

Review

Comparative analysis of the project management curricula offered by academic institutions in Pakistan

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The developed nations have pioneered the innovative concepts and techniques in the field of education such as project management. Academic institutions in the developing world could benefit a lot from the methods and concepts employed by the developed world institutions. A paradigm shift is needed so that the developing world starts realizing the importance of rapidly emerging business concepts which could be easily implemented in the developing world. However, it is not possible without bridging the gap between academia and industry especially in the developing world. The close contact between academia and industry would reveal and strengthen the importance of the concept of project management. The project management education is of immense importance in boosting the economic and industrial growth of any country. This phenomenon is even more crucial for the developing nations such as Pakistan. This research study is focused on the in-depth analysis of region wise and city wise comparison of the project management related courses in different academic institutions of Pakistan. The analysis is based on course offerings at 61 private and public sector universities in Pakistan. Only those universities were selected that were recognized by the Higher Education Commission of Pakistan. A comprehensive online search was conducted in which the web-sites of all 61 universities were visited to identify the courses being offered in project management discipline. The research revealed that the discipline of project management is still in its infancy stage in Pakistan. The Pakistani academic institutions do not offer any degree program in the field of project management which shows that the project management has not been recognized as a distinct discipline by the Pakistani institutions. The research also revealed that only a limited number of institutions offer wide range of project management related courses. The most common project management related courses in Pakistani institutions include production and operations management, project management, software project management, and project evaluation. Majority of the courses were offered as core courses, however the elective course offerings were limited. More courses were offered at the graduate level and the course offerings were limited to the PhD students. It was revealed that there is an immense need to upgrade the project management curricula of Pakistani academic institutions. The research only focused on those universities which were recognized by the Higher Education Commission of Pakistan. Further works can be extended to survey the private sector universities in Pakistan. A comparative study of project management curricula in developed and developing countries would be very beneficial. This is a timely study as the programme of improving project management education is currently underway in Pakistan. This paper sets the foundation for future research focusing on improving project management curricula for business schools in the developing countries. The findings of this study would also be valuable for all academicians and professionals involved in the area of project management in general. This is a unique comparative study of project management curricula offered by academic institutions in Pakistan, conducted for the first time. This study is part of a larger study being carried out for improving project management education in Pakistan. Further the research suggests comparing the course offerings of Pakistani institutions with the project management body of knowledge that is, the 9 knowledge areas and their competencies in order to develop a valuable project management curricula which could be embraced by the academic institutions and professional industry in Pakistan.

Key words: Project management, courses, education, Pakistan, curriculum.

INTRODUCTION

The external business environment is continuously changing and evolving. In order to cope with the present and future challenges of the business world, it is pertinent that the academic institutions impart the relevant and current knowledge to the students. It is particularly important for the business schools to take a more balanced approach and offer business education curricula which contain a blend of diversified business areas (Arain and Tipu, 2007a).

The rapid trend of globalization and technological changes have made difficult for organizations to survive in the competitive world. As a result the importance of project management has been increased many folds (Arain and Tipu, 2007a). It is difficult to face the challenges of present international business arena without being more agile, adaptive and efficient. Without properly managing the business operations, it would be increasingly difficult to thrive or even survive for the organizations. Projects are complex because they involve many human and non-human factors and variables (Arain et al., 2004). The project process can be influenced by changing variables and unpredictable factors that could derive from different sources. These sources include the performance of the parties, resources availability, environmental conditions, involvement of other parties and contractual relations (Arain and Low, 2003). As a consequence, the projects may face problems possibly causing delay in the project completion time. It is commonly accepted that the construction industry has for many years been criticized for not developing consistent projects that are on time, within budget and with high quality standard (Raouf, 1998). Generally, failure to deliver successful projects has been considered in relation to schism between design and construction, lack of integration, lack of effective communication, uncertainty, changing environment, and increasing project complexity (Arain et al., 2004; Arain, 2005). Arain and Tipu (2007a) pointed out that committed people with high team spirit are essential for effective project management. Successful implementation of projects has always been a critical factor to the success of organization. However, organizations face difficulty aligning the Project Management goals with Project Management practices (Conrad and Sireli, 2005).

Due to the complex nature of present business environment, the organizations often undertake multiple projects which are varied in nature and call for more specialized expertise in project management (Arain and Tipu, 2007a). The engineers are often assigned management responsibilities as a result of promotion to higher level or due to the nature of work. Therefore, the engineering managers must have project management skills and ability to have the holistic view of the project from initia-

tion till closing. The engineering managers have to in an organizational setting which demands high degree of cross-functional integration. In order to effectively operate in such environment, the engineering managers should have project management knowledge and essential skills (Babcock and Morse, 2002).

Due to the technological advances in the IT industry around the world, the need for better Project Management skills is becoming more evident. Hartenian et al. (2001) pointed out that there is immense need that business schools strive to improve the course offerings that incorporate the issues of complex dynamic environment. They particularly pointed out that the graduate students do not possess required knowledge of project management related skills. Arain and Tipu (2007a) mentioned that the issue of lack of project management skills has been realized by the business schools and it is encouraging that business schools are considering developing a complete Project Management curriculum. The challenges discussed above are equally important to the organizations operating in developed as well as developing countries (Arain and Tipu, 2007a). However, it could be more critical for organizations in a developing country to optimize the output by making their operations more effective and efficient. Management decides and implements the ways and means to effectively and efficiently utilize human and non human resources to reach pre-determined objectives (Bryde, 2003). Managers are expected to marshal re-sources to complete a fixed-life project on time, on budget, and within specifications. Managers are the direct link to the customer and must manage the interface between customer expectations and what is feasible and reasonable (Arain, 2005). They provide direction, coordination, and integration to the project team, which is often made up of part time participants loyal to their functional departments. Project managers must ensure that appropriate trade-offs are made between the time, cost and performance requirements of the project (Arain and Low, 2003). At the same time, managers, unlike their counterparts, generally enjoy only rudimentary technical knowledge to make such decisions. Instead, they must orchestrate the completion of the project by inducing the right people and resources, at the right time, to address the right issues and make the right decisions (Arain, 2005; Coy et al., 2007). Certainly, resource optimization for successful project management is a unique and challenging task. Arain and Assaf (2003) pointed out that the underlying reasons of the issues, such as time delays and high cost, could be lack of knowledge of the management skills.

Project management education

The project management curricula of business and engineering schools especially in developed nations such as US and UK could be considered as benchmark to deve-

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lop a separate project management discipline suitable for the developing world. Developed nations have pioneered the teaching of project management skills to the graduate students and have already realized some economic benefit in terms of effective project management. Teaching of the project management concepts is more crucial for the organizations in developing world where economic, social, and technological factors could cause the project failure.

In order to analyze different courses, Arain and Tipu (2007b) reviewed the MBA course offerings at the following international business schools:

- o Kellogg School of Management, Northwestern University, USA
- o The Wharton School of the University of Pennsylvania, USA
- o Graduate School of Business, Stanford University, USA
- o Sloan School of Management, Massachusetts Institute of Technology, USA
- o Yale School of Management, Yale University, USA
- o London Business School, UK
- o Indian Institute of Management, Ahmedabad, India
- o Lahore University of Management Sciences, Lahore, Pakistan.

A total of 946 MBA courses were reviewed and it was revealed that 3 out of 8 institutions offer project management course as elective. However, the course on “operations management” was offered as core in all selected business schools.

Different approaches are being applied by US universities to provide students maximum exposure to the PM discipline. One approach is to require students working on a project to give them practical orientation with regard to the project management concepts and skills. US universities have emphasized the importance of Project Management by giving the opportunity to students to sharpen their PM skills by completing capstone project in final term. Another approach is to have a graduate degree program in project management. Meredith and Roth (1998) wrote that courses such as consulting, entrepreneurship, international business, and project management are very popular among the students in the south-eastern USA. Meredith and Roth (1998) also identified the need to have qualified faculties with expertise and skills in project management. They also emphasized that more universities should offer PM courses.

Hartenian et al. (2001) suggested that the concepts of Project Management could be introduced to the students using a capstone integrated business course. In the research study conducted by Hartenian et al. (2001), the students were assigned to a cross-functional project team which exposed them to different operational issues of project implementation. The case method approach was used for the semester long exercise in which students had the opportunity to work on business and project management related issues and had practical orientation.

This provided the students an opportunity to relate theory with practice and see the practical implications of successful project implementation. It was also revealed that the students showed interest to have individual and team responsibilities in an organizational setting while working on a project as a team. In the context of case based instructions to impart the knowledge of project management concepts in developing countries, a related challenge would be the availability of cases on local industry.

The discipline of operations management incorporated various Project Management concepts. Meredith and Roth (1998) anticipated that more Project Management courses would be required as an elective in the operations management field. The following areas, as identified by Roth et al. (1997), could also be considered in the domain of project management:

Manufacturing operations – certain activities could be related to Project Management such as production planning, control systems, plant rationalization, and benchmarking to evaluate the performance

Location and facilities – activities included in the domain of Project Management such as facility location, design, layout etc.

The Project Management concepts are becoming popular among other disciplines. In US, many efforts have been made to incorporate the Project Management topics in the Information Systems (IS) discipline. The faculties are actively showing interests in the Project Management practices and striving to include the Project Management concepts in the Information Systems curricula (Reif and Mitri, 2005). The objective of these efforts is to enable the students to effectively plan and execute IT based projects. It appears that it is beneficial for organizations to implement PM techniques in different areas.

The study conducted by Reif and Mitri (2005) also revealed that PM concepts are included in the Information Systems classes such as introduction to Information Systems and IT management. However, the study also revealed that only 25% faculty members have separate course in the name of Project Management. Lack of available course hours was pointed out as the underlying reason of not offering a separate course focusing fully on Project Management concepts. Basic concepts of Project Management such as project organization management, principles, concepts and issues were included in the Systems Analysis and Design courses (Duncan, 1996).

Du et al. (2004) also agreed that the Project Management concepts could be incorporated in the Information Systems program in order to enable students to have blend of managerial and technical skills. The study conducted by Du et al. (2004) found that 78 institutions out of 206 in the US offered a separate course on project management. It was also found that the information systems programs put more emphasis on project management related topics such as project scope and cost management. However, there was less emphasis on soft

Table 1. Project Management topics taught at the University of Westminster

Project Management Topics Taught at The University of Westminster		
Introduction to Project Management	Team, team selection, leadership	Performance monitoring
Managing implementation.	Finance accounting, cash flow	Critical path analysis
Project timing	Quality and Business Process Reengineering	Project control, standards
Networks and schedules	Contract and project reviews	Leadership and motivation
Financial controls	Roles and responsibilities of project management	Project life cycle
Contract law	Networking and scheduling (PERT and GANTT charts, WBS)	Planning a project
Contract administration	Change control, risk management	Safety and risks

skills such as human resource and project communications management. Moreover, as compared to the benchmark course offered at the Georgia State University, the information systems programs in the US heavily cover project management concepts such as work breakdown, estimation, and project networks but do not fully address the topics such as project chartering and dealing with vendors and suppliers.

Shinkins (1995) identified the project management concepts which have been taught at the University of Westminster, UK. Some of the Project Management topics taught at the University of Westminster are shown in Table 1.

As shown in Table 1, topics indicate the multidisciplinary nature of project management. It also suggests the need to develop a separate project management curriculum in order to fully address the above mentioned topics. Another important element of teaching project management topics at the University of Westminster was computer based instructions. The students were given the opportunity to learn how to manage projects using computers. The areas which were covered using the computer based instructions include: content knowledge, self-knowledge diagnostic skills, applications skills, teamwork skills and self control. The below mentioned topics were also included in the course contents:

- Project Management Overview
- Defining the project
- Work Breakdown structure
- Project activity charts
- Defining the project network
- Fining the critical path
- Calendar scheduling
- Elements of the GANTT chart
- What if Analysis
- Resource Histogram
- Resource optimization

- Time/cost trade-offs
- Tracking progress
- Advanced cost control

The above mentioned contents of computer based learning modules of Project Management reflect that the computer based instructions could be beneficial in terms of developing the Project Management curriculum and teaching various Project Management topics.

Universities around the world are beginning to realize that the Project Management concepts are essential and need to be incorporated in the academic curricula. However, it is difficult to see the considerable effort by the universities at the national level in developing countries. There could be the possibility to see few Project Management related courses offered by the academic institutions in developing countries.

Majority of business and engineering schools around the world offer management related courses which may also include the Project Management concepts under varying titles. Vrat (1998) reported different courses which fall under the umbrella of Operations Management and are being offered at the business and engineering schools in India. The courses, offered in India, covering the below mentioned topics could also be considered as Project Management related courses:

- Facility layout
- Facility location
- Work measurement
- Scheduling and sequencing
- Design, planning and control of production systems

In India, industry-academia cooperation is highly encouraged in developing academic curricula. It helps identifying the requirements of the industry and enable students to learn modern skills required to be successful in the highly competitive and globalized world. Vrat (1998) also pointed out that due to resource paucity; it is very difficult

to procure Operations Management related software. These kinds of constraints hinder the future research and development activities in the field of Operations Management.

It appeared that there is paucity of research concerning the global view of the Project Management education in general and the state of the Project Management education in developing countries in particular. Kocaoglu (1994) pointed out that the educational programs offered in the field of engineering and technology management between 1949 and 1994 had significantly increased. He underlined the importance of this discipline and wrote that the discipline of engineering and technology management is becoming increasingly popular outside the US in countries such as Australia, Canada, South Africa, United Kingdom etc. A total of 159 different programs were being offered in 25 countries till 1994. The study identified the following different titles of engineering and technology management program:

Engineering Management
Management of Technology Master
of Engineering Management
Technology Management Industrial
Management Systems Engineering

Engineering Science
Manufacturing Management
Production Management
Diploma in Tech. Management

The above mentioned titles may include certain components of project management discipline; however it is important to note that the discipline of project management was not identified by name in the above list.

Research approach

The analysis is based on the 160 courses being offered at 61 private and public sector universities in Pakistan. Only those universities were selected which were recognized by the Higher Education Commission of Pakistan. A comprehensive online search was conