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A Knowledge Management approach for Developing Research Community among Universities

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Abstract: Universities provide Research Foundation degrees and Research oriented degrees like M.Phil., Ph.D. and Post Doctoral degrees through a network of Research Centers, Research Institutes & University Departments. This is centrally managed through collaboration with other institutes; but raises the challenge of making best usage of vast amount of knowledge and expertise in research.. Researchers who are working at different locations are not able to collaborate without creating or providing the research network. A mechanism by which this expertise can be shared is the need of the day. This can be achieved through a proper Knowledge Management System. This system should be investigated and then it should be employed at the university level in the form of tool. The Research scholars would be able to use this system as an important information and communication tool. This Knowledge Management System can serve as set of features for sharing research related databases, ideas, research experiences, knowledge, expertise, etc. This study is based on Knowledge Management approach for Research Knowledge Community development and specifically focuses on need of development of the system at university level. It aims to collaborate more number of researchers and high quality research in multidisciplinary and interdisciplinary streams.

Keywords: Knowledge Management System (KMS), Research Knowledge Community (RKC), Research Knowledge Exchange Network (RKEN), Research Knowledge Management System (RKMS).

I. Introduction

The rapid development in information technology and science changes the paradigm of the university, now a day's universities are working on online systems. Universities have adopted online solutions for different processes like admission process, convocation process, exam applications, online exams, etc. The research projects and research work running in the university, has most important assets of the university [3]. The researchers contributing in their research work are most important knowledge resources. Researchers having subject expertise and set of knowledge in the respective subjects, due to various research projects and research work experience. The new researchers are adding in the list by obtaining different degrees like M.Phil., Ph.D, Research Fellows, Research Project Assistants. These all researchers, research supervisors and related all individuals forms a Research Knowledge Community (RKC) in the university. They need help and expertise guidance in different tasks of research process [14]. They initially rely on resources available in university like library, internet & expert consultation. But the expertise knowledge with individuals will not able to communicate due to geographical distances, so the knowledge exists in the individuals in the university should be managed in the university. Problem arise in the university is knowledge of individuals is not documented and well organized, and even the university itself does not realize that the individuals have knowledge that can enhance competitive advantage among researchers. Though this system, the Research Knowledge Exchange Network (RKEN) should be formed among the RKC. Through RKEN, researchers can easily get idea about the expertise and knowledge set of individuals, they can pass information, communicate each other, share their views and experiences through RKEN. This research knowledge can be managed by scientific systems, known by the term Knowledge Management System (KMS) [3]. In general, the implementation of KMS aims to increase the competitive advantage of university and can be one factor to improve the performance of the university.

II. Research Knowledge Community

A social, religious, occupational, or other groups sharing common characteristics or interests perceived or perceiving itself as distinct in some respect from the larger society within which it exists (usually preceded by the); the business community[2]; the community of scholars. A community is a social unit of any size that shares common values. Although embodied or face-to-face communities are usually small, larger or more extended communities such as a national community, international community and virtual community are also studied.

As the concept of community, the university and its related institutions, colleges and students, teachers and other staff, these are named as academic community [3]. In academic community, the special and important community in higher education, at university level is Research Knowledge Community (RKC). The RKC is a community of research scholars, research facilitators and research staff as shown in the Fig. 1.1. RKC at university level includes different research institutions, research centres, university departments which are the controlling bodies for the researchers. The RKC members can be distributed in two different types i.e. direct members and indirect members. The RKC direct member means, who are directly related to the research work as individual – Research Students, Research Fellows, Research Assistants, Research Guides / Supervisors. The RKC indirect member means, the members, who are not directly working on research but they are working as employee in the university departments, institutions and libraries. Also the other research experts and research scholars from other universities can be indirect members.

