between success and failure for both profit and non-profit organizations. He further mentions that, this study looked at how knowledge was generated in ILRI, how it was shared, how it was transferred and how it was integrated into the day-to-day operations of the institute. It also looked at institutional culture and environment aspects for knowledge management perspectives. He has mentioned the some of the challenges that the ILRI faced in managing knowledge, and few solutions were discussed.

Finally, the author has concluded that, the institute ILRI has implemented Knowledge Management System for making learning environment, exchange, sharing, creation of knowledge and information. And also, institute has established collaborative relationships with other institutions for the same. The author has focused on the nonprofit organization - ILRI institute, but there is scope to study the structured, cultured, environmental changes in other profit or non-profit organizations and how this knowledge management system can become helpful for them.

Gourova, E., & Toteva, K., 2014, April, p. 3, the author has worked on the Design of Knowledge Management Systems. The authors have done good amount of research publications in the knowledge management field. In this research article; they have explained their own design of Knowledge Management System. They further have mentioned that, knowledge is in the center of organisational competitiveness and growth and it is difficult to manage knowledge as it resides in human minds. Its success requires a synergy of organisational, technological and human focused initiatives and tools integrated in a Knowledge Management System. The authors have provided guidance in a form of patterns on designing the core elements of Knowledge Management System – infrastructure, info-structure and info-culture. The have provided a framework for a set of patterns to be further developed, and based on already presented patterns at the
European Conference for Patterns Language of Programming (EuroPLoP) in the areas of Knowledge Audit and Knowledge Management Strategy.

The authors presented three patterns corresponding to the design of Knowledge Management Systems – INFO-CULTURE CHANGE, INFO-STRUCTURE DESIGN and INFRASTRUCTURE DESIGN. They have mentioned that these patterns can be applied in knowledge-intensive organisations as they propose guidelines for solving specific problems of linking knowledge and business processes, better usage and provision of knowledge when and where it is needed. The patterns could help organisations also to better involve knowledge workers in new initiatives, and especially in large changes like KM. Finally they have mentioned that, during the discussion of these patterns at VikingPLoP 2014 it was clarified that they provide a framework for new sub-patterns which could help solving practical problems in knowledge management implementation. This will be a goal of future work related to KM System. The authors have designed a general structure of KM System for any public sector or private sector organisation; but the various factors related to organizational infrastructure, culture, environment, etc. are playing important role in design of the KM System. So making such design of Knowledge Management System may be needed lot of customisations related to organization. Hence it’s more intended to design a KM System in perspective of the specific organisation.

Trauth, E. M., 2012, January, pp. 3612-3621, the author has worked on the topic related to regional knowledge economy development and the barriers to knowledge acquisition, transfer and management. A key characteristic of a knowledge economy is the shift from an economy dominated by tangible assets to one that is based on intangible, knowledge-based assets, which consist primarily of human capital and innovation. The success of a regional knowledge economy is, in turn, measured by its ability to attract and retain companies that focus on the production, dissemination and application of knowledge, and on the provision of services that involve the efforts of knowledge workers. Two factors that are linked to a thriving regional knowledge economy that is capable of both continuous learning and innovation are the sustainability of human
capital for a knowledge workforce and the sustainability of inter organizational knowledge transfers. As such, a research program was undertaken to identify and analyze the challenges for human capital and inter organizational knowledge transfer in service to learning and innovation, towards the goal of regional economic development.

Khanna, V. K., 2009, August, pp. 346-354, the author has worked on the role of knowledge management in improving World Competitiveness. The author has mentioned that though most of the Indian organizations were following TQM philosophy to improve the Global World Competitiveness ranking, still the Global Competitiveness Index of India has not improved much to the desired level. He further described that it clearly shows only TQM philosophy cannot put India among the top leagues of the countries. Knowledge Management (KM) world over has been extensively used to improve the performance of the organizations along with TQM. He mentioned that the research was undertaken to assess the level of TQM and KM system being undertaken by various three categories of organizations that is Big, Medium and Small. The author have explained, The KM index, which has been computed for ‘Big’, ‘Medium’, and ‘Small’ group of organizations, was 4.07, 2.88, and 2.08 respectively out of total score of 5.

Finally author has proposed through this study that to improve Global Competitiveness Index, all three groups of organizations must focus on improving KM index to move towards the category of ‘Outstanding’. The high level of KM implementation along with TQM will help Indian organizations in improving their Global World Competitiveness ranking. The author has studied about the KM index of organization in different categories and concluded with the need of improvement in KM index for global competitiveness. But there is scope of study in getting idea about, why these organizations are having low KM index, issue, problems and challenges of organization in implementation of KM? What are the possible solutions for this?
2.3.3 Use of Knowledge Management in Universities

Tian, J., Nakamori, Y., & Wierzbicki, A. P., 2009, p.76-92, the authors have done research work on Knowledge management and knowledge creation in academia a survey based study in a Japanese research university. The authors have given the purpose that to pose one major research question, i.e. why and how to use knowledge management methods in order to enhance knowledge creation in academia – at universities and research institutes? They have mentioned that, the first survey was focused on knowledge management in academia and investigated the current KM situations, special and diverse requirements from researchers. The second survey was concentrated on supporting the creative processes of academic research and investigated which aspects of knowledge creation processes should be supported in particular. The author have given findings based on survey that the first survey showed that the KM obstacles reflected on various aspects that was technological support, the people involved in creation activities, laboratory cultural, and so on. The seven most critical questions and three most important questions were evaluated by responders with respect to academic knowledge creation process in the second survey.

The authors have suggested with respect to the survey results that a creative environment in academia should be enhanced from both “soft” and “hard” aspects under the guidelines of a systems thinking framework for KM in scientific labs. From the soft side, by using personalization strategies, a knowledge-sharing culture has to be built in labs to facilitate scientific communication, debate and team work. From the hard side, by using technology strategies, it is hoped that the research can launch further debate and prompt practical steps to help research institutes or universities improve their management and increase the research efficiency. The authors have given the importance of KM in the university through this research at Japanese research University. There is scope of more study in this area to actually implement KM for the academic research community.

Smokotin, V. M., Petrova, G. I., & Gural, S. K., 2014, p.229-232, the authors have worked on their research topic that is Theoretical Principles for Knowledge Management
in the Research University. The authors have considered the specificity of the contemporary university administration, when the University is losing its classical unity and acquires plural forms of existence. They have given particular attention to the research university, which transforms the classical university’s ideas in its adaptation to the conditions of the information society. They have further mentioned that cognitive management in the research university is a form of governance that increases its competitiveness in the globalized educational area. They have brought most important factor about cognitive management based on the transformation of knowledge into information, which can increase the student’s cognitive competence.

The authors have finally concluded that the knowledge management is the answer in the transformation to informational society within the sphere of education. They have also proposed practical recommendations, that is, the main task of knowledge management is shaping cognitive competence. Prorector (provost) of educational work is the main manager for the Research University. He provides expertise in development of curricula and may adjust them if their content is not aimed at the formation of student ability to generate new knowledge. The theory of communicative action by J. Habermas, shifted onto education, is the theoretical basis for knowledge management. The authors have clearly mentioned through this research paper that for the research university Knowledge Management is the answer in this information society. Here is scope of study to implement Knowledge Management in different areas and scopes of the university that means from Administration, E-learning, examinations and so on. Main important area of university is research community.

Simon P Philbin, Rizan Abdul Razak has prepared this research article to explain the objectives, needs and uses of university portal at the Rakan University in significance to the bridging Knowledge and digital divide among the varsity and the community. The author has mentioned that, the objective of E-Rakan University Portal was to develop a common platform for communication between the members of varsity and the community off-campus. The university is the rich source of knowledge and housed the best brain and experts in different areas, the community off-campus should be given opportunities to tap this information and reach the experts without many barriers. He has
further mentioned that, E-Rakan University Portal provides services and information related to e-counseling, which contain topics such as education, career, lifestyle, health and religion. It also provides information based on user-generated content and based on the needs of the communities.

The author finally proposed that the impact of this portal was to help and to bridge the knowledge and digital divide between the communities; and the success of the portal would depend on aggressive promotional campaign. The author have explained the university portals purpose, objectives and how it would be helpful for the community; but not mentioned the exact university portal’s structure and design; and is it in true sense knowledge management portal?

Toral, S. L., Bessis, N., Martinez-Torres, M. R., Franc, F., Barrero, F., & Xhafa, F., 2011, November, pp. 21-26, the authors have done an exploratory analysis of Social Network of Academic Research Networks. The authors have been analyzed joint article publications data using an automated tool. The authors have analyzed the data using factors and noted the results that is, collaboration intensity, scope of collaboration, absence of collaboration among the university in England. They have attempted to highlight and demonstrate how these collaborative networks are developing in practice. In this case study, they have limited data from works published in 2010 by England academic and research institutions.

The authors finally stated that, the outcomes of this work can help policy makers in realising the current status of research collaborative networks in England. But there is scope of study to know why universities are lacking behind in collaboration of research work? What are the main points due to which the collaboration is not happening? And what is exact solution for it.

Kidwell, J. J., Vander Linde, K., & Johnson, S. L., 2000, p. 28-33, the authors have written article on higher education, focusing corporate knowledge Management practice in higher education. They have mentioned that, colleges and universities have significant opportunities to apply knowledge management practices in higher education to support every part of their mission. They have mentioned knowledge management
system with various application and benefits for different areas of higher education like, research, curriculum development, alumni services, etc. The authors have focused on application view of Knowledge Management in higher education, but there is scope to study for, studying about actual needs of users, knowledge & Knowledge Management model, KM System and its implementation related issues.

Oakley, A., 2003, p.21-33, the author has given his ideas about the Knowledge and Knowledge Management in educational practice using study of reviews in education research. The Author has mentioned with his huge experience in higher education field that the education system is about the production and dissemination of knowledge and what happens within it is itself knowledge-based. But again he explained that education is not ‘simply’ about the transfer of knowledge: it is about many other processes and outcomes as well. What is knowledge? Who is knowledge for? Who defines what we want to know about and why? How is knowledge used, and who benefits from (or is damaged by) these uses? Perhaps most problematic of all are the two questions: how does anyone know what they know? And, how do we get from knowledge to wisdom? They have finally concluded with the managing knowledge a lesson for all, giving an importance of knowledge management in education and education research.

The author have given overall picture of knowledge and its management, but there is scope of study to know importance of Knowledge management in education systems different entities in their point of view as researchers, faculties, students and so on.

García, V. H. M., & Torres, D. A. S., 2012, p.205-208, the authors have studied the Graduate - Master degree programme; to propose the Knowledge Management Model for Research Projects Master’s Program. The authors have focused on effective use of knowledge management in Higher Education and Academic Research. They have presented the adaptation of the knowledge management model and intellectual capital measurement NOVA model. They have finally proposed the final model that shows the strong responsibility that has an organisation to support research by supporting their research groups and researchers. It is the responsibility of the researcher and the research group published results. They have mentioned that the model allows to express
and communicate the roles involved in the research process and responsibilities of each, to complement classic methodologies for monitoring projects, as these methods do not have a way to express the process of knowledge.

The authors have proposed a KM Model for Research Projects of a graduate master’s programme that means Knowledge Management for higher education and Research; there is more scope of study, to use this knowledge management model for the academic research like M.Phil., Ph.D. and Post Ph.D. degree courses or propose the new knowledge management model.

Owoc, M., & Marciniak, K., 2013, September, pp. 1267-1272, the authors have focused their research on Knowledge Management as Foundation of Smart University. The authors have mentioned that, we are living in age of international integration, where world economy is tending to reach type of knowledge-based economy (KBE), universities are forced also to change way of their functioning. They further have noted that it is important for modern universities to be not only education centers but mainly the successfully prospering organizations-based-on-knowledge. They said that this approach is going to provide higher competitiveness of particular institution and will make its functioning more useful for economy of the region. They further proposed for Implementing a comprehensive and intelligent IT solution within a university and providing educational services, which are personalized to the needs of the market, which can term it as “smart university”.

The authors have explained that the aim of the research was to explain, why university centers should evolve in a type of institution based on knowledge? They have concluded that organizational success depends on access to high-quality information, appropriately implemented IT solutions and business culture of institutions. Additionally, caring about knowledge management at every level of organization enables creating opportunities of organization growth. It allows also implementing innovation, conduct studies on the effectiveness of organization considering processes inside and outside the organization. But they have given very short idea about smart university. Hence, there is huge scope to study about the effective use of knowledge management in universities, to
convert them in to a smart university.

Jundale, S., & Navale, G. S., 2009, July, p. 1-3, the authors have done their research work on the Knowledge Management in Education. The authors have mentioned that there is tremendous value to educational institutions that develop initiatives to share knowledge to achieve business objectives. They again mentioned that if knowledge management is done effectively, it can lead to better decision-making capabilities, reduced "product" development cycle time (for example, curriculum development and research), improved academic and administrative services, and reduced costs. They have specifically focused on the basic concepts of knowledge management and its applicability in educational institutes and whether educational institutes are ready to embrace it.

The authors have concluded that, the academic culture must change from knowledge hoarding to knowledge sharing. Colleges and universities have significant opportunities to apply knowledge management practices to support every part of their mission. The greatest benefit of using KM may come from its ability to capture tacit knowledge, which is the most valuable knowledge asset of an organization. Greater collaboration among institutional stakeholders in the area of knowledge management would result in better use of resources and improved services. But there is scope of study of appropriate models, tools and techniques of Knowledge Management. To design an appropriate KM Model, how it can be feasible for educational institutes?

Akhavan, P., Hosnavi, R., & Sanjaghi, M. E., 2009, p.276-288, the authors have done their research work on movement of Iranian academic research centers towards knowledge management to explore Knowledge Management critical factors. The authors have discussed the essential issues of knowledge management, in order to explore knowledge management primary steps in some Iranian academic research centers (ARC). They have discussed the critical success factors of knowledge management (KM-CSF) through some Iranian academic research centers. They have used survey method and questionnaire for data collection and then they analyzed this data by some statistical methods.
The authors have believed that after this research, the leaders of the mentioned academic research centers can decide in a better way for establishing a knowledge management system. The authors have used factor analysis to extract critical factors of knowledge management in academic research centers through 34 variables. Through this analysis the authors proposed the knowledge management critical success factors were: "human resource management and flexible structures", "KM architecture and readiness", "knowledge storage", "benchmarking", and "chief knowledge officer". The authors have discussed the critical success factor of Knowledge Management. But there is scope of study in getting idea about how the different factors are affecting the KM. What are the appropriate actions and solutions available for improving the performance of KM? And so on.

Ractham, P., & Zhang, X., 2006 April, pp. 314-317, the authors have focused their research on podcasting in Academia as a new Knowledge Management Paradigm within Academic Settings. The authors explained that the podcasting represents a new and exciting learning paradigm within an academic setting. As a podcasting they suggest that the materials such conference reports, research manuscripts, and course lectures can be recorded as audio and video files and delivered to subscribing users automatically. Due to this a minimum skills and effort is requiring for involved parties to accomplish the knowledge transaction. They further mentioned that Minimal time and effort is wasted for both knowledge distribution and acquisition. They further suggested that the podcasting can be utilized in various types of KM practices including, a collaborative and social networking activities. The authors have provided the technological overview of podcasting and examines and the potential podcasting usage within educational settings, podcasting contributions to academia, and future podcasting research suggestion. Finally they have concluded that the podcasting offers an easy way for users to create, distribute and manage the class and research materials. Podcasting’s multimedia attributes and the popularization of converged artifacts such as iPod offers potential academic value to its users. In the long run, podcasting has a potential to be embraced not only by consumers and academic users, but also a societal entities such as communities and government agencies.
2.4. **Literature Review of the Empirical Study Research**

Harm-Jan Steenhuis, Erik J. de BruijnSteenhuis, H. J., & Bruijn, E. J., 2006, p. 1-10, the authors have observed in their research problem, "Empirical research in Organisational Management: three paradigms”; that in operations management practitioners and academics link is weakened for that empirical research is required. In this paper they have discussed three different empirical research paradigms: the positivist, post positivist mostly aligned with surveys; and the interpretivist paradigm, mostly aligned with in-depth case studies. In this paper the authors have proposed positivist & post positivist oriented empirical research for reaching objective and generalizable results by using appropriate statistical data analysis methods. Hence according to the authors, survey method using questionnaire instrument is useful for the empirical study, which is selected for this research and appropriate statistical methods can be used to get the proper and generalizable results.

Perry, D. E., Porter, A. A., & Votta, L. G., 2000, May, p. 345-355, the authors have done empirical study of software engineering and shows a road map for improvement in the software engineering research, which includes a general structure for software empirical studies and concrete steps for achieving goals like designing better studies, collecting data more effectively, and involving others in our empirical enterprise.

The article has provided an overview of the current state of empirical studies and delineated its strengths and weaknesses, important issues that must be addressed in creating a rigorous and credible empirical discipline for software engineering. Hence these suggestions can be used in this research to make it more rigorous, credible and proper empirical study to find the challenges and problems in the academic research and get proper knowledge management research.

Falessi, D., Babar, M. A., Cantone, G., & Kruchten, P., 2010, p.250-276, the authors have proposed in their research paper titled “Empirical research in software architecture: opportunities, challenges, and approaches”, that there is a vital need for
gathering and disseminating empirical evidence to help researchers to assess current research and identify promising future research areas, and practitioners to choose appropriate methods and techniques for supporting the software architecture process. Aims at increasing the recognition of the importance and value of empirical research as an objective and structured means of assembling and analyzing the available data in order to identify and answer the most significant research questions about the effectiveness and efficiencies of different technologies in software architecture.

The article has provided an overview of the current state of empirical research and opportunities, challenges and approaches which are significant to this research, which can be adopted for the empirical study of the research.

Verma, R., 2000, p.8-25, the author has focused on the empirical study approach in his research paper titled “An empirical analysis of management challenges in service factories, service shops, mass services and professional services”. The author used a survey – questionnaire method for this empirical research for recording observations and data collections; and given a snap shot of the management challenges as perceived by managers in different industries. The article has shown a proper data collection method and instrument for this empirical research. Hence we can collect the data from research scholars using the questionnaire as instrument and through different ways like interviews, emails and Internet.

Budhwar, P. S., & Sparrow, P. R., 1998, p. 105-121, the authors have proposed in their research paper titled, “National Factors Determining Indian and British HRM practices: An Empirical study” The authors used a survey – questionnaire method for this empirical research for recording observations and data collections; and through this empirical study, highlights strong need of more cross national HRM studies, and presents four national factors i.e. national culture, institution, national business environment and business sector. Hence the article is saying that empirical study is done and proper qualitative outputs parameters are majored and highlighted. This means in this research we can use empirical study to find the challenges and problems in the academic research and get proper knowledge management research.
2.5 **Essence of Literature review:**

2.5.1. **Essence of Literature review of Academic Research:**

The researcher observed that there is very few research publications are available on the academic research related problems, challenges and issues and providing study of the current status of academic research in India. Very Negligible number of research papers available, which are specifically focusing on academic research. As per the available knowledge references and the literature studied on different categories like academic research, current status of India in academic research and challenges of academic research the researcher conclude here that, the academic research is a most important domain of a developing country. The academic research plays very important role in the development of country. India is a fast growing country. But as per the literature review still we need more focus for quality research and to increase India’s global research contribution. Hence more focus towards increasing the standard of Higher Education and academic research is required by Indian government. As we have seen overall world ranking of Indian Institutes and Universities; we are lacking behind in different aspects like infrastructure, facilities, ICT network, research collaboration, research environment, legal aspects, rules and regulations and so on.

It can be observed in literature is that India need to improve in various aspects of academic research like research procedures, standards, quality and quantity of research, application and innovation in research, international level publications, citations and impact of research, research collaboration at international level with different Universities. These and various factors are needed to be more focused for improving research. The literature study about challenges of academic research was focused on different points just from starting with the selection of suitable research topic for the new researchers, to the final completion and submission of thesis. Navigating the new research topic is most important challenge of the new researchers. As compare to last few decades the number of research scholars and their awareness about research is increased. The lots of research scholars are doing their research in Indian under various
research institute and universities. The unavailability of proper infrastructures, expertise, tools, resources, knowledge gap is the most important challenges of the researchers. Again apart from this, various challenges related to research environment, sources, funds, awareness about social requirements, rules, regulations and many more issues might be there under scope of this research.

The researchers are having lot of challenges, from identifying research topic, to how to write the thesis? The research scholars were unaware about the availability of Repository. If few researchers who know about the research information utilities they were not confirmed about a single unit. Researchers have to search on search engine lot of times for the data and finally lot of time, energy and money had been wasted in throughout this process. Means, there is no any single utility available nationally which can provide proper solution for new researcher to get information about the new research topic, how many researchers are working on this topic, what is status of this topic, what amount of work is done on this topic and so on. These all points putting in mind, the researcher has got idea that there is lack of information and wide scope to study in this area and planned to have a Research on this topic.

The literatures gives knowledge about the lack of information of research, research methodology training, research and communication tools, research and subject expertise and their availability, infrastructure, network, libraries and so on. Hence the literature study diversifies the researcher to focus his research, to study the basic problems, challenges and issues faced by researchers during their research, to know the basic problems of the research scholars and suggest proper solution for them.

2.5.2. Essence of Literature Review of Knowledge Management:

As per the given references related to knowledge management, researchers want to explore the uses of Knowledge Management in Business Organisations, research and development organizations, universities. We can conclude that the Knowledge Management is the most important field, though there are different view on definition of
KM and but it’s proved that the KM is playing very important and vital role in the growth and development of business organizations. The organizations most important asset is knowledge set of employees working in the organization. It is having power of innovation, to improve the results and make positive growth of the organization. The Knowledge should be managed in proper way to achieve the goal of organization that means there is need of Knowledge Management System, using ICT or without it, to manage it and deliver the highly desired output.

As so far in last few decades the KM is mostly used for the development and growth of the business organizations. Now days, it has taken important place in various organizations; one of them is Research & Development organizations. In literature review have seen, all top most research organizations like NASA, ISRO, DRDO, etc. are implemented KM Systems for the total knowledge management of research organization. A new global era of UNO: Socio-Economic Development and Knowledge Based Economy, all countries are trying to use knowledge management in various fields as an important tool for their overall development.

The researchers are doing their research in KM, for designing KM model for research organization, for implementing KM System in various organizations, to evaluate the success of KM System, to find the need of the KM System, To know the effective use of KM in organization, to find the critical success factors of KM, and to compare the effectiveness of KM in various industries.

