Impact of ICT Innovations on the Quality of Business Research Process in Higher Education Institutions

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ABSTRACT

Information Communication Technology (ICT) influences the business process in ever increasing dimensions. It no exception that ICT has affected all forms of research domains and as such business research is no exception. Use of ICT has dynamically changed the business research process. Its role in transforming business research in higher education institutions (HEI’s) needs to be analyzed thoroughly. The process of business research is a multifaceted process that results in making available data which is significant to the business process for being successful. Business research enables identification of potential customers, gauging competition and self-assessment. India aims at increasing its knowledge capital through genuine research that has practical implications. ICT development has been the one the core sector identified for infrastructure development in higher education institutions. The business research process is highly influenced by the collective pool of information available through ICT. This review paper aims to do the assess the impact of ICT on business research process in higher education institutions. The paper would focus on evaluating the contribution of the business research process in higher education through ICT. How substantive ICT has been in contributing to the effective research of business processes and how has it become indispensable to the process of research in business studies. The methodology used is an extensive exploratory study based on the higher institution where ICT has been implemented. The data is collected from various journals, websites, research based articles, etc.

Keywords— ICT, business research, higher education institutions.

I. INTRODUCTION

Business research is one of the core strategic tools that contribute to the functioning of successful business models. Business research is necessary to create new knowledge from the use of existing knowledge for the accomplishment of different objectives. A substantive role is played by research in higher education educational institutes to by preparing and disseminating knowledge to society and contributing to the economic development [1]. ICT has been one of the core focused areas that have been a primary agenda of all the educational policies in recent past. ICT is defined as a diverse set of technological tools and resources used to communicate, create, disseminate, store, and manages information. These technologies include computers, the Internet, broadcasting technologies (radio and television), and telephone [2]. In present day ICT plays a significant role in the dissemination of sustainable quality education worldwide [3]. Ho [1] explains the role of ICT as

‘-provides the infrastructure (computers, broadband, wireless, etc.), data collection and storage, processing, computing power, visualization, simulations.
- helps convert data into useful information then business knowledge, presumably profitable knowledge.
- helps reap collective wisdom through community collaborations such as Open Sources and community software, wikis, and blogs to enhance the quantity, quality, and thoroughness. However, the collaboration needs to be structured and have a well-defined orientation to be effective. - helps accelerate research and innovation with Open Sources and Open Standards.’

Various educational policies emphasize the need and development of the ICT at different levels to bring efficiency in delivering education system. The Indian government is utilizing ICT in developing education from elementary to higher education. The government has significantly increased the financial allocation to the education sector in the previous plans through education cess for funding various government initiatives [4]. There are various factors that influence the change ICT brings in education and are beyond the direct control of educational ministries [5]. ICT presents an excellent opportunity for achieving excellence in higher education in India through
its implementation [6]. Government of India understands the importance of ICT for business research and its role in developing the resilient business economy and as such benefit whole society. Businesses that use ICT are more innovative [7].

The role of ICT in business research higher education institutions over the past two decades has been transformational and supportive. ICT has been an enabler for many strides achieved in the Indian educational system. India has 45 central universities, 313 state universities, 175 state private universities, 129 deemed universities, four institutions established by state legislature making a total number of universities to 666 currently. The number of colleges in India is 39671. Besides this 10,700 management institutes provide professional management courses [8]. Establishing of such a vast network of educational infrastructure signifies the commitment government towards education policy. Education policy of the past two decades has recognized the need for ICT and potential that it for the development of education and research in higher institutions. ICT has become as a socially necessary constituent of higher learning in India, In the following sections we study and analyze the role of ICT on business research quality through various facets(Fig1).

Fig 1: Source author

ICT and Business Research facets

II. ICT AS A FACILITATOR OF BUSINESS RESEARCH

Information Communication Technology has played a huge role in transforming the research in higher institutions. Research process has become more collaborative and personalized for the business researcher in higher institutions. ICT tools through the presentation of a broad range of innovative solutions have very well played a role of facilitator for the business researcher. It has enhanced the research process both on the campus and off the campus for a researcher. In 2005, the number of doctorates awarded in the field of business studies was 1096 which has seen a growth of 45 percent to 1585[8, 9]. ICT which has increasingly established its presence in the

higher education in last decade can very well be attributed to a significant growth factor for the increase in a number of business studies being undertaken in higher education. In several scenarios, ICT enables the firm on which a researcher is working to dispense essential secondary data for research in soft copy only through which is then used for analysis. A business researcher wouldn’t have been able to comprehend and successfully undertake studies such as big data analytics in the scenario where ICT is nonexistent. ICT infrastructure in higher educational institutes has dramatically been up scaled in the past few years in India which has transpired into the manifold increase in the number of business researcher endeavoring into the field. ICT has acted as a promoter of business research in higher education department along with other several contributing factors.

III. ACCESSIBILITY

A quality business research requires high-quality articles encompassing both conventional fields of business processes and cross-functional, multidisciplinary research that holistically reveals the business problems. Hence, accessibility to research happening throughout the globe is an important contributing factor in making research relevant efficient in the present global business setup. Indian research findings are underrepresented and are not given prominence on the global scale [10]. ICT through various media’s plays a crucial role in increasing the availability international research to the business researcher. Simultaneously it provides new avenues for Indian business research to reach a global market. ICT facilitates collaboration amongst the universities and helps in developing synergy amongst them in research. Different government initiatives in India have been implemented for ICT development in higher education. National level initiatives like INFLIBNET project act both as a platform for publication of research and resource for research.

Shodhganga provides access to full text Ph. D theses submitted to universities in India; these are highly resourceful for business researchers. National Library and Information Services Infrastructure for Scholarly Content (N-LIST) provides access to e-resources to students, researchers, and faculty from colleges and other. Its facilitates cross-institution subscription to e-resources for sharing at national level. N-LIST is a joint-collaboration of UGC-INFONET Digital Library Consortium, INFLIBNET Centre, and the INDEST-AICTE Consortium.

Similarly, DLI project funded by the Department of Electronics and Information Technology, The Ministry of Communication and Information Technology (MCIT), Govt. of India provides access to is a digital collection of freely accessible rare books collected from various libraries in India [11].

Another significant step at national level which has hugely impacted the ICT implementation in higher
education is National Mission on Education through ICT (NMEICT) known as SAKSHAT [12]. Under this various projects have constructively contributed and increased the access through providing connectivity, along with provision for access devices, to institutions and learners and content generation. NMEICT will cost 50 billion INR and aims to provide increased Internet connectivity facilitating easy accessibility to the research materials on the internet [13].

Increased access through these ICT initiatives acts as valuable research inputs for business researchers. Besides this its only because of facilitation through ICT that Universities subscribe various international journals. The funding through UGC and MHRD though not always adequate is very crucial for the success of business research. Another essential facility in HEI’s is the ability to access intranet services of University e-resources through the internet which has allowed off-campus access to researchers. At international scenario, there are various consortia of e-resources of many higher educational institutes which can be accessed through the internet. The use of ICT in Business research has alleviated the accessibility issues to a large extent and has empowered the business researcher.

IV. DATA PROCESSES

In recent times, business research ICT has an impact on the collection, analysis, and presentation of data. In the yesteryears, these tasks were performed manually with pen and paper, and as such were susceptible to error, scalability was limited, and these activities were expensive. In the past two decades particularly in business research data collection and dissemination has been technology majorly supported and its non-adoption could lead to competitive disadvantage for business research [14]. For most business researcher’s data collection is central most of the business research projects [15]. Most forms of business research require data collection either primary or secondary and is crucial for business research in most of the cases. ICT has played a crucial role in collection research data through various methods like online questionnaires, online video interviews, telephony, email and many others. ICT tools in higher educational institutions have the capacity to produce digital surveys that enable the business researcher to upload data to storage locations in real-time, cutting back the conventional challenges associated significantly. ICT facilitates data collection over large geographically distributed population for business researcher while employing minimal resources. But there is also need for caution while collecting data online for business research, careful consideration must be taken into account for different response rates in the population before using them in online data collection process [16]. Online data collection is a way for future business research though it requires careful selection of sample and methods to ensure participation by sample populations.

<table>
<thead>
<tr>
<th>ICT assisted Data Collection</th>
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<tbody>
<tr>
<td>Transactional</td>
<td>Online and in-store purchases, Machine performance, Online phone, in-store inquiries.</td>
</tr>
<tr>
<td>Observational</td>
<td>Click-through paths on the Web, Stock price valuations, Online Web visits and in-store shopping trips, Biometric measures, (e.g., neuro-marketing, AMRI, PET, eye tracking), Stock price valuations.</td>
</tr>
<tr>
<td>Conversational (Touch Points)</td>
<td>Surveys, online and in-store intercepts, Call center interactions, Blog activity, Candidate interviews, Performance reviews, Exit interviews, Annual stockholder meetings, Financial performance presentations, Web chat interactions.</td>
</tr>
<tr>
<td>Internet Analytics</td>
<td>Google Analytics, Facebook Insights, Keyword searches, Click analysis, Yahoo Web Analytics, Woopra.</td>
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Table 1 Source: Adapted from [14] p13,[17],[18] and intercepts from authors experience.

Various techniques that have evolved with the use of ICT in research (Table 1) have become an integral part of the business research process and have enabled the business researcher to undertake studies involves new dimensions. Data analysis and interpretation through various ICT hardware and especially software that endowed a business researcher. Data analysis’ charting elements’ and number crunching is now accomplished through personal computers in higher educational institutes. The personal computer based software analysis is utilized in most of the business research processes through software packages such as SASTM™, LISERAL™, STATAM™, Minitab™, SPSS for Windows™ and Statview™. There are also more specialized survey design and analysis packages such as SNAP™ and SphinxSurvey™. Most of the packages allow data import features which let utilization of secondary data by a business researcher in an efficient manner. Saving both time of re-inputting the data and also the cost involved in such exercise. However, analysis and use of these packages has the certain prerequisite for the business researcher or else they won’t be productive for business research. The researcher needs to prepare data in line with his research objective and for quantitative analysis. The business researcher also needs to have pre-acquired knowledge of the use of various statistical and charting techniques [19]. Indian Council of Social Science Research (ICSSR) finances various national workshops in different higher education institutes that elaborate use of many software packages for the business researchers. These workshops are aimed to provide researcher first-hand experience with the different software packages. The government is working with IT giants like Tata Consultancy services to develop software’s that would provide software based solutions for enhancing education and research understanding.
V. ICT AND ETHICAL DIMENSION

Ethical issues in business research emerge during collection, analysis or representation of results from the research. In business research, there are two contrasting standpoints; the deontological view and teleological view. The deontological view confirms that researcher should not use unethical means to justify getting the relevant information. While the teleological view contends that end results justify any means of obtaining of data [19]. Most universities and organizations, require business researchers to obtain formal approval from Research Ethics Department or Committee for their proposed research, including their data collection methods, prior to granting access. ICT has opened up new dimensions of investigations and has motivated the business researcher to go online to study the dimensions that were resisted in offline investigations. Ethicists who lay down the guiding code for business researchers repugn the ethicalness of research on dimensions which are resisted offline by the subject as they amount to - a violation of rights, interference, denial of privacy and invasiveness in lives of the subjects [14]. The data mining information through the use of advanced ICT technology collected from advanced and not necessarily obvious sources opens up innumerable opportunities to the business researcher for abuse. Plagiarism control has become an important facet in recent years as a result of the ease with which material can be copied from internet sources and passed on as someone else’s research. Consequences of being found plagiarizing some other researchers work will likely bear a severe consequence for the researcher involved. In higher education institutes in India implementation of various anti-plagirism initiatives has already had a huge impact on business research and still has huge potential for further improvement. Access to software packages like iAuthenticate, Turnitin, Urkund amongst many others, for higher education institutes through UGC funding has been a crucial factor in raising the standards of business research.

VI. CHALLENGES ASSOCIATED WITH ICT IN BUSINESS RESEARCH

ICT implementation in higher educational institutions is confronted with various challenges. Challenges ranging from installation procurement, maintenance and upgradation of existing software. Meeting up to these challenges in higher education institutes is an uphill task for self-financed institutions and require government support for funding the ICT infrastructure for business research needs [20]. Training the ICT facilitator in higher educational institutes is another main concern for the realizing the potential of ICT in business research. Lack of proper training hinders the application of stakeholders. There is a need to ensure the ICT and its dependencies are reviewed and upgraded from time to time as its crucial to achieving the desired efficiency in the research process. It’s imperative to capitalize on the growth already achieved through a continual periodic upgradation of ICT infrastructure while simultaneously purging of redundant infrastructure and practices. Adaptation of newer technology in business research in time after a proper evaluation would enhance and enrich business research. An important concern is the dearth of resource persons for the training and delivering various ICT software packages that would impart training to a business researcher in higher educational institutes.

VII. CONCLUSION

It’s clear that through ICT business researchers are able to have accessibility to commonly shared resources, technology and various ways of exchanging information. In the past two decades’ data collection and dissemination has been majorly technology supported and not using could lead to a competitive disadvantage for business research. ICT will continue to play a crucial role in increasing the standards of business research. The caliber of the business researcher will like increase continually to achieve higher efficiencies with the use of ICT. Effective ICT implementation will enhance the business research process. Effective implementation of ICT in business research would provide a competitive edge to institutions by offering enhanced services to the business researcher. Higher educational institutional would thereby derive greater efficiencies in terms of cost and quality while delivering an enriched learning experience for the business researcher. It wouldn’t be farfetched to say that business houses would utilize the research facilities in higher education if excellence is achieved in ICT implementation in higher educational institutes. It would be doubly beneficial firstly it would make the business research in higher educational institutes more practically usable and also self-sustaining through funding by business houses. Thus, ameliorating the existing learning experience will lead to a more knowledge driven business research that has industry application. As students and teachers gain access to technology, more direct forms of communication, and access to shareable resources, the capability to support this quality learning standard will continue to grow. ICT applications provide institutions with a competitive edge by offering enhanced services to students and faculty, driving greater efficiencies and creating enriched learning experiences.

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