The Role of Knowledge Transfer in Industry - University

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Abstract - The Aim of this paper is to develop a framework for Knowledge Transfer (KT) collaborations to support a strategic decision making process for evaluating international partnership between universities and industries. Universities benefitted from industrial funding have access to industrial testing facilities and practical case studies demonstrating translational impact. Industry potentially saves on Research and Development and the need to develop a specific expertise-in home. As a result, such partnership leads to increased innovation, competitiveness and national growth [1]. Dr. M.S. Udhaya Moorthy, an academician, industrialist and a motivational writer is one of such great legends who always believed in university–industry Knowledge Transfer and this paper is a sincere dedication to his footprints.

Keywords--- Knowledge Transfer, Research and Development, Technology Transfer, Goal Based Knowledge Management, Personal Knowledge Management.

I.   Introduction

Knowledge is defined as the fact condition of knowing something with familiarity gained through experience [6]. Knowledge Transfer (KT) is the process of knowledge Transferring from main body of high potential to lower. Figure 1 represents flow of knowledge between UNI-IND with government as a stimulator agent.
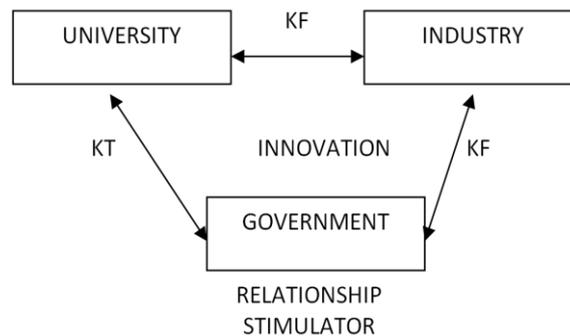

Figure 1: *Knowledge Flow*

The purpose of this article is to promote the KT between teachers and students of colleges and universities, improving the effect of KT, in order to enable the students to gain more knowledge.

Knowledge from the universities and other government bodies, like DOTE (Department of Technical Education) are identified as knowledge resources too [8]. The educational processes like teaching-learning, curricular, co-curricular and extra-curricular, training and competency development, best practices in teaching- learning processes are the other important source of knowledge in assets like library, digital contents, video lectures and administrative documents. They are all considered as knowledge resources for the institution.

II.   Concept of Knowledge Transfer

KT is the transmission of knowledge from teachers to students. Through the ways of transmission, students can acquire the knowledge from teacher, and through their studying and understanding, they can turn it into one's own knowledge.

There are six methods of KT, Serial Transfer, Near transfer, Far Transfer, Strategic Transfer and Expert Transfer [10]. The best suitable method can be chosen among them.   There are four types of KT models:

- Shannon- weaver model,
- Szylanskils KT process model
- Nonaka's SECI model
- Boisot's I – space model [9]

III.   Knowledge Transfer in University

Knowledge management focuses on institutions objectives such as improved performance, competitive advantage, innovation, best practices in sharing knowledge and lessons learned, and continuous improvement of the institution. Hence the importance of KM in higher education institutions and its tremendous growth is unavoidable. It has numerous problems to solve and hence the scope for improved research is abundant.

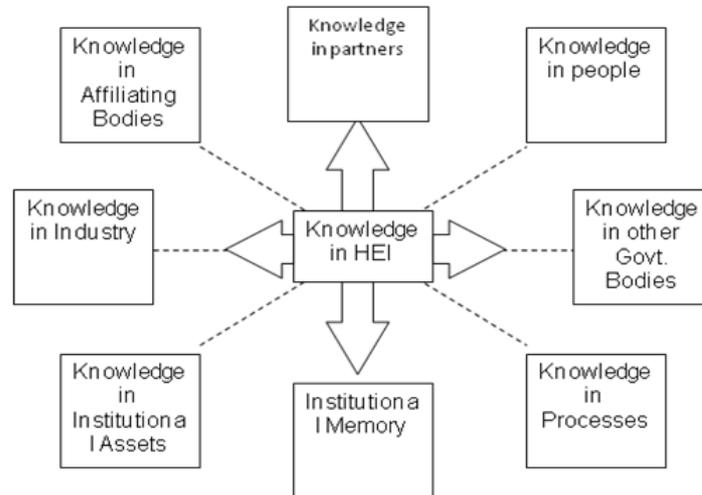Figure 2, Designing a KM framework to identify the major knowledge sources of the institution.

Figure 2: Knowledge Resources

Institutional knowledge resource knowledge from the affiliation, regulatory and accreditation bodies like UGC, AICTE, NBA and NACC helps the institutions to set up standards and policies. Knowledge from the industries is another vital knowledge resource for the institutions to know the current industry standards and needs of the industry.
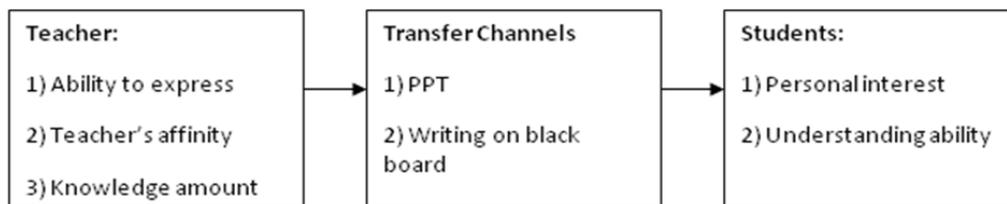

Figure 3: Conceptual Model of KT

Thus they can initiate collaborative research and development projects to cater the needs of the industries and place their students in the industries successfully.