As per the study, from last few years’ education institutes and universities are trying to implement the KM for the benefit of the students, faculties and research students. Researchers are doing research on different KM Models, KM System Architectures, and KM System implementations for institute level for E-learning environment, distance learning and other related activities of the educational institutions. The research community can use KM System to share the research knowledge among researchers in particular institute or organization. But as per the study of the research so far, there is lack of research related to KM System in any institute, organization or university which is specifically designed for the research community. A KM model
designed specifically for the research community is not available. Hence the researcher self-motivated to do this empirical study, to know about the proper requirements of researchers, the actual problems, issues and challenges faced by the researchers during their day to day research activities. Then researcher want to study and develop a proper theoretical KM model for the research community and KM System architecture for implementation of KM System at institute or University level considering the scope of integration of these KM System at National or country level.

2.5.3 Essence of Literature Review of an Empirical Study:

The given knowledge references related to empirical research gives idea about the importance of the empirical evidence in research. The empirical research is having its special significance in scientific research. The empirical research could be survey based research and questionnaire and interview are the instruments for data collection. The appropriate statistical analysis tools and methods must be used for data analysis and interpretation, for more generalized results. Hence researchers should follow the empirical study in their research to provide proper evidences. We can focus our research study as an empirical research study. This empirical research includes survey method for data collection and questionnaire as an instrument. We can focus research empirically to study the researcher’s problems, issues and challenges in true manner to provide the empirical evidences.

2.6 Essence of overall Literature Review

Through this categorized study of literature review, the researcher firstly focused on the academic research and observed that mostly research is related to most important word that is knowledge. Research is systematized effort to gain new Knowledge, to create knowledge, advancement of knowledge, to verify and to expand existing knowledge and so on. Consequently, research most significant harvest is the knowledge; means research is mostly focusing on creation of knowledge in the particular research
subject or stream or area. The researcher also studied the importance of academic research in the economic development of country. The academic research is important asset of the country.

Now a days, Higher Education and Academic Research facilities are provided by total 712 different Universities and Institutions in India. Maximum number of central, state and private universities and institutions are working on academic research through research oriented programs like Ph.D., M. Phil. and post graduate degrees. Every year thousands of students are enrolling for these courses. They are doing their research in different fields and generating various research documents like research thesis, dissertations, research papers, articles, etc. means the lot of knowledge creation is happening in various research areas. There is scope of study to manage this generated knowledge in effective manner for betterment of society and research. Researcher found that Knowledge Management is the most important issue in the academic research.

Then, researcher studied about the problems, challenges and issues faced by the research scholars during their research work. The researcher has studied Literature and found that in the academic research, research scholars are facing various problems, challenges and issues, which are commonly related to the infrastructures, facilities, information resources, exchange of knowledge, code of conduct, quality of research, international level recognition of research and so on.

The researcher focused his study on Knowledge Management and the use of knowledge management as a solution for the research scholar's various problems. After study of literature the researcher found that Knowledge Management approach towards academic research would be helpful, because it is successfully used in different business organizations, R&D organizations to enhance the performance of the organization in more innovative ways. The researcher found that Knowledge Management was effectively used in smart universities, high tech academic institutions for different purposes, like E-learning management, examinations, teaching and learning and so on. As per the study it is found that no any knowledge management system model is developed specifically for research community. Hence this research problem as a
research topic is mostly considerable. In this research researcher has to work for design a better solution for the research community, researcher has to study the need of Knowledge Management of the research community. Means need to know what actually major problems, challenges & issues are faced by research community. What solutions are expected by the research scholars? What type of suitable solutions would be developed for the research community? How can it improve the quality and quantity of research?

Finally, the researcher here concludes that through this spectrum of the light of literature review, among the various research aspects of the Academic Research and Research Community, this research is now focused specifically on an empirical study of challenges of academic research community and the need of knowledge management. Through this researcher have defined problem statement as follows:

“To study the challenges faced by academic research community during various stages of the research. To know the problems faced by the research scholars and to study the need of Knowledge Management for Research Community.”