

Enhancement of Quality in Technical Education by Knowledge Sharing Using ICT Tools: Bridging the Gap through Academia-Industry Interface

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Abstract: Emerging markets and corporate houses need more technical graduates and moreover India's Higher education system contributes huge number of technical graduates but it is difficult to make them employable. Therefore an effort has to be made to address the direct needs of the corporate sector by having Academia Industry interface. Academia- Industry Interface could be defined as interactive and collaborative arrangement between academic institutions and business corporations for the achievement of certain interchangeable inclusive goals and objectives. Universities and industry, which for long have been operating in separate domains, are rapidly inching closer to each other to create synergies. The constantly changing in new technology paradigms, in response to growing perplexity of the business environment today have necessitated these two to come closer. Higher education institutions not only contribute skilled human resources to technological world, but also in various intangible ways. This paper explores the various techniques to bridge the gap between the academics and Industry so as to enhance the quality in technical education. Moreover an attempt is made to explore how technical education enhance knowledge sharing using ICT tools can work closely with industry, study the dimensions of academia-industry partnership, and identify possible areas where industry's contribution to academia would be most effective.

Keywords - Universities, Industry, Bridge the gap.

I. INTRODUCTION

Extremely dynamic business world and the rapidly developing knowledge based service economy have faced a deficit of available human intellectual capital necessary to manage and sustain their rapidly transformation of technology. And this is precisely the reason why amongst various other fields of knowledge, desire for acquiring technical skills is growing, both amongst the fresh graduates and working executives. India has also not remained untouched with technical skills degree bug and technical education in India but has been on a raised rapidly since last one decade. Though the very advent of technical education in India was to cater to the demands of the industry, the two entities have traditionally been operating in different domains and as more or less isolated islands. Traditionally, technical educations were looking for placements and internships for their students and the industry for fresh recruits who are well trained and equipped with the right KSA (knowledge, skills and attitude) to be able to contribute to organization's growth. Today, the technical education have realized the importance of 'working closely with employers' i.e. Academia-Industry interface because it is a critical dimension for any technical education as this interface decides the extent to which the institute becomes an acceptable brand. This paper explores the various use of new ICT tools to bridge the gap between the academics and industry so as to enhance the quality in technical education.

II. NECESSITY OF ACADEMIA-INDUSTRY INTERACTION:

M.M. Gandhi stated that The Government of India, through number of initiatives, is devoting resources to encourage industry institute partnership. Ministry of HRD and All India Council Technical Education (AICTE) are funding projects to improve industrial relevance to educational institutions. Human resource has to rise in utilizing resource available in the organization and meet the emerging challenges. In order to strengthen institution-industry collaboration the institutions have to take many policy decisions, which will encourage interaction by sharing knowledge base available with the technical institutes by coming close with the field experience and industry exposure by which they will get skilled employees which can have sustainable development and meet their customers needs. Sen Chai Willy Shih suggests academic-industry partnerships collaboration actively improves the firm's survival and employment. Nicolas Carayol and Mireille Matt studied collaborations goes along with a high accomplishment in terms of collaborations with industrial partners. R. Rabiser et al concludes SPL research was on an academic and an industry perspective in line with each other, Gary King and Nate Persily, industry-academic partnership must satisfy a company's legal, fiduciary, and business needs; academics' need for scientific freedom to work and publish; and the public's need for privacy and potential social goods derived. Working closely with the employees in the industry will make the academicians to understand the complexity in business world and constantly changing needs of the industry and increasing criticality of human competence in creating and sustaining competitiveness of the organizations. Industry can benefit from the academia in solving their critical problems through consultancy services offered by the academia and this can be a source of income generation for the academic institutes.

III. EFFECTIVE COLLABORATIONS OF KNOWLEDGE EXCHANGE BETWEEN INDUSTRIES AND ACADEMICS:

According to World Meteorological Organization, 2013, it must be noted that the global scenarios are changing rapidly and the new knowledge-driven society and organization requires a better informed and skilled acquitted labor so that the demands of the industry could be met properly. For this stress is to be laid on the provision of the higher education in the universities colleges, seminaries, institutes of technology, and certain other collegiate-level institutions, etc. such that the technical knowledge and understanding of the students could be increased and the gap between the industry requirement and the fresh professional talents could be met. According to MHRD, Department of school Education and Literacy, there is a great demand for the professionals who have technical qualifications is in demand in the industry but the technical institutions are found to be inefficient to meet the demand. The Academia is used to represent the collective community of the students, faculty, and scholars who are continuously engaged in higher education and research. It refers to the impartation of learning and education through curriculum and courses specially designed for increasing the research ability and technical knowledge of the large sections of the population. Academia is to be held responsible to update and upgrade the community levels by increasing the levels of interaction with diverse industries. The industry is referred to the economic activity in which goods and services are produced for the usage of the large populace. The conduction of work in the industry goes in the chain formation; it involves using raw materials to produce finished goods. The finished goods provide service to the needing people which lead to further induction of research and development so that the community could be served in a better way. Many industries work simultaneously at domestic as well as international levels forming an interconnected complex web so that large populace could be served properly. Four primary industrial economic sectors have been identified which are primary sector (involved in provision of raw materials for farming, mining, etc.), secondary sector (involved in processing raw materials, refining, manufacturing products, etc.), tertiary industry (involved in provision of service like law, medicine, etc. and distribution of finished products), and quaternary sector (referred to a knowledge industry which lay stress on technical research, design and development like computer programming, biochemistry, etc. It also provides a base for the opportunities for the application so that new technology could be enhanced and more academia-industry collaborations could take place. Academia intervention is required so that the technical innovation and modification could be done to meet the industry requirements.

IV. BRIDGING THE GAP BETWEEN ACADEMICS AND INDUSTRY USING ICT TOOLS:

JagulHumaLashari et al focus on bridging the gap through Academia-Industry Interface with the help of quality in technical education by knowledge sharing using ICT tools it was found that the certain barriers from the governing bodies, academia and industry are prevailing due to which effective conduction of academia-industry interference is not possible. The major barrier is laid down by the government which acts in a sluggish manner and is not acting too in a flexible manner. The government agencies are required to be providing adequate systems that could support the ICT and provide effective collaboration between the educational institutions and industry requirements. There is a lack of adequate provision and usage of ICT tools like a computer, cell phones, cell phone towers, video conferencing, software, radio, television, laptop etc. The academicians, on the other hand, are found to be unwilling to leave the ease zone of pure teaching to adopt new technologies. The universities are found to be adamant and unwilling to adopt new innovative methods. AjitPrajapati et al point of view is that in the absence of the use of ICT tools and techniques like e-mail, databases, data-mining systems, search engines, video-conferencing equipment, etc. is found. Hindrances to pursue collaborative projects and presence of certain internal policies that do not support change are also found. Academia is unaware of the actual needs and demands of the industrial sector and is unable to meet the national needs of highly qualified professionals excelling at professional front. In addition to this other factors like absence of funds and incentives for development of technical infrastructure to carry out research and development work (R&D Lab.), lack of adequate expert experienced faculty, bureaucratic constraints related to appropriate usage of consultancy funds, lack of interaction between university and industry cell within the campus, etc. Lack of training for knowledge sharing and or learning technology and processes, Lack of priority of knowledge retention, Lack of technology investment, the unfamiliarity of IT or IS system, etc are creating an additional issue to impart technical knowledge sharing by the academia. The industry is also found to be more interested in targeted development. The industry does investments keeping the yield and the result into consideration and has restricted cost frames for the R&D into the workings. Other factors like insensitivity, absence of cognizance, high dependency of global know-how, lack of adequate knowledge sharing environment, lack of trust, lack of time to share knowledge, low awareness of possessed knowledge, dominance in sharing explicit over tacit knowledge, asserting own position authority, un-supportive organizational structure and culture, poor leadership communication about knowledge sharing, lack of integration of knowledge sharing in organizational strategy, etc. are found to be laying hindrances in the adequate sharing knowledge from industry to academia or within the industry. In addition to this adequate interaction between the industry and academia is also found as the industry prefers learned professionals and do not want to waste time, money and efforts on the training and development. This further reduces the knowledge sharing propensities within the academia and industry.

V. EFFECTIVE INTERACTION BETWEEN INDUSTRY AND ACADEMICS TO MEET THE NEEDS:

The regular University and industry interaction are essential to raising funds so that adequate improvements and inclusion of ICT tools could be done at the technical university levels. The academia must increase interaction and interface with the industry so that the changing needs of the industry could be met and restructuring of curriculum could be done adequately meeting the industry requirements. To meet the industry requirements the technical universities must lay stress on strengthening academia-industry interface by usage of ICT tools and collaborations. Richardson W point of view is to integrating ICT tools to learning like using of easy-to-use spreadsheets, email, and virtual teaching, video conferencing, use of expert systems, knowledge bases, various types of information management, software, document management systems, information technology (IT) systems supporting organizational knowledge flows, e-learning, web-conferencing, collaborative software, content management systems, corporate directories, email lists, wikis and blogs, etc so that the adequate and enhanced knowledge sharing could be imparted to the learners. This will increase their learning abilities and they will be able to serve the industry in a better way of reducing the gap between the academia and industry interface. Susan Foster, Janet MacLeod says that the involvement of the Alumni as Mentor of Students Alumni having the

industrial background and sound technical knowledge can be done to increase the capability of the learners. The experienced alumni could share their knowledge and learn regarding the global business trends, overseas opportunities in business, and information of technological advancement etc. by using the ICT tools like video conferencing, digital or virtual conferencing to increase the learning abilities of the learners. Maged N KamelBoulos et al says that use of Groupware, E-Document Management System, Electronic Publishing like e-books and electronic articles, Academic Publishing like EBSCO Host, Blackwells, Individual Communities of Interest like twitter, blogs, Communities of Practices like consortia, E-Document Management Systems like Digital Library, etc. could be used to impart learning to the students so that their learning abilities could increase and they could be adequately able to serve the industry resulting in reducing the gap between the academia and industry interface. As per the survey conducted by The Automotive Forum on Industry-Academia Partnership, it was found that the inclusion of ICT tools into the imparting of the knowledge to the learners has helped inadequate knowledge sharing process. It was found that those institutes which were using the ICT tools to transfer knowledge were able to meet the demands of the industry in an adequate manner resulting in reducing the gap between the academia and industry. Elizabeth BoyeKuranchie-Mensah says that the industries were found to be satisfied with the performance of the new joiners as the productivity of the industries had increased to 34.9% which was about 21.01% before. The new batch of professionals who had joined the industry straight after passing from the technical institute was found to be learned and had knowledge about the industry conceptions. This has helped the industries to grow increasingly marking new heights. Manuel Trajtenberg, efforts have been laid on developing interactive relations between the academia and industry. For this, the many Research and Development labs have been constructed and institutionalized at various educational institutions. The introduction of R&D Lab Consortia that helps in the provision of industry-oriented R&D is done at various institutions so that the scientific and technological targets related to the learning and productive mechanism could be developed adequately. The development of the consortia will help to adequately meet the demands of the industry and will provide innovative solutions so that the economic targets and social development aims of the organizations could be met appropriately. For this many R&D centers have been institutionalized by the University Grants Commission (UGC). Four Centers of National Facilities have been created which are Indian Institute of Advanced Studies, Shimla (Himachal Pradesh.); Western Regional Instrumentation Center, Mumbai (Maharashtra); Crystal Growth Center, Anna University, Chennai and mesosphere-stratosphere-troposphere (MST) Radar Center, Tirupati (Andhra Pradesh) so that the quality of technical learning could be enhanced by the academia enhancing the abilities of the learners and reducing the gap between the academia and industry. David Connell, states large companies should be encouraged to take minority investments in small companies; collaboration between academia and industry should be increased. It is necessary to have a realistic understanding about the expectations of the industry from technical institutes to impart industry relevant skills to enhance education in order to groom fresh graduates as competent persons. The industry interface can also be through faculty exchange programmes – industry experts taking time off from the industry to serve a term in the technical institute and / or the faculty member joining the industry to know advanced skills training programmes. Industry can also participate by sponsoring courses in the institute and participating in the research activities of the technical institutions.

VI.CONCLUSION

To acquire the important human resource for successful commercialization and industrial competitiveness, various strategies have been adopted by different firms, States, or as a combined effort of both with academic institutions. PrachiKapil states that strategies range from identification of skills, shortfalls which may occur, efforts to impart required skills, and adapt existing skills by orienting to new demands. Given the huge gap between the rapidly evolving skill need of Indian businesses and those provided by our higher education system, there is a growing realization amongst the government, academic institutions and the industry, of the urgent need to bridge these skill gaps.

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