K-Knowledge C-Characteristic GKM Goal based KM contain the competency data of staff members. PKM is the process which helps the staff and students to manage their personal knowledge. Social networking tools like forums, blogs (k-logs or k-blogs) can be used to share knowledge through posting and scribing. An educational wiki can be introduced to capture the knowledge of the staff and students.

IV.   Knowledge Transfer in Industry

KT defines how to move good ideas from one part of an organization to others that can use the information. In companies there are 3 levels of KT, that is, individual and group level, Organization level and global level [3] knowledge is transferred from the corporate centre to the subsidiaries. It is assumed that it is basically the subsidiary that learns from the parent and there is no important knowledge flow in the other direction. However, more and more research underpins a strengthening role of subsidiaries in organizational knowledge transfer. They contribute not only to the vertical but also to the horizontal knowledge transfer, if they own knowledge then that is useful for both parent and other subsidiaries [4].

Different ways of KT in Industry

*   KM systems transfers knowledge using databases, search engines, portals and Communities of practice and other technologies.
*   E-learning system uses internet technology to transmit self-learning and yet self-tested.
*   Operational & Management process binds lengthy compilations of expert procedural content. By following the procedures the user learns and applies the content.

- Instructor lead training is the classic training course which is very common in most organizations.
- OJT-On-the-Job-Training is given when a less knowledgeable person works with someone more experienced. Applicability of KT is extremely high and the quality of knowledge depends on the experience of the coach or mentor.
- DCT-Digital Coaching Technology was specifically designed to meet the conditions that facilitate KT.
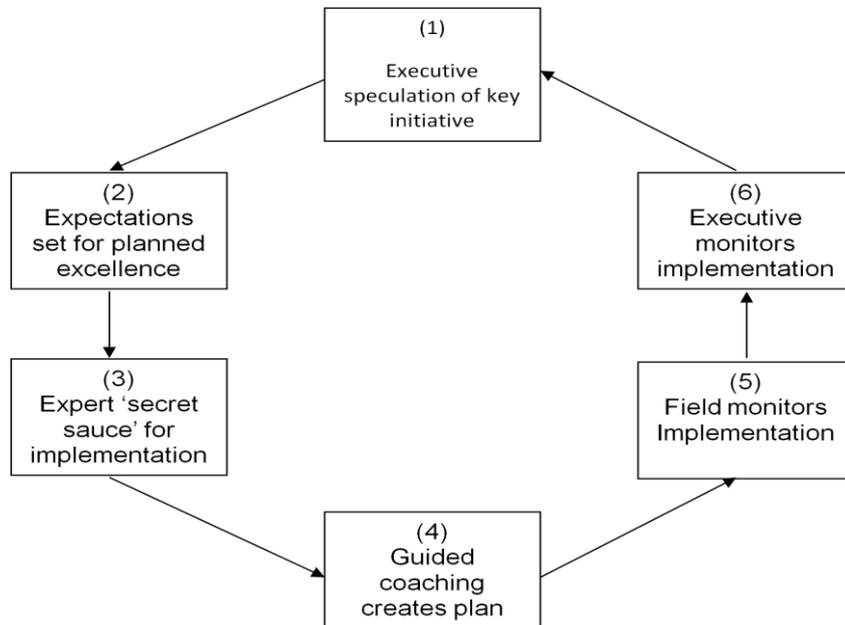

Figure 4: *DCT KT process*

The DCT knowledge transfer process begins with executive selection of a key process that are processed through knowledge harvesting, guided coaching and local monitoring, and concludes with the executive role in monitoring knowledge use. Ensuring knowledge is learned and used.
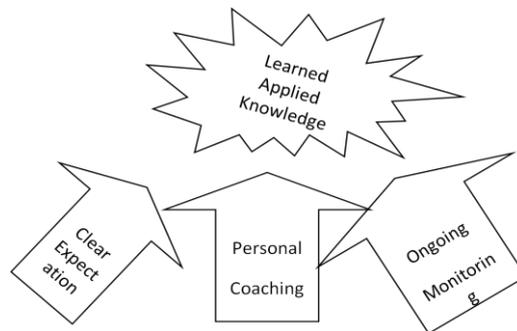

Figure 5.

V. a) Collaboration of UNI-IND

KT may be the most interactive relationship as it contains lots of different formal and informal interactions like Personal interactions, cooperative education, curriculum development and personnel exchanges. Good examples about those interactions are research consortia, trade associations and research papers by university and firm personnel. KT is not only concerned with workers, but also students have some benefits through interns and business casers. KT also offers good possibilities for post graduate students these multiple reasons and opportunities make KT as desired way to make co-operation, because it helps universities to train students in state-of the art techniques. At the same time, firms can also improve their own competence.

Research Support	a) Networking
	b) Financial Supporting
	c) Grants
KT	a) Trainee programs
	b) Consortium
	c) Participating on curriculum planning

TT	a) Short term research projects b) Solving specific business problem c) Consultation
Collaborative Research	a) Thesis works b) R & D projects c) Projects (resources from university)
Educational Interaction	a) Assignments and special works b) Seminars and Information sharing c) Visiting lectures

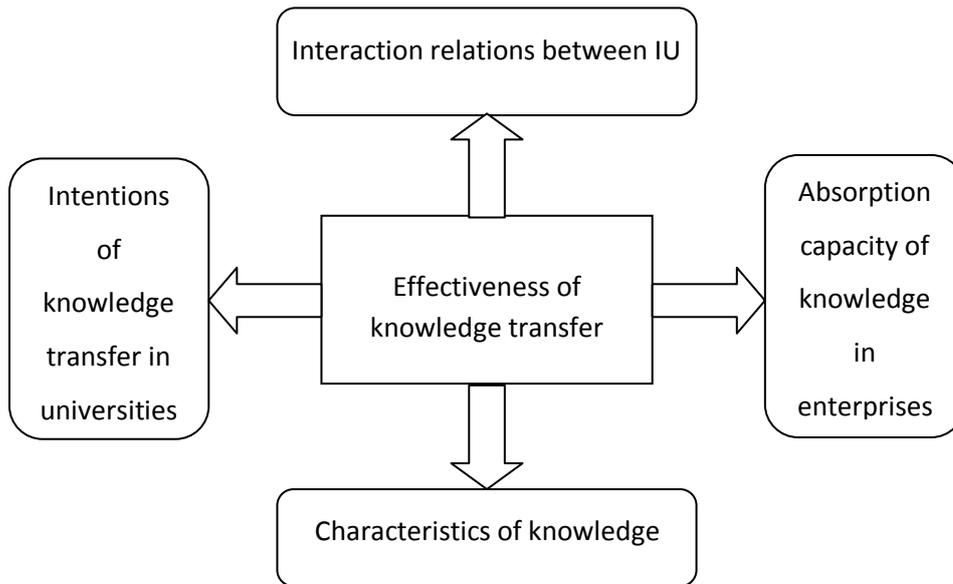*Table* 1: *Forms of U-I co-operation*

Figure 6: *The influencing Factors of KT of IU Cooperation*

Table 1 lists many ways and forms to build cooperation between firm and university. Co-operation is divided into 5 different categories: Research support, KT, TT, collaborative research and Educational interaction. The first 4 categories are convergent with Santoro & Chakrabarti's [2] definitions. Basically research support is only one way co-operation which is served by firms and such co-operations are marked by italics. Also knowledge transferring includes some one-way co-operation but co-operative and joint research always insists on at least two participants. In the 5th category, educational interaction is added, because it entails the educational mission of universities. Figure 7 shows the Interaction Relation in IU Cooperation.
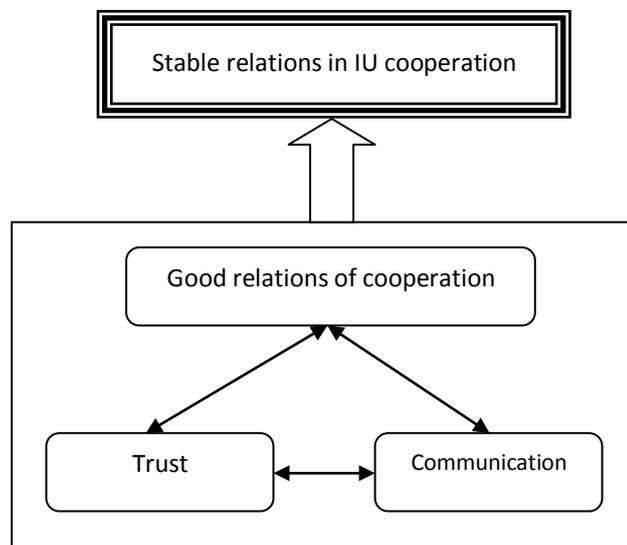

Figure 7

V. b) Methods

A survey sample built in with included M.Phil scholars, senior professors and HR people in the industries.

Opinion	M. Phil Scholars	Academicians	Local Firms
Sent	20	10	15
Received	20	8	10
Acceptance Rate	80%	90%	70%

V.   Conclusion

Professors of universities are in boards of government organizations and in advisory board of companies. We can also have people from industry as part time professors at the university. Students should have half-a-day theory class and the corresponding practical class in remaining half-a-day with this we can create many eminent personalities like Dr. M.S. Udhaya Moorthy in our country.

There are three barriers in academic-industry collaboration[7]:

- Inherit differences in mission and objectives
- Organizational differences
- Cultural differences

The tacit knowledge [5] in senior faculty members, administrative staff and students are very important sources of knowledge for any institution, when a senior staff leaves the university or industry his/her knowledge also leaves. To overcome this issue, a research should be made towards creating new KT model, which is used for university and industry. Wiki can be used to post the best things which will act as a platform for teaching - learning processes.

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