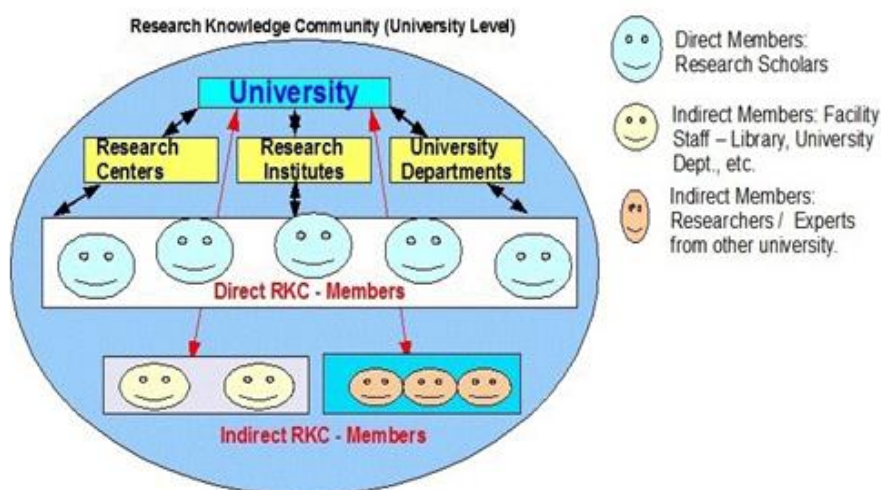


Fig. 1.1: Structure of Research Knowledge Community

The RKC is having a common interest, common goal of research. The research of university is important knowledge asset of the nation. The government is always motivating the scholars for the research activities through offering different research student's scholarships and research project grants. The RKC would be a special kind of community which always needs interaction, communication, and sharing of knowledge from various streams and disciplines for innovative research work. The community members are trying to regularly contact and interact with each other for sharing knowledge and information of research, through different conferences, seminars, workshops and development programs, etc. The RKC is most important community and its individual member is a knowledge asset of the university. Since, till date there is no any such kind of community formed, or properly organized in the universities. Formation of RKC can make healthy environment for research in the university, by providing technology, tools, and various platforms for RKC, to inculcate the importance of research knowledge in students. This would be helpful for the high quality research with more positive and proper output to the nation building.

III. Knowledge management

A. What is knowledge management?

There are many definitions of Knowledge Management [3], here we have combined the Knowledge Management and Organization Management literature to define Knowledge Management as the process of selectively applying knowledge [4] from previous experiences of decision-making to current and future decision making activities with the express purpose of improving the organization's effectiveness [5]. This definition allows us to define the goals of Knowledge Management [3] as:

1. Identify Critical Knowledge
2. Acquire Critical Knowledge in a Knowledge Base
3. Share the stored Knowledge
4. Apply the Knowledge to appropriate situations
5. Determine the effectiveness of using the applied knowledge
6. Adjust Knowledge usage to improve effectiveness.

B. Why do we need knowledge management for RKC?

The idea that an organization's most valuable resource is the knowledge of its people and basically Knowledge management is based on this idea. This idea is not new – organizations have been managing “human resources” for years. What is new? is the focus on knowledge[13]. This focus is being driven by the accelerated rate of change in today's organizations and in society as a whole. Knowledge management recognizes that today nearly all jobs involve “knowledge work” [13] and so all staff means “knowledge workers” to some degree or another meaning is that their job depends more on their knowledge than their manual skills [9].

In the same manner here, in this study university as an organization, and research knowledge community is most important part of the university. Research output and Research scholars are main knowledge resources in the university. The individual's set of research knowledge in the university, is major and important asset of the university. This knowledge set of researchers should be managed, means that in real sense the Research Knowledge Management of the university. The Research Knowledge Management means that creating, sharing and using the research knowledge, these activities are the most important activities, every person in every institution under the constituent of university should know about this. Do we know everything we need to know or are there gaps in our knowledge? Of course there are gaps in research knowledge. The current modernization programs requires us to let go of what we knew and to learn and apply new knowledge in research. In this concern the following questions should be asked to RKC's individual members [8]:

- Do we share what we know?
- Is the knowledge of individual researchers available to the university?
- Is the research knowledge of organizations available to all?
- Not at present. How many times have we lost valuable knowledge and expertise when a staff member moves on?
- How many times have we “reinvented the wheel” when we could have learned from someone else's experience?
- Do we use what we know to best effect? Not always.
- Clearly our knowledge has not always been applied to best effect, do we think? We lacked the time or resources to do anything about it?
- How many times have we implemented a new initiative, only to find we reverted back to the “old way” a few months later?

The answers for this question would be the basic reasons for forming RKEN, using RKMS as a medium of communication for RKC. In terms of how that can be done, the processes of knowledge management are many and varied [8]. As knowledge management is a relatively new concept [4], organizations are still finding their way and so there is no single agreed way forward or best practice. This is a time of much trial and error. Similarly, to simply copy the practices of another organization would probably not work because each organization faces a different set of knowledge management problems and challenges. Knowledge management is essentially about people – how they create, share and use knowledge, and so no knowledge management tool [9] will work if it is not applied in a manner that is sensitive to the ways people think and behave.

Knowledge Management and few definitions: “The creation and subsequent management of an environment, which encourages knowledge to be created, shared, learned, enhanced, organized and utilized for the benefit of the organization and its customers.” Abell and Oxbrow, tfpl Ltd, 2001. “The capabilities by which communities within an organization capture the knowledge that is critical to them, constantly improve it, and make it available in the most effective manner to those people who need it, so that they can exploit it creatively to add value as a normal part of their work.”BSI's A Guide to Good Practice in KM.

IV. Research Knowledge and Its Resources

Research Knowledge means the information collected, created, generated through analysis and stored in minds of researchers in form of experiences, stories, conclusions and suggestions. Research Knowledge is conclusive information [10] that forms the basis for thoughts, actions, and beliefs.” It includes the theories and experiments of scientists, who collaborate to establish our knowledge of the external world. Research knowledge is a scientific knowledge which is generated by proper scientific Research methods. Research Knowledge is having its own value in the research field and interdisciplinary research too.

Research Knowledge is majorly concerned with individual researchers, is the information created and stored in their minds like their experiences, actions, thoughts, observations and beliefs during the time of research work activities. When we represent the knowledge means that, we can store and manage the explicit knowledge. The data can be managed in the different forms like text, images, charts, etc. but really managing the tacit knowledge is very different, we can try to represent this type of knowledge using the few formats, like we can store videos, audios, images and stories about the exact experiences during their research experiences. These data would be managed in data server, which can make available to the researchers to share the knowledge or tacit knowledge. This would help the researchers to prepare future plan in their research

V. Research Knowledge Exchange Network (RKEN)

During this study, after discussion with researchers, views comes out, RKC would be a effective community. RKC formation, organization, implementation is important task for the universities. The main purpose of RKC formation, is to provide common platform and tools to the research scholars for the exchange of Set of Research Knowledge (SRK). SRK related to different research tools and techniques, Statistical Analysis tools, various research disciplines, research methodologies, research streams, etc. The short comings of SRK in RKC would be fulfilled within itself as community. Researchers will get idea about the SRK of individual research scholars and related problems would be solved easily. RKC would arrange different activities for the sharing of knowledge and ideas related to their research, which will help them for further development. Hence for communication, sharing, exchange of ideas, learning new tools, university research environment, would require the proper network. The network, in the sense of Person to Person P2P, Person to Application P2A, Application to Application A2A interaction for the closeness of RKC. This network, basically exchanging Research Knowledge among RKC, is nothing but Research Knowledge Exchange Network (RKEN).

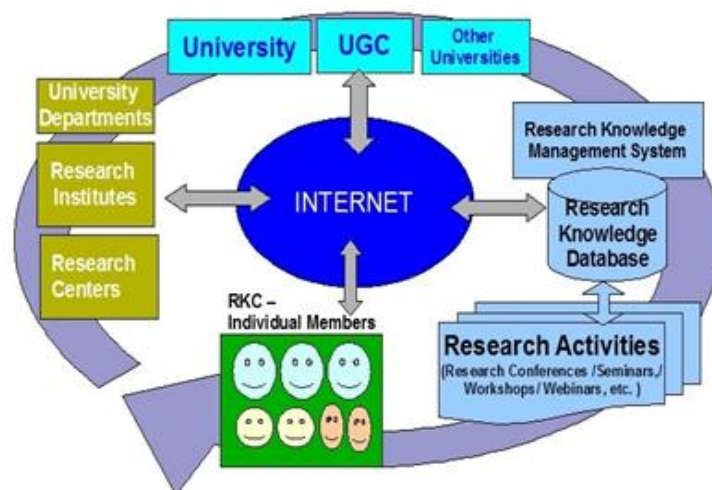


Fig. 1.2: Research Knowledge Exchange Network

The RKEN is amalgam of each individual research scholar, Colleges, Institutes, Research Centres, set of infrastructure, hardware, networks, Research Knowledge Management System (RKMS), and various required tools and techniques. As shown in Fig. 5.1, at higher hierarchy level, UGC (University Grant Commission), University and Other Universities, treated as a controlling body for the Research Activities. These bodies will control the all protocols, activities & procedure of the RKEN. The next level is University Departments, Research Institutes / Colleges / Centres; these are working as a facilitators for individual research scholars. Individual Members of RKC are the end users of this RKEN, who are get benefited by this network. The main tool which should be developed, for the implementation of the RKEN, is the Research Knowledge Management System (RKMS). The RKMS is the main concept, which would be a interface or important media tool for the RKC – all members. RKC can directly communicate with each other using RKMS through the Internet. The RKEN would be a network system in the university, which will encourage RKC members to think about, and articulate the benefit and value to the RKC. RKEN would be a really good system for organizing and formation of RKC. In true sense RKC would be active with the proper working RKEN. The RKMS would provide a proper support for the RKC, for communication, sharing of research knowledge, etc. The next task for the development of RKC is to define the architecture of RKMS. Through the analysis of different needs and requirements of researchers. Challenges faced by researchers, the actual RKMS should be designed, which would be a complete solution for the researchers. All queries, questions and knowledge gaps should be filled with the use of RKMS in the RKC. Once the RKMS is developed and implemented, then for the awareness and importance of RKMS in RKC, we should provide the training for the researchers. Training program should include all aspects of the RKC like what is mission, goals and objectives of the RKC. How these would be achieved by the RKEN & RKMS. What are the Dos & Don'ts with system? How RKC and individual researchers would get benefits from this system. What different tools are available in the system for the communication, searching, sharing, and presentation of research knowledge. All important points, training program should be developed for all the members of RKC. After implementation and training of RKMS, RKEN would be in working conditions for the benefit of RKC. The RKC would be working in real sense, by the use of RKEN and RKMS in university and research scholars. The research scholars would come closer for their future research activities without any geographical distance barrier and they can exchange the ideas for mutual benefits. The Research Scholars could get all information and knowledge on a single point and which is authorized

system, Research Scholars can get knowledge related to research activities, conferences, seminars, Ph.D. Vivas, research presentations and so on. They can easily search contact for any SRK and can contact with each other to get solutions.

VI. Conclusion, Recommendations and Future work

A. Conclusion

This study is specifically focused on the Knowledge Management approach in research. An idea of developing RKC within university is for the research scholars so that the communication and knowledge gap among them can be avoided. The formation and development of RKEN and the implementation of RKMS would be a major task in the development of RKC. The RKEN formation, which is in progress, would be beneficial for RKC to great extent. RKMS would be a complete system for the research scholars for their exchange of SRK- for designing, disseminating, sharing and managing various research related protocols, rules, regulations, ideas, etc.

B. Recommendations

The following recommendations are suggested:

- 1) Any university can run the pilot project for the development of RKC, because till date no university has designed such RKC.
- 2) The proper Knowledge Exchange Network must be formed by research and redesign of the RKEN. The RKEN formation would be a continuous and repetitive process of diagnosis, analysis, implementation and verification.
- 3) The Knowledge Management Systems must be studied and challenges of research scholars should be investigated before the design of RKMS.
- 4) The RKC would be incomplete without formation of RKEN and without implementation of RKMS; hence all the activities should be started immediately for further development of RKC.
- 5) A proper model should be designed for both RKMS and RKEN.
- 6) The success of this system would be a major achievement for the respective university. This can be an initiation of integration of university, UGC or national level RKC.

C. Future Work

This is a conceptual study for developing a RKC, hence it is at infant level. Several process have to be carried out in the implementation of RKEN. The basic stages for developing the RKC includes,

1. Propose RKC to university authorities,
2. analysis and design of the RKEN and RKMS
3. developing Architecture Model for RKMS,
4. Software engineering for RKMS
5. evaluation of RKMS and its benefits to RMC.

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