

Developing Linkage Between Universities and Industries in Pakistan

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Abstract

This research study was carried out to investigate the facts and establish the present state of the link between Industry and university in Pakistan especially focusing on the present scenario and current operating systems, the research study further examined the main elements impacting and manipulating on the association and potential zones of participation and collaboration. An example of 33 (male 23 and female 10) comprised of Deans and Heads of branches of the colleges and agents of Higher Education Commission). The study revealed that universities and industries had associations and connections through contact workplaces established in (HEC) Higher Education Commission. This office has so many functions like research and development (Research and Development) activities, preparing and manage visiting lectureship, training the staff, and also plan joint actions for educational planning, improvement, and as well as both can work to guide each other. Most definitely, the study further revealed that although there is mutual coordination is found at the national level but unfortunately internationally the same coordination is not found in the same spirit in Pakistan amongst commerce and universities. Moreover, this study also revealed that the coordination among these agencies plays so many functions like personal contacts, guidance function, meetings with each other, educational synergistic preparing programs, Research & Development activities, boards of trustees, panels, courses, and meetings. Thus, the linkages were influenced by numerous components which included government strategy, the executives of the college just as the industry. It was additionally discovered that there were certainly a few issues these included, absence of coordination, scarcity of funds to perform research, lack of enthusiasm on the part of employees, absence of research and development exercises, absence of required capability, conflicting venture of businesses. In addition, there was a scarcity of incubation Center, advance parks, and no basic assessment and check and balance framework. These feasible domains of cooperation covered assurance of licensed innovation, awards, gifts, donations, grants, classes/workshops, and vocation directing cooperative research and development projects, and guidance administrations.

Keywords: University, Industry, Research & Development, Pakistan

Introduction

The time in which we live is a globalization era, both higher education and commerce are vital for each other. The society expected from the university to produce skilled, talented, and profitable individuals, who can perform better for society.

This skilled, talented, and profitable product will be able to boost up the economy of the country and they will be fulfilling the requirements of the country. Additionally, the industry and commerce need to assume an increasingly dynamic job and both the industry and university can jointly work for the betterment of society, the university produces knowledgeable persons and industry can hire those persons.

There is no doubt that nationally and internationally higher education and industry are considered very imperative and indispensable for each other. UNESCO presented a significant plan to link the industry and university to produce a product of expert persons, who can intensify the economy of the society. In this regard UNESCO (2003) introduced four guideline principles of

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coordination among industry and university, "(i) there is a need of up to date training, (ii) at all levels due place is given in the curriculum for industrial education, (iii) R and D (Research and development) are necessary to coordinate university/industry, (iv) a proper system is operating at the university level for proper coordination.

National Education Policy (1998-2010) of Government of Pakistan mentioned that "In future for better coordination amongst industries and universities, different tasks will be performed like the building of industrial research offices, establishing of advanced industrial laboratories, starting of combined consultancy program and establishing modern parks". As indicated by the educational policy guidelines that higher education is very concerned about the collaborative programs of industry and university, these guidelines show that HEC (Higher Education Commission) wants to launch collaborative research projects to create a group of talented people.

In the research study of Martin, M. (2000) which is carried out in twelve different countries, his findings show so many advantages of links of industry and university. He added up that by a strong collaboration of industry and university we can increase more and more assets, we can access to the up-to-the-minute technology, both students and employees can get equal opportunities to access to the new and contemporary technology, knowledge and equipment, product of universities will be able to work in modern industries, society may increase its assets (Martin, 2000, p12).

UNESCO (2000) indicated that there are some countries of both categories (developing and developed) that have strong and withstanding coordinated effort among industry and university. Therefore, they contributed to the financial development and innovative headway in their nations. Along these lines, the significance of colleges in advancing specialized change and advancement is extensively perceived. The National Education Policies,(NEP) 1992, 2009 and 1998-2010 focused on fastening coordinated effort among college and industry for financial improvement in the nation because advanced education has the obligation regarding outfitting the understudies with cutting edge information and abilities according to prerequisites of beneficial divisions of the nation. The current period of data innovation has changed the entire situation of the world. Therefore broadening of expert aptitudes and most recent precise information are requirements of the ideal opportunity for the monetary turn of events. The government of Pakistan perceived the significance of market necessities and stressed on the joint effort of industry and university. (NEP) Government of Pakistan (2009) provided two guideline doctrines

- (i) We can improve the efficiency of Research and Development by implying and focusing on basic/fundamental research in the universities and after conducting the basic research, we have to apply the findings of that research in our industries. In this regard, industries may also assist the universities.
- (ii) In conducting Research we have to keep in mind the local situation of our industry, business, agribusiness, and so forth will be urged to help these territories through indigenous arrangements and make linkages among the scholarly community and the market (NEP, GOP, 2009).

These strategy activities give guidance for setting up contact among colleges and businesses for mechanical headway, research, and knowledge-based economy.

After researching 12 varied countries Martin,(2000,p.11) expressed that some evolved nations have accomplished a very impressive target of close collaborative partnership amongst industry and university. In this regard he mentioned the example of North American countries, he further added that we can see it in the past decade that some other countries of the world also trying to promote collaboration amongst industry and university. Vigdor (2000, p. 81) pointed out that we can promote the collaboration amongst industry and university by applying some techniques like arrangement of Conferences/ Seminars, introducing short courses, compulsory Industrial training, the culture of exhibition and prizes, the arrangement of a staff exchange program, research grants for universities to conduct basic research, focusing on consultancy and professional development. Gudmund,(2000,p.67) also in the same opinions but he further added that industries can provide funds to the universities because due to the shortage of resources universities are bound to conduct market-oriented researches. If grants are provided to the universities, they may produce better results. Vigdor (2000,p. 20) researched five different institutes of different countries and concluded that the basic function of a university is to produce personnel of a high caliber which promotes the social economy and overall condition of the country.

Association between industry and University needs focusing on so many factors that contributed and necessary for its collaboration. These factors found in both the places in universities and industries, like consultancy administration, students achievements and their placement in industries, staff exchange, focusing on continuing professional development, arrangement of consultancy services, combined research and development program, attention should be given to the small industries and advertising of research and development products. We can see a close association between industry and university in industrial countries but in developing countries, we can promote this collaboration by focusing and give proper attention to professional development. Martin,& Gudmund, (2000, p.21-22) suggested some conditions which are vital and necessary for the association and linkages of industry _university like teaching capabilities, proper basic research, staff improvement programs, proper attention to the small industries and multinational industries, focusing on the activities of research and development (related to the industries).

To achieve the close link between industries and universities we have to deploy dedicated expert operational and administrative staff at all levels of industries and universities and their heads should be more expert and cooperative and knowledgeable persons. All the staff can advertise and promote potential items. Moreover, they can work together with each other and they have to value the link and linkages of industries and universities. They must be equipped with the spirit of teamwork and collaborative efforts. Considering the significance and importance of the link amongst industries and university this research study was planned and carried out to research the possible zones of participation with the objective in the mind that these linkages could be set up based on some observational confirmations for financial development.

Objectives of the Study

The primary targets of this investigation were:

1. To study the current circumstance of the University-Industry association in Pakistan focusing on existing exercises and operating systems.
2. To study the main considerations liable for the enhancement of industry University association.
3. To point out the qualities and shortcomings (if any) in the association amongst industries and universities.

Design and Methodology of the Study

As the study describe the present situation thus the study is descriptive. The principle motivation behind the study in hand was to investigate the existing circumstance of linkage amongst industry and university, to highlight and pointed out the shortcomings for building up and improve the link and association in different fields. Based on these authoritative and hierarchical models for the administration of industry and university link in Pakistan was planned and structured. The number of occupants in the assessment remembered as the population of this investigation filled in for all the heads of the workplaces concerned and Deans of the workforce of the colleges serving in the general population and private in Rawalpindi and Islamabad district. An arbitrary review procedure was used to pick the test example. On 33 respondents the example of the investigation was involved.

Data Interpretation and Analysis

Data was collected from the respondents. After collection, it was analyzed and interpretation was carried out in the following lines.

Table 1: Present scenario of association among industry and university in Pakistan

In the light of respondents’ responses related to the present scenario of association among industries and universities in Pakistan are mentioned below.

S#	Activities concerning the existing situation	Oppose %	Support %	Mean Score
1	Presently industry and university have combined Research Projects/ Research & Development activities	20	80	4
2	Manpower Training, improvement, and guidance program.	22	78	4
3	Exchange of employees and students between industry and university / Internship program	14	86	4
4	To improve the professional ability of the workforce visiting lectureship program.	18	82	4
5	The industry offers monetary assistance to inquire about undertaking to the university	39	61	3

6	Advisory and counseling services are provided to each other	20	80	4
7	Joint endeavors for educational plan and curriculum development	17	83	4

Table 1 indicates support or opposes of the respondents’ responses related to the existing scenario of association among industry and university in Pakistan. 80% of respondents positively responded to the statement about the existing combined Research activities/ research and development functions between industry and university. 78% of respondents responded positively about the statement of the Manpower Training, improvement, and guidance program. 86% of respondents positively responded about the statement that the Exchange of employees and students between industry and university / Internship program. 82% of respondents positively responded to the statement about the improvement of the professional ability of the workforce visiting lectureship program. 61% of respondents positively responded to the statement that Industry offers monetary assistance to inquire about undertaking to the university. 83% of respondents positively responded to the statement about joint endeavors for educational plan development. 80% of respondents positively responded to the statement that Advisory and counseling services are provided to each other. The data additional revealed that the mean score was in the range of 3-4 which indicated that most of the respondents responded positively about the statements and the minimum percentage opposed the statement.

Table 2: Association system to create harmony among industry and university

In the light of respondents’ responses related to the established system and mechanism for the collaboration of universities/ industries in Pakistan are mentioned below.

S#	Associations Mechanism	Oppose %	Support %	Mean Score
1	Individual contacts among the relevant workforce	0	100	5
2	Arrangement of official meetings	18	82	4
3	Guidance and counselling administration and services	14	86	4
4	Community-oriented preparing and training programs	10	90	5
5	Research and development exercises/Research and improvement programs	8	92	4
6	Board of trustees has been established for innovative progression	16	84	4
7	Arrangement of courses/gatherings	14	86	4
8	combined Research publications/distributions	24	74	4
9	Industrial assistance and help to talented, skilled and proficient students	14	86	4

Table 2 indicates the support or opposition of the respondents’ responses related to the established system and mechanism for the collaboration of universities/ industries in Pakistan. 100 % of respondents positively responded to the statement about the Individual contacts among the relevant workforce. 82% of respondents positively responded to the statement about the Arrangement of official meetings. 86% of respondents positively responded about the statement of guidance and counselling administration and services between industry and university. 90% respondents positively responded to the statement about the Community-oriented preparing programs. 84% respondents positively responded to the statement that the Board of trustees has been established for innovative progression. 86% of respondents positively responded to the statement about the Arrangement of courses/gatherings. 74% of respondents positively responded to the statement about the combined Research publications/distributions. 86% of respondents positively responded to the statement about Industrial assistance and help to talented, skilled, and proficient students. The data additional revealed that the mean score was in among 4-5 which indicated that most of the respondents responded positively about the statements and the minimum percentage opposed the statement.

Table 3: Factors affecting industries and University collaboration

In the light of respondents’ responses related to the elements which influenced the collaboration of industries /universities in Pakistan are mentioned below.

S#	Factors which manipulate the association among industries and universities	Oppose %	Support %	Mean Score
1	plans, policy, and strategy of the Government of Pakistan	0	100	5

2	Commerce demand high-standard, trendy, and caliber of the outcomes of higher education.	11	89	4
3	Management and administration of the University	1	99	5
4	Global and local associations	22	78	4

Table 3 indicates the support or oppose of the respondents’ responses about the factors which affected the collaboration of universities/ industries in Pakistan. 100% of respondents positively responded to the statement about Government plans, policy, and strategy. 99% of respondents positively responded to the statement about the Management and administration of the University. 89% respondents positively responded about the statement about the Industries demand high-quality, trendy, and caliber of the outcomes of the university. 78% of respondents positively responded to the statement about the International associations and linkages. The data additional revealed that the mean score was in the range of 3-4 which clearly shows that most of the respondents responded positively about the statements and the minimum percentage opposed the statement.

Table 4: Advantages of association among industry and university

The respondents’ responded some benefits and advantages of university/industry associations are mentioned below.

S#	Advantages	Oppose%	Support%	Mean Score
1	Scholars are engaged in the works of practical life.	0	100	5
2	Skilled and proficient students are encouraged and valued.	0	100	5
3	Students are encouraged and motivated to visit the industry.	0	100	5
4	Employment chances for skilled personnel are available.	0	100	5
5	Conduct applied research in universities.	0	100	5
6	A global skyline and foundation of Center in pragmatic areas.	36	64	3
7	Excellence and standard of advanced education are improved.	35	65	3
8	Creation of required labor for the business	37	63	3

Table 4 indicates the support or oppose of the respondents’ responses about some benefits and advantages of university/industry associations. 100% of respondents positively responded to the statement that students are engaged in the activities of practical life. 100% of respondents positively responded to the statement that skilled and proficient students are encouraged and valued. 100% of respondents positively responded to the statement that Students are encouraged and motivated to visit the industry. 100% of respondents positively responded to the statement that Employment chances for skilled personnel. 100% of respondents positively responded to the statement about the Conduct of applied research in universities. 64% of respondents positively responded to the statement about the global skyline and foundation of Center in pragmatic areas.63% respondents positively responded to the statement about the creation of required labor for the business. 65% of respondents positively responded to the statement about the Quality and standard of advance education is improved. The data additional revealed that the mean score was between 3-5 which indicates that most of the respondents responded positively about the statements and the minimum percentage opposed the statement.

Table 5: Barriers and Constraints for the improvement of industry/university relationship

In the light of respondents’ responses, some barriers, and constraints in the industry/university relationship are mentioned below.

S#	Constraints/ Gaps	Oppose%	Support%	Mean Score
1	Deficiency and dearth of coordination	12	88	4
2	Lack of Communication between these institutions	0	100	5
3	Scarcity of grants for research	0	100	5
4	Ailing in house research and development structure and building capacities in the vast majority of the enterprises	12	88	4
5	Enthusiasm deficiency of faculty members	16	84	4
6	Lack of skilled personnel	36	64	3
7	Conflicting funding and industry procedures	0	100	5
8	No innovation parks or creating a community for making innovation entrepreneurs	38	62	3
9	No common assessment and checking system	0	100	5

Table 5 indicates the support or oppose of the respondents' responses to some barriers and constraints in the industry/university relationship. 88% of respondents positively responded to the statement about the Deficiency and dearth of coordination. 100% of respondents positively responded to the statement about the Lack of Communication between these institutions. 100% of respondents positively responded about the statement that there is a scarcity of grants for research. 84% of respondents positively responded to the statement about the enthusiasm deficiency of faculty members. 88% of respondents positively responded to the statement about the ailing in house research and development structure and building capacities in the vast majority of the enterprises. 64% of respondents positively responded to the statement about the lack of skilled personnel. 100% of respondents positively responded to the statement about conflicting funding and industry procedures. 62% of respondents positively responded to the statement that there are no innovation parks or creating a community for making innovation entrepreneurs. 100% of respondents positively responded to the statement that there is no common assessment and checking system. The data additional revealed that the mean score was in the range of 3-5 which clearly shows that most of the respondents responded positively about the statements and the minimum percentage opposed the statement.

Table 6: Some areas of university/ industry collaboration which can be improved

In the light of respondents' responses about some areas of industry/university relationship which can be improved are mentioned below.

S#	Potential areas of link	Oppose%	Support%	Mean Score
1	Funding, aids, and better study chances for the students can be provided.	0	100	5
2	More workshops and seminars can be arranged for career counseling	0	100	5
3	Joint Research & Development Projects and Placements of students can be further maximized.	0	100	5
4	Modern technology and instruments can be provided.	18	82	4
5	The fortification of skilled and proficient persons can be improved.	0	100	5
6	Guidance and counseling services can be more increased.	12	88	4
7	In Curriculum development and planning process place can be given to the industrial requirements	22	78	4
8.	Professional development can be considered to keep the ongoing process	38	62	3
9	For joint launching activities, financial grants may be provided	13	87	4

Table 6 indicates the support or oppose of the respondents' responses about some areas of industry/university relationship which can be improved. 100% of respondents positively responded to the statement that the protection of skilled and proficient persons can be improved. 100% of respondents positively responded to the statement that funding, aids, and better study chances for the students can be provided. 100% of respondents positively responded to the statement that more workshops and seminars can be arranged for career counseling. 100% respondents positively responded to the statement that joint Research & Development Projects and Placements of students can be further maximized. 82% of respondents positively responded to the statement that Modern technology and instruments can be provided. 88% of respondents positively responded to the statement that guidance and counseling services can be more increased. 78% of respondents positively responded to the statement that In Curriculum development and planning process place can be given to the industrial requirements. 62% of respondents positively responded to the statement that Professional development can be considering to keep an ongoing process. 87% of respondents positively responded to the statement that For joint launching activities financial grants may be provided. The data additional revealed that the mean score was in the range of 3-4 which clearly shows that most of the respondents provided positive responses about the statements and the minimum percentage opposed the statement.

Findings

1. From the respondents' responses related to the existing scenario of association among industry and university in Pakistan, it was established that 80% of respondents positively

responded to the statement about the existing combined research and development activities / Research Projects between industry and university. 78% of respondents positively responded to the statement about the Manpower Training, improvement, and guidance program. 86% of respondents positively responded about the statement that the Exchange of employees and students between industry and university / Internship program. 82% of respondents positively responded to the statement about the improvement of the professional ability of the workforce visiting lectureship program. 62% of respondents positively responded to the statement that Industry offers monetary assistance to inquire about undertaking to the university. 84% of respondents positively responded to the statement about the joint endeavors for educational plan development. 80% of respondents positively responded to the statement that advisory services are provided to each other. The data additional revealed that the mean score was in the range of 3-4 which clearly shows that most of the respondents responded positively about the statements and the minimum percentage opposed the statement.

2. From the respondents' responses related to the established system and mechanism for the collaboration of universities/ industries in Pakistan, it was established that 100 % of respondents positively responded to the statement about the Individual contacts among the relevant workforce. 82% of respondents positively responded to the statement about the Arrangement of official meetings. 86% of respondents positively responded about the statement of guidance and counselling administration and services between industry and university. 90% of respondents positively responded to the statement about the Community-oriented preparing programs. 84% of respondents positively responded to the statement that the Board of trustees has been established for innovative progression. 86% of respondents positively responded to the statement about the Arrangement of courses/gatherings. 74% of respondents positively responded to the statement about the combined Research publications/distributions. 86% of respondents positively responded to the statement about Industrial assistance and help to talented, skilled, and proficient students. The data additional revealed that the mean score was in the range of 4-5 which clearly shows that most of the respondents responded positively about the statements and the minimum percentage opposed the statement.
3. From the respondents' responses about the factors which affected the collaboration of industries/ universities in Pakistan, it was established that 100% of respondents positively responded to the statement about the Government plans, policy, and strategy. 100% of respondents positively responded to the statement about the Management and administration of the University. 89% of respondents positively responded about the statement about the Industries demand high-quality, trendy, and caliber of the outcomes of the university. 78% of respondents positively responded to the statement about the International associations and linkages. The data additional revealed that the mean score was in the range of 3-4 which clearly shows that most of the respondents responded positively about the statements and the minimum percentage opposed the statement.
4. From the respondents' responses about some benefits and advantages of university/industry associations, it was established that 100% of respondents positively responded to the statement that students are engaged in the activities of practical life. 100% of respondents positively responded to the statement that skilled and proficient students are encouraged and valued. 100% of respondents positively responded to the statement that Students are encouraged and motivated to visit the industry. 100% of respondents positively responded to the statement that Employment chances for skilled personnel. 100% of respondents positively responded to the statement about the Conduct of applied research in universities. 64% of respondents positively responded to the statement about the global skyline and foundation of Center in pragmatic areas. 63% respondents positively responded to the statement about the creation of required labour for the business. 65% of respondents positively responded to the statement about the Quality and standard of advance education is improved. The data additional revealed that the mean score was in the range of 3-5 which clearly shows that most of the respondents responded positively about the statements and the minimum percentage opposed the statement.

5. From the respondents' responses to some barriers and constraints in the industry/university relationship, it was established that 88% of respondents positively responded to the statement about the Deficiency and dearth of coordination. 100% of respondents positively responded to the statement about the Lack of Communication between these institutions. 100% of respondents positively responded about the statement that there is a scarcity of grants for research. 84% of respondents positively responded to the statement about the enthusiasm deficiency of faculty members. 88% of respondents positively responded to the statement about the ailing in house research and development structure and building capacities in the vast majority of the enterprises. 64% of respondents positively responded to the statement about the lack of skilled personnel. 100% of respondents positively responded to the statement about conflicting funding and industry procedures. 62% respondents positively responded to the statement that there are no innovation parks or creating a community for making innovation entrepreneurs. 100% of respondents positively responded to the statement that there is no common assessment and checking system. The data additional revealed that the mean score was in the range of 3-5 which clearly shows that most of the respondents responded positively about the statements and the minimum percentage opposed the statement.
6. From the respondents' responses about some areas of industry/university relationship which can be improved, it was established that 100% of respondents positively responded to the statement that the protection of skilled and proficient persons can be improved. 100% of respondents positively responded to the statement that funding, aids, and better study chances for the students can be provided. 100% of respondents positively responded to the statement that more workshops and seminars can be arranged for career counseling. 100% of respondents positively responded to the statement that joint Research & Development Projects and Placements of students can be further maximized. 82% of respondents positively responded to the statement that Modern technology and instruments can be provided. 88% of respondents positively responded to the statement that guidance and counseling services can be more increased. 78% of respondents positively responded to the statement that In Curriculum development and planning process place can be given to the industrial requirements. 62% of respondents positively responded to the statement that Professional development can be considering to keep an on-going process. 87% of respondents positively responded to the statement that for joint launching activities financial grants may be provided. The data additional revealed that the mean score was in the range of 3-4 which clearly shows that most of the respondents provided positive responses about the statements and the minimum percentage opposed the statement.

Conclusions

It was inferred that somewhat relationship among industries and universities had been built up throughout the contact office in the (HEC) Higher Education Commission. With the affiliations to combined research activities, Research and Development functions and activities were arranged. It additionally covered representatives preparing and advancement agendas, temporary job program/exchange of employees, visiting lectureship, and budgetary help for a look into the venture, educational plan improvement, and consultancy administrations. It was likewise summed up there were different affiliation instruments which included, individual contacts, formal gatherings consultancy administrations, collective preparing programs, research and development exercises, courses/meetings, combined research distributions, and sustaining trained students. It was additionally finished up there are numerous components that influenced the relationship between enterprises and universities. It was additionally presumed that there were a few constructive conditions of keeping up the relationship among industry and university, which incorporated like understudies were engaged with this present reality business exercises, and they were roused and moved to ventures, work open doors for proficient staff, applied research, could be led, worldwide skyline and focus in down to earth fields could be set up.

Some barriers were inferred from the data which create hindrance in the expansion of link among industry and university. These incorporated deficiencies and the dearth of harmonization, Lack of contact between these institutions, scarcity of grants for research, the enthusiasm deficiency of faculty members, Lack of skilled personnel, conflicting funding and industry procedures, no

innovation parks, or creating a community for making innovation entrepreneurs. It was also concluded that some areas of industry/university relationship which can be improved like, protection of skilled and proficient persons, funding, aids, and better study chances for the students t more workshops and seminars and joint Research & Development Projects and Placements of students can be further maximized.

Recommendations

The researcher suggested that it is the responsibility of the contact office located in the HEC (Higher Education Commission) that they may welcome the expert persons from both the sides industry as well as from the university to make proper arrangement and make plans to tackle the issues which create hindrance in the way of the collaboration of industries and universities because the solution of these issues is only in the hands of policymakers. It is further suggested that this specific model can be actualized in the view of the arrangement of the approach of the government because the motivation behind structuring this model is additionally to build links among industries and universities. Thusly this model will assist the dynamic for understanding improvement to discover arrangements of the issues based on some exact facts and evidence.

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