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Cloud Research for Social Work – 5th Generation Research Methodology

KEYWORDS: e- Research, e- Questionnaire, Virtual Research, Cloud Researching

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ABSTRACT *Today, Human is not a mere social animal; advancement in technology made them techno-social. To deal with the techno-social animal it would be much appropriate to revamp the research methodologies particularly used in humanities and social science researches. The hope is that it will be possible to create powerful "Virtual Research Environment" consisting of a set of sophisticated tools and technologies that will ease the extraction of information from data, and knowledge from information. In this dimension, the paper advocates an initiative to analyse and support cloud researching in social work. Moreover, the objective of the National Knowledge Network1 (NKN) is to interconnect all research institutions with a high speed data communication network to facilitate knowledge sharing and collaborative research. The cloud research would fulfil this objective by providing an open source platform for data collection and e-research analysis. In short, this paper has a double goal. First, to introduce the innovative cloud research methodology as 5th generation research methodology a, historically suited, set of interventions to existing practices in social work. Second, to moot methodological, political and epistemological debate in social sciences, thereby accepting the comments and suggestions*

I. INTRODUCTION

Whether it's the cloud research in India, or e-research in Australia, Grid in Europe, Cyber infrastructure in USA or e-Science in UK, a transformation is clearly occurring in research practice, a transformation that will have a profound impact among professional social workers, academicians and research scholars in humanities and social sciences.

The term e-research in a methodological sense was first used by Tery Anderson and Heather Kanuka (2002)[2]. In their research methodology addressed to researchers in the field of education, they define e-research basically as 'Net research'. It includes online surveys and interviews, log file analysis, analysis of social behaviour in virtual reality environments and online evaluation of knowledge. Their use of the term e-research is very close to Christine Hine's use of term 'virtual methods' or by the term 'Internet Research' cited by a growing group of social and humanities scholars, the group which has organized the Association of Internet Researchers AoIR (www.air.org) (Janko wski, Jones, Lievrouw, & Hampton, 2004).[3] But this paper used the concept of e-research differently and specifically with reference to cloud computing.[4] The core idea of cloud research is that knowledge production will be enhanced by the combination of pooled human expertise, data and sources, and computational tools.

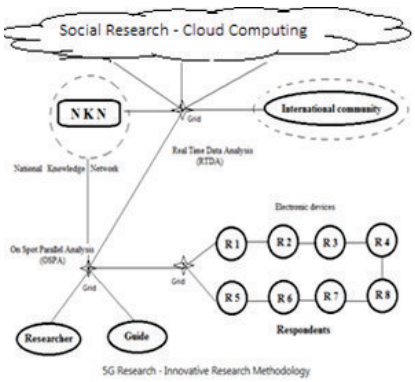
It typically *"entails harnessing the capacity of information and communication technology (ICT) systems, particularly the power of high capacity distributed computing, and the vast distributed storage capacity fuelled by the reducing cost of memory, to study complex problems across the research landscape."*

II. CLOUD RESEARCH AND GRID NETWORK

The term cloud research is used to describe the hybrid computing and network infrastructure that enables social research environments such as the "co-laboratory, grid network, virtual science community, and e-science community." The grid is a specific instance of cyberinfrastructure[5]: a collection of distributed cloud computing (data repositories, specialized scientific equipment, computing power, knowledge services) that appears to users as one virtual system. The National Knowledge Network[1] (NKN) is a state-of-the-art multi-gigabit pan-India grid network used for providing a unified high speed network backbone for all knowledge related institutions in the country. The NKN will enable scientists, researchers and students from different backgrounds and diverse geographies to work closely for advancing human development in critical and emerging areas. This grid could play a vital role in the development of cloud research, enabling the sharing of data, computational power, and specialized equipment on a global scale. It can perhaps best be characterized as a step towards sustainable and inclusive research.

III. CLOUD RESEARCH AS INTERVENTION

To conceptualize the development of cloud research in social work and social sciences as an intervention in the practice of knowledge creation. The drive to create new modes of knowledge generation that is dependent on, and mediated by, hybrid computing networks has usually not been the result of the autonomous development of the field in question, but rather of interactions. For example, biotechnologists have not accidently hit upon the idea of stimulating a living protein receptor in a 3D graphical immersive environment. Rather, this resulted from interaction with computer scientists involved in the creation of virtual reality environments and of visualizations, which ultimately led to the development of an Open Source Drug Discovery (OSDD), with Bioinformatics as nodal branch in the field of computational biology. Coalitions are therefore created around advanced research instrumentation. Funding schemes, tools, researchers, institutional frameworks and research agendas interact to form these coalitions. Presently, we are witnessing the emergence of this type of interaction in humanities and social sciences.



IV. INTERVENTION AS CONCERN FOR SOCIAL WORK

It may be fruitful to conceptualize the cloud research as an intervention in current practices, potentially upsetting the practises and disrupting the existing fabric of social relationships that carry knowledge creation. But this conceptualization emphasizes the recognition of thematic, theoretical and

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methodological factors which is attached to the term cloud research. It is also relevant to acknowledge the fact that cloud research as intervention needs to be understood in sociological as well as epistemological terms. There is a need to step back from involvement in the culture of a particular field to be able to see these intricacies. It is understood that the expertise developed in the field of science and technology studies are significant. Because the accountability for scholars is not a particular field being investigated, this provides a relative distance from its dominant paradigm. Thereby having a degree of freedom to engage in experiment and play with new forms of research that may be enabled in this cloud research, and to reflect on the consequences. This leads to an immediate new involvement in that field, opening virtuous cycle of engagement and disengagement. This cycle can only be sustained on the basis of theory about innovation in a particular field that is partly independent of the state affairs in that field.

V. E-QUESTIONNAIRE METHODOLOGY

When data can be communicated within seconds irrespective of distance, cross cutting the geographical barriers then it is not judicious in still using conventional data collection methodologies. Rather it is now appropriate time to blend innovation with data collection methodologies in social work. For this, we have developed an e-questionnaire[6] cum online quantitative and qualitative data analysis e-tool. Under the brand name '5G Research', the e-tool can be used for primary data collection and cloud analysing/researching in humanities and social sciences. The Respondents for e-questionnaire[6] need not necessarily be e-literate, even an illiterate person will be able to respond to the questions with the help of pictorial effects as supported by the e-tool. The 5G Research e-tool[b] can be used in both online and offline mode thus addressing the internet constraints. When compared to conventional schedule or questionnaire methodologies, the 5G Research e-tool [b] will be more interactive because the respondents themselves answer the questions through electronic devices like computer, laptop, tablet and Smartphone. Also, at present the e-tool supports 14 Indian languages so that the respondents can easily understand the meaning of each and every question in their native language. In addition, it supports all the international/national languages that are supported by Google. Moreover, the e-tool does not confine itself to closed-ended questionnaire alone rather it facilitates both semi-closed and open-ended questionnaire methodologies. Both comparative and non-comparative scaling techniques can be used in our e-tool, thus fostering the research adaptability. Logical flow of questions in e-routed mode avoids duplication and reduces the time consumption for respondents. From researcher point of view our e-tool increases the questionnaire response rates, saves time, reduces expenditures and also conserves paper contributing to eco-welfare. With e-questionnaire proven to be a viable primary data collection methodology, the design of questionnaires and collection tools has to be revisited to adapt to this new methodology among the academicians and professionals in humanities and social sciences.

VI. CLOUD RESEARCH METHODOLOGY

The paper elucidates the working principles of cloud research. First of all, cloud research makes use of e-questionnaire methodology. So the moment when respondents completes the questionnaire, the data can be analysed on the spot itself, thus facilitating the Real Time Data Analysis (RTDA)[7] and promotes multitasking and parallel processing in research methodology. These innovative features contribute for adaptability in the research methodologies used in social work. Moreover, the data analysed in the cloud research could also be used in the other commercial statistical software packages like SPSS. Thus, cloud research can be best viewed as collaborative research which aspires for collaboration nationally and internationally. It harness the opportunities rendered by NKN Grid network by means of knowledge sharing with the scholars and resource personals. Contributions from diverse stakeholders would enhance the research quality and at same time it brings transparency, accountability and reliability.

VII. CONCLUSION

Research is changing dramatically. It is becoming more multidisciplinary, more collaborative, more global, and more dependent on the capabilities offered through advanced networks and large data storage. These changes provide new opportunities and challenges for social work professionals; scholars should bring their know-how forward and actively engage in developing, fostering and building our partnerships with each other. Therefore, the Cloud Research challenges the academicians to think globally and act locally!

ACKNOWLEDGEMENT

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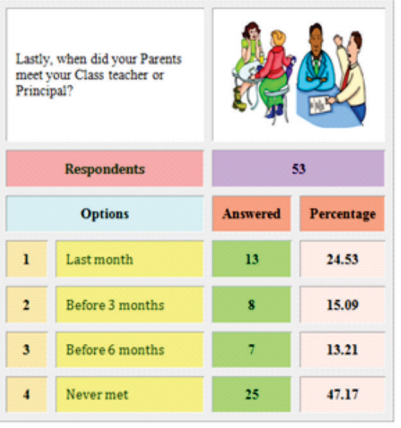
Notes:

a. 5G Research e-tool - web: (www.sociotechnology.in)
b. Demo videos on 5G Research e-tool can be downloaded from (www.sociotechnology.in/demo)
c. Authors can be contacted at balamurlikrishna@gmail.com [a1] prathiba01@yahoo.co.in [a2]

VIII e-Questionnaire Snapshot



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