University-Industry Collaboration (UIC) for Developing Highly Skilled and Productive Business Graduates in Bangladesh

[1] Md. Sarwar Uddin, [2]* M. Aktaruzzaman Khan, [3] M. Kamal Uddin, [4] M. Solaiman

[1,3] *Faculty of Business Studies, BGC Trust University Bangladesh*

[2] *Department of Business Administration, International Islamic University Chittagong (IIUC), Bangladesh*

[4] *Department of Marketing, University of Chittagong, Bangladesh*

ABSTRACT:

University-Industry Collaboration (UIC) creates highly skilled and productive business graduates for meeting demand of industry, globalization, knowledge economy, and job market at home and abroad. In coping with ongoing acute competitive pressures of the information edge, higher education curricula of business needs to be intellectually planned, through collaboration between university and industry and developing more connectivity among different stakeholders. Examples of such successful co-operation are well manifested in several countries especially in USA, created interest elsewhere to evaluate university-industry link programs. The present research has collected primary and secondary data from one public university (University of Chittagong) and one group of industries (PHP group of companies) for the study purpose. This study employed both qualitative and quantitative research instruments which have identified some criteria in order to develop a framework which are 5C such as (i) comparability, (ii) credibility, (iii) consistency, (iv) cost-benefit, and (v) culture. The Cone Model for university-industry collaboration has also been used in this paper.

Keywords: *Cone model, Productive business graduates, Job-market*

INTRODUCTION

To cope with the ongoing acute competitive pressures of the information edge, higher education curricula of business needs to be intellectually planned, through collaboration between university and industry and developing more connectivity among different stakeholders. Again, industry-university collaborations represent an evolving trend for the advancement of knowledge and new technologies (Meneghel et al., 2004). A number of quantitative studies confirm a positive association between the university-industry collaboration and innovativeness at the firm level (Webster and Etzkowitz, 1991; Webster, 1994). Collaboration between industry and university has emerged as one of the priorities in the OECD[1] countries (OECD, 1992) and has become a trend in European innovation policy (European Commission, 2000). Cases of successful co-operation between university and industry observed in several countries, especially, the united states, have created interest elsewhere to

---

1- Organization for Economic Co-operation and Development

*Corresponding Author, Email: *rajarkul2002@yahoo.com*, Mohammad Aktaruzzaman Khan
Third Author: Mohd. Kamal Uddin, Fourth Author: Mohammed Solaiman

evaluate such experiences through the promotion of university-industry link programs (Dickson, 1988). Universities can be major resources in a company's innovation strategy but to extract the most business value from research, companies need to follow seven rules, (Julio et al., 2010). Rapid change in competition and the speed of innovation around the world have promoted the creation of collaborations between research communities and commercial enterprises. Universities forced to find new ways of generating income due to increased competition and cuts in government funding, are increasingly commercializing their skills and research (Bakken, 2003). Furthermore, innovation and combining research efforts of private and public sector institution has also become a key driver of economic performance (OECD, 2001) with science and industry labeled the pillars supporting a country's innovation system (University of Dortmund, 2003). Between 2000 and 2001, consultancy and contract research contributed AU $467 million or 21 percent to the total further AU $14.6 million or 0.7 per cent (KCA, 2003). Companies also faced increased pressure to advance knowledge and create new products and technologies to be successful in today's marketplace (Gupta and Wilemon, 1996; Santoro and Chakrabarti, 2002).

Literature Review

In the context of globalization, market place is undergoing rapid changes in competition, technological advancement and a shift to knowledge based economies. Against this background importance of knowledge as a competitive weapon has increased dramatically (Dierdonck et al., 1990). Universities are known to be centers of wisdom capable of backing a countries innovation system. The rapid technological changes and competition has made it necessary for industry to collaborate with university. This has enabled them to combine their efforts to foster the diffusion of knowledge and innovation within national innovation system. Strands of research also opined university-industry relationship as one of the key elements of national as well as regional and industrial innovation system (Miller et al., 1995; Xu et al., 1998; Clark and Bower, 2002). In an attempt, Motohashi (2005) showed that how the concerted effort of academies and enterprises

together affect their innovations which is not simply adaptations of technology at university, but involves significant development activities at industry side. University can play crucial role on the innovation of knowledge-based societies through forming direct links with industry to maximize "capitalization of knowledge" (Etzkowitz and Leydesdorff, 2000).

The comparative contribution of universities and industries, Sherwood et al. (2004) have argued that universities offer extensive access to a wide variety of research expertise and research infrastructure while industry offers extensive access to a wide range of expertise in product development/ commercialization, market knowledge and employment opportunities for university graduates. Schartinger et al. (2002) identifies three major roles of universities within an innovation system. First, they undertake a general process of scientific research and thereby affect the technological frontier of industry over the long run. Secondly, they partly produce knowledge which is directly applicable to industrial production. Thirdly, universities provide major inputs for industrial innovation processes in terms of human capital, either through the education of graduates, who become industry researchers or through personnel mobility from universities to firms. It is consensual that the functioning, upgrading and survival of any sophisticated economic system relies upon the exchange of knowledge among its various subsystems and particularly between universities and industry. Based on this consensus, since the 1970s the topic of university-industry links increasingly attracted the attention of policy-makers in both advanced and late-industrializing countries as well as least-developed country like Bangladesh. At the same time, many economists and academics in other social sciences also became interested in this topic which resulted in a growing body of evidence in these contexts (Shin, 2002; OECD, 2003; Velho, 2005).

The review of the previous works in same subject area in Bangladesh and elsewhere revealed that quality enhancement though university-industry collaboration as a whole or various aspects of quality enhancement in higher education in the context of quality enhancement in business education at undergraduate level was not examined in detail through research work.

This research gap induced the present researchers to undertake this study on university-industry collaboration in order to develop highly skilled and productive business graduates in Bangladesh.

Objectives of the Study

The main objective of this study is to highlight the role and potentials of university and industry collaboration for creating highly skilled and productive business graduates for meeting demand of industry, need of globalization, knowledge economy, and job market at home and abroad. The specific objectives of this study are as follows:

1. To identify the existing available educational services for meeting the demand of industry, private sector, government sector, and other job market at home and abroad.
2. To find out the gap between industry requirements and university perceptions for creating skilled and productive business graduates.
3. To examine value exploration in teaching learning process through teacher-industry professionals interactions; student industrial unit technical manager discussions; student industry expert interactions, collaborative exchange of ideas among students and industries' managerial experts.
4. To analyze the frame work of university-industry collaboration for developing industry centric curriculum, teaching methodology, training of teachers (TOT) to meet the industry demand.
5. To suggest policy strategies for meeting the requirements of industry through university-industry collaboration with an emphasis on systems efficiency, equity, quality, effectiveness and accountability.

RESEARCH METHOD
Data Collection

Two samples (one university and one industry) have been selected for the study purpose. Both primary and secondary data have been used in this research. The sample university is University of Chittagong (a public university) and the sample industry is PHP group of industry bases in Chittagong (second largest city of Bangladesh). In the case of university, faculty of business administration has been selected for the research. The sample respondents of the university have been consisted of Vice Chancellor, Dean, Teachers (20), Officers (10) and Students (80). The size of sample respondents of the industry have been consisted of Chairman of PHP group, Directors (7), Group GM, HR (1), HR Managers (10), Operational Managers (10), staffs (50). Both quantitative and qualitative research instruments have been used in this study. Participant observations, group discussions, focus group discussion, in depth interview and peer interview have been used to collect qualitative data for research purpose. Attitudes of the sample students have been evaluated through five point Likert type scales. In order to present the fact in logical format, the supporting and relevant secondary data have been collected though desk research. The desk study covered research works, conference proceedings, World Bank reports, and policies of Ministry of Education, Ministry of Industry, text books, internet, website and the likes. The collected data have been processed with care and analyzed in order to make the study more informative and useful to the policymakers and other stakeholders.

Significance of the Study

There is no denying fact that both business and business people play an important role in higher productivity, economic growth by the way of optimizing active and latent resources as well as the development of standards, entrepreneurs and managers. Moreover, there is a clear need for both addition to and improvements in business education through building relationship between university and industry, academicians and businessmen, and strategic alliance among policymakers, industrialists and business leaders. This recognition, in turn, emphasizes the need for quality business education at the university level in Bangladesh. The research will contribute to enrich the teaching skills of faculty, update the curriculum of business at undergraduate level by providing direct benefits to the students. The curriculum of subjects will be updated and new courses will be designed to meet the requirements of the industry.

The research has been prepared a framework in order to improve the education system to

benefit the students, government, industries and access to industry experience such as involvement of industry professionals in class room teaching, examination activities and more connectivity between industry and university to meet the requirements of the industry.

The collaboration between university and industry open opportunities for teachers to work as a researcher, consultant on one hand and student may be involved in internship, project work, on the other. Students may work in the industry at weekend, holidays and in different schemes like 'Earning while Learning Scheme'. Thus the work experience may add value to their career development and this on-hand experience of fresh university graduates in getting professional job.

Conceptual Framework
Cone Model for University-Industry Collaboration (UIC)

Hussain (2011) developed three-tiered Cone Model for creating highly skilled and productive business graduates through university-industry collaboration which has been shown in figure 1. The success of collaboration between university

other stakeholders with particular emphasis on and industry depends on to a great extent commitment of both parties. The industry can play a leading role in idntifying the needs of skills of graduates of the university. Further, the university can contribute to build up relationship with industry through arranging meetings and sessions with industry people. In this research, the Cone Model has been used to build up university-industry collaboration for implementing win-win strategy for both parties.

Skills

A manager's job is complex and multidimensional; as such it requires a range of skills. Although some management theorists propose a long list of skills, the necessary skills for managing an organization can be summarized in three categories: conceptual, human and technical (Katz, 1974). Skill is the ability (analytical, mental initiative, drive ability and the like) of a business graduates to deliver the job performance effectively and efficiently. Basically, the required skill of a business graduate is three such as: conceptual, human and technical skills (figure 2).
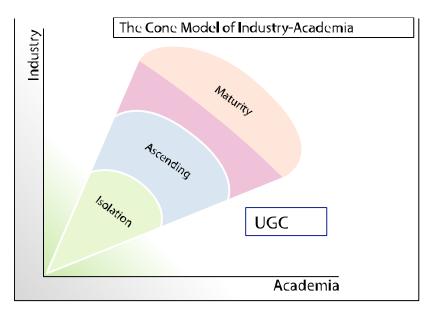

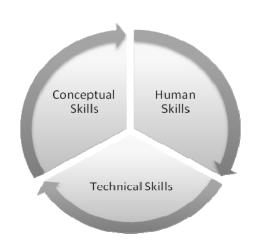**Figure 1: The Cone model of industry-academia**

Figure 2: Required skills on productive business graduates

Conceptual Skills

A conceptual skill involves thinking, information processing and planning activities of the business graduates. It means the ability to think strategically to take the broad long term planning, such as "Bangladesh Government Vision 2021." It reveals that these skills are needed for all business graduates to build up as an entrepreneur as well as an intrapreneur.

Human Skills

It is the ability of business graduates to work with and through other people and to work effectively as a group member. The skill includes the ability of a business graduate to motivate, facilitate, coordinate, lead, communicate and resolve conflicts. A recent survey by the 'Fortune Magazine' found that business graduates' human skills are important for employee motivation, retention as well as for overall organizational performance.

Technical Skills

It is the understanding of and proficiency in the performance of specific tasks. It includes mastery of the methods, techniques and equipment involved in specific functions such as finance (Daft, 1997). In career development, this skill is essential for a business graduate. The business graduates are known as valuable and rare human resources when they possess these skills simultaneously for doing their jobs effectively and efficiently. Again, the graduate of 21st century needs variety of skills to meet the demand of industry and job market. The survey data evidence that the performance which indicates the attendance of a student at business under-grade level in the class for involving underactive learning process including different assessment system for evaluation and active participation in co-curricular activities.

Productivity

Students' productivity is the function of teacher-student ratio, teacher-student qualifications, infrastructure, curriculum, and teaching aid. Productive business graduate means trained and qualified, managerial and operational expert, civil servants, professionals, teachers and technicians. The productivity of an organization depends, to a great extent, on productive managerial people of the organization. Productivity is significant because it influences the well-being of the entire society as well as individual institutions. The only way to increase the output of goods and services to society is to increase organizational productivity (Esterson, 1998). Thus, it appears that there is a relationship between the productivity of the organization and the contribution of productive business graduates in business, industry and the like. Further, tertiary education is central to the creation on which knowledge production and utilization depend and to the lifelong learning

practices necessary for updating people's knowledge and skills (HEQEP, 2010). It is argued that productive business graduates can contribute to qualitative improvements through the use of new technology resulting from the acquisition of skills, knowledge, capacity, and ability. Thus, the productive business graduate is essential for creating new method, system, product, services for meeting and the demand of knowledge, economy, employability and total quality management in the sectors of economy.

RESULTS AND DISCUSSION

The quantitative and qualitative research have been identified some criteria for developing a framework in the journey of quality assurance and enhancement of quality education for creating skilled and productive business graduates through UIC. It has been reported that these criteria are 5Cs such as comparability, credibility, consistency, cost-benefit, and culture.

Comparability

The students may be given an opportunity to compare their programs with their peers. The determining factors for the success of these criteria are faculty collaboration, educator's commitment, consistently developed and applied policies etc (Cizek, 1995). In the process, two aspects need to be taken care of: (a) students' right to privacy with his/her performance; (b) students should feel comfortable asking for relevant information when questions arise.

Credibility

A test is valid if the results are appropriate and useful for making decisions about an aspect of students' achievement (Gronlund and Linn, 1990). A practical approach is to focus on content validity, the extent to which the content of the test represents an adequate sampling of the knowledge and skills taught in the course. This credibility is a must for creating skilled and productive business graduates in the country.

Consistence

Students vary in their performances for different forms. So, using a variety of evaluation methods will help students do their best (Jacobs and Chase, 1992). No single evaluation system

will be appropriate for all courses at all times, and teachers must be sensitive to differences in students and subject matter when choosing an evaluation system (Milton et al., 1996).

Cost-Benefit Analysis

Normally, a faculty cannot spend more than 30 minutes in a session evaluating students in the class room management. This could mean that a set of criteria may require for evaluation of student. This would involve a lot of time of faculties going into the process of evaluation and leaving very little time for other academic activities.

Culture

There may be traditions and written rules regarding evaluation, and a faculty's evaluation system has to conform to these rules. The philosophy of the educational institution has to be clearly spelt out and the faculty's' evaluation system should be consistent with these philosophies. Ensuring faculty grade students in accordance with the guidelines would enhance the overall culture within the institute (Friedman, 2001). It has been observed that quality education in higher studies depends on a number of factors such as student's qualification, teacher's qualification, curriculum, teaching-learning methodology, infrastructure facility, university-industry linkage, networking with universities and professional bodies. Moreover, the 5Cs can add value in delivering the quality education to the students for creating skilled and productive business graduates in the country.

Demand of Business Graduates in the Industry

Employers/executives of Bangladesh raise their voice against business graduates of Bangladesh in the context of competency, commitment, congruence, and communication. In this study, data have been collected by using the Likert scale. The five point Likert scale is as follows: very highly required = 5; highly required = 4; moderately required = 3; required to some extent = 2 and not required = 1 (table 1).

Table 1 portrays that the industry required three types of skills, such as: conceptual skills, human skills, and technical skills. It is revealed that about 60% employers/executives recognized punctuality as the most important required

human skill at entry level in the career of a business graduate (please see Table 1). The research identified that the other required human skills are commitment (58.5%), honesty (53.8%), dedication (36.9%), and empathy (6.2%) respectively. It is also identified from Table-1 that 46.2% employers/executives recognized oral communication as the most important required conceptual skill at entry level in the career of a business graduate. The research identified that the other required conceptual skills are adaptability to changes (36.9%), written communication (21.5%), presence of wit

and innovativeness (10.8%) and presentation skill (4.6%), respectively. Again, in case of technical skill it is recognized that about 54% employers/executives focused time management capability as the most important required technical skill at entry level in the career of a business graduate. The other technical skills are competency (52.3%), stress taking capability (32.3%), capability to work (26.2%), decision making capacity and theoretical knowledge (15.4%), analytical ability (10.8%), knowledge about corporate world (6.2%), leadership and IT skill (4.6 %), respectively.

Table 1: Industry required skills of graduates in entry level

	Skills	V. Highly required		Highly required		Moderately required		Required to some extant		Not required	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Human Skills	Punctuality	39	60	26	40	0	0	0	0	0	0
	Honesty	35	53.8	23	35.4	7	10.8	0	0	0	0
	Commitment	38	58.5	27	41.5	0	0	0	0	0	0
	Empathy	4	6.2	37	56.9	20	30.8	4	6.2	0	0
	Dedication	24	36.9	35	53.8	6	9.2	0		0	0
	Belongingness/Organizational Citizenship	11	16.9	28	43.1	18	27.7	8	12.3	0	0
	Fellow feelings			42	64.6	20	30.8	3	4.6	0	0
	Other	0	0	3	4.6	7	10.8	55	84.6	0	0
Conceptual Skills	Oral communication	30	46.2	28	43.1	7	10.8	0	0	0	0
	Written communication	14	21.5	33	50.8	18	27.7	0	0	0	0
	Appearance consciousness			25	38.5	36	55.4	4	6.2	0	0
	Presence of wit	7	10.8	21	32.3	30	46.2	7	10.8	0	0
	Adaptability to changes (Tech. Cult, Econ. and Environ)	24	36.9	19	29.2	7	10.8	15	23.1	0	0
	Presentation skill	3	4.6	42	64.6	20	30.8	0	0	0	0
	Innovativeness	7	10.8	20	30.8	23	35.4	15	23.1	0	0
	Other	0	0	0	0	14	21.5	51	78.5	0	0
Technical Skills	Stress taking capability	21	32.3	27	41.5	13	20	4	6.2		
	Decision making capacity	10	15.4	26	40	29	44.6				
	Capability to work in group	17	26.2	41	63.1	3	4.6	4	6.2		
	Leadership	3	4.6	35	53.8	27	41.5				
	Theoretical knowledge	10	15.4	31	47.7	20	30.8	4	6.2		
	Knowledge about corporate world	4	6.2	23	35.4	30	46.2	8	12.3		
	Analytical ability	7	10.8	30	46.2	11	16.9	17	26.2		
	IT skill	3	4.6	29	44.6	25	38.5	8	12.3		
	Time management capability	35	53.8	20	30.8	10	15.4				
	Competency	34	52.3	28	43.1	3	4.6				
	Working capability					14	21.5	51	78.5		

Gap Analysis: University and Industry

University-industry collaboration is a new issue in Bangladesh. But it has been practiced in developed world for long. Bangladesh has been working hard to change the present environment from labor intensive policy to knowledge intensive strategy for making the country as mid-developed country within 2021. But very few new products are originally developed from the industry based in Bangladesh. Industry can develop new products either based on internal research or outsourcing. Literature review argues that creativity and innovativeness can be ensured through university-industry collaboration (Berman, 1990; Wu, 1994). The Harvard Business School's effort is to improve case discussion leadership through a formal program of teaching seminars and it focuses a number of issues. These are qualities of mind such as curiosity, judgment, wisdom; qualities of person e.g. character, sensitivity, integrity and responsibility; and the ability to apply general concepts and knowledge to specific situations; discussion pedagogy may well be very effective. In the light of these broad spectrum regarding perceptions of university-industry collaboration, relevant data and information have been collected from sample respondents (table 2).

Table 2 shows that the perceptions of university and industry have been analyzed based on 13 skills of business graduates of Sample University. The highest weighted mean of skills in the context of university perception is theoretical knowledge (4.90), whereas the highest weighted mean of skills in view of industry is customer sense in the students (4.61). The lowest weighted mean of skills in the eye of university is sociability (4.24) whereas the lowest weighted mean of skills in the eye of industry is also sociability (3.35). Beard suggested a number of recommendations in order to improve collaborations between the two which are arranging guest speaker sessions, encouraging faculty to undertake consultancy work in the industry, real involvements with industry to give exposure of practical experiences to students (Beard, 1994). Links and Raees (1991) opined that one important reason to bring academia and industry together is to gain access to students as potential future employees and to aid on product development.

Professors and Professionals Interaction
Value Creation in UIC

Harman (2001) defined value as financial gain through building collaborations between university and industry while Gronroos (2004) defined, value covers security, credibility and safety in the long run collaborations between the two parties. As such we were interested to know the various types of value in context of UIC (table 3).

Table 2: GAP analysis: Perceptions of university and industry

Skills	University	Industry
Theoretical knowledge	4.90	3.72
Written communication skill	4.81	3.94
Aptitude for learning	4.71	3.84
Analytical skill	4.62	3.42
Creativity	4.62	3.29
Application of knowledge	4.48	4.51
Computer skill	4.48	3.42
Oral skill	4.48	4.35
Customer sense in the students	4.48	4.61
Leadership skill	4.43	3.63
Developing team skill	4.38	4.09
Organizing skill	4.38	3.63
Sociability	4.24	3.35

Table 3: Types of value

Value Type	University	Industry
Human Capital Gain		√
Technology Gain		√
Additional Funding	√	
Knowledge Gain	√	
Strategic Alliances	√	√
Access to Networks	√	√
Retention	√	

Table 3 indicates that UIC creates value in different stages of collaboration management for the benefits of academic institutions and industrial organizations. The research identified various types of values in the UIC management system. The focus group study identified that the values are for the industries mainly (i) Human capital gain (ii) Technology gain (iii) Strategic alliance, (iv) Access to network. In depth interview, it has been revealed that the university is benefited by getting some values through UIC, these values are (i) Additional funding (ii) Knowledge gain (iii) Strategic alliances (iv) Access to networks (v) Retention. Burt (2004) rightly pointed out that UIC creates value through disseminating information, idea generation, and competitive capabilities for both organizations.

University-Industry Collaboration: Developing Strategies

The strategies for quality education through UIC are as follows:

Policy Framework for Quality Education

Rules, regulations, policies and performance indicators are set in a way so that appropriate levels of accountability may be ensured in the processes of UIC between sample universities. Thus, the procedure may be free of corruption and may ensure the integrity between the university and industry taking effective measures in different stages of organization, operation and management of UICs.

Promoting University-Industry Collaborations (UIC)

High standards of corporate governance, transparency, rule of law including protection of property and contractual rights will be established and maintained in order to ensure successful operation of UIC in the concerned samples.

Quality Assurance and Incentives

Enabling regulatory environment, providing clear and streamlined registration processes, setting up effective quality assurance system and providing incentives for partners may ensure the efficient and effective operation of successful UIC in the samples.

Competitive Fairness

The process of awarding UIC contracts may be competitive and rewarding. The whole mechanism will be characterized by fairness, transparency and non- discrimination.

Good Faith

University may observe the principles and standards for responsible business conducts that have been agreed on with the industry and that will participate in such projects in good faith. Both partners may work on the basis of agreed principles and rules of game for better management of UIC.

Risk Sharing

UIC contracts can achieve an increased level of risk-sharing between the university and industry. This risk-sharing strategy is likely to increase efficiency and effectiveness in the delivery of education services in both sectors i.e. government and private.

Matching Supply and Demand for Education

In practice, the sample university has less autonomy in hiring teachers in different levels of education structure due to government's regulatory mechanism and influence of ruling party of the country. In the social status, the teachers of sample University enjoy higher dignity, honor, and recognition and so on.

Competition in Education Market

The new element in education industry will emerge as university –industry collaboration. The UIC may open up new opportunities both for industry and university.

CONCLUSION

Universities and industries are dependent on each other for mutual benefits in the process of creating opportunities in competitive market. Thus, universities and industries will need to build up strategic alliances for mutual benefits and lasting collaborations one another. As such two way investments of time and resources are becoming essential to make collaboration gradually increasing and improved the interactions between university and industry for the mutual benefits of teachers, students and other stakeholders of the country. Cairney (2000) suggested that universities which understand this rule will see judgment of their success not only in terms of the internationally accepted quality of their teaching and research, but also in terms of their role in a region's social, economic, and cultural development. In line with this statement, the policy makers of Bangladesh, one of the least-developed country representatives, should pay proper attention on the issue of university-industry link in order to produce highly-skilled business graduates.

REFERENCES

Bakken, T. (2003). Science Marketing. In U. Kamenze ed., Applied Marketing: Anwendungsorientierte Marketingwissenschaft der deutschen fachhochschulen. Berlin: Springer-Verlag, pp. 1051-1066.

Beard, C. (1994). Educating the Star Fleet Captain-Making Business Schools More Relevant to their Stakeholders. Working paper, University of Paisley.

Berman, E. M. (1990). R and D Consortia: Impact of Competitiveness? *Journal of Technology Transfer*, 15 (3), pp. 5-12.

Burt, R. S. (2004). Structural Holes and Good Ideas. *American Journal of Sociology*, 110 (2), pp. 349-399.

Cairney, T. H. (2000). The Role of Universities in Developing Regional Knowledge Workers. Unpublished Paper.

Cizek, G. J. (1995). Further Investigation of Teacher Assessment Practices Quoted in Management Education: A Framework for Grading, MBA Curriculum Workshop-1999, pp. 63.

Clark, G. and Bower, J. L. (2002). Disruptive Change: When Trying Harder is Part of the Problem. *Harvard Business Review*, 80 (5), pp. 94-101.

Daft, R. (1997). *Management*, Harcourt College Publisher, p. 15.

Dickson, D. (1988). *The New Policies of 8 Science*, Chicago: University of Chicago Press, p. 403.

Dierdonck, R. V., Debackere, K. and Engelen, B. (1990). University-Industry Relationships: How Does the Belgian Academic Community Feel about It? *Research Policy*, 19 (6), pp. 551-566.

Esterson, E. (1998). First Class Delivery Inc. Technology. September 15, p. 89.

Etzkowitz, H. and Leydesdorff, L. (2000). The Dynamics of Innovation: From National Systems and "Mode 2" to a Triple Helix of Academic–Industry–Government Relations. *Research Policy*, 29 (2), pp. 109-123.

European Commission. (2000). European Innovation Policy.

Fisher, A. (1998). The 100 Best Companies: Why Employees Love Their Companies. *Fortune*, pp. 72-74.

Friedman, S. J. (2001). Guiding Teachers Grading Policies. Available:http://www.middleweb.com/prinGrdng.html/ (December 10, 2013).

Gronlund, N. E and Linn, R. (1990). Measurement and Evaluation in Teaching 6th ed. New York: Macmillan.

Gronroos, C. (2004). The Relationship Marketing Process: Communication, Interaction, Dialogue, Value. *Journal of Business and Industrial Marketing*, 19 (2), pp. 99-113.

Gupta, A. K. and Wilemon, D. (1996). Changing Patterns in Industrial R&D Management. *Journal of Product Innovation Management*, 13 (6), pp. 497-511.

Harrman, G. (2001). University-Industry Research Partnerships in Australia: Extent, Benefits and Risks. *Higher Education Research and Development*, 20 (3), pp. 245-264.

Higher Education Quality Enhancement Project, Manual. (2010). UGC: Dhaka, p. 1.

Hossain, S. A. (2011). University-Industry Partnership. Available: http://asad.szabist-isb.edu.pk (December 22, 2013).

Jacobs, L. C. and Chase, C. I. (1992). Developing and Using Tests Effectively: The Guide for Faculty. San Francisco: Jossey-Bass.

Katz, R. L. (1974). Skills of an Effective Administration. *Harvard Business Review*, 52, pp. 92-102.

KCA (Knowledge Commercialization Australasia). (2003). Forum and Fair of Ideas: Commercialization Discussion Paper. Brisbane: Knowledge Commercialization Australasia.

Links, A. and Rees, J. (1991). Firm Size, University based Research and Return to R&D in Innovation and Technological Change: An International Comparison, USA.

Mccune, J. C. (1997). Managements' Brave New World. *Management Review*, October, pp. 10-14.

Meneghel, S., Mello D., Gomes, E. and Brisolla, S. (2004). The University- Industry Relationship in Brazil: Trends and Implications for University Management. *International Journal of Technology Management and Sustainable Development*, 2 (3), pp. 173-190.

Miller, R., Hobday, M., Leroux-Demers, T. and Olleros, X. (1995). Innovation in Complex Systems Industries: The Case of Flight Simulation. *Industrial and Corporate Change*, Oxford University Press, 4 (2), pp. 363-400.

Motohashi, K. (2005). University-Industry Collaborations in Japan: The Role of New Technology-Based Firms in Transforming the National Innovation System. *Research Policy*, 34 (5), pp. 583-594.

OCDE (1992). Technology and the Economy: The Key Relations. Paris: OCDE.

OECD (2003). Turning Science into Business: Patenting and Licensing at Public Research Organizations. Paris: OECD.

OECD (2001). Science, Technology and Industry Outlook. Paris: OECD.

Pertuze, A. J. (2010). Knowledge Exchange Paths in Industry-University Collaboration. *MITSloan*, 51(4), p. 89.

Santoro, M. and Chakrabarti, A. K. (2002). Firm Size and Technology Centrality in Industry-University Interactions. *Research Policy*, 31(7), pp. 1163-1180.

Schartinger, D., Rammer, C., Fischer, M. M and Fröhlich, J. (2002). Knowledge Interactions between Universities and Industry in Austria: Sectoral Patterns and Determinants, *Research Policy*, 31(3), pp. 303-28.

Sherwood, A. L., Butts, S. B and Kacar, S. L. (2004). Partnering for Knowledge: A learning framework for University-Industry Collaboration, Submitted to Midwest Academy of Management, 2004 Annual Meeting, pp. 1-17.

Shin, G. W. (2002). A Study on Innovation toward University-Industry Networking. Seoul:STEPI.

University of Dortmund. (2003). Forschung Erfolgreich Vermarkten: Ein Ratgeber fur die Praxis. Berlin: Springer.

Velho, L. (2005). S & T institutions in Latin America and the Caribbean: An Overview. Science *and Public Policy*, 32 (2), pp. 95-108.

Webster, A. J. and Etz-kowits, H. (1991). Academic-Industry Relations: The Second Academic Revolutions. London: Science Policy Support Group 31.

Webster, A. J. (1994). International Evaluation of Academic–Industry Relations: Contexts: 8 Analyses. *Science of Public Policy*, 21 (2), pp. 72-78.

Wu, F.-Sh. (1994). Technological Cooperation: Model and Trend. The Third Symposium on Industrial Management, Taiwan: Funjung University.

Xu, Q., Chen, J. and Guo, B. (1998). Perspective of Technological Innovation and Technology Management in China, *IEEE Transactions on Engineering Management*, 45 (4), pp. 381-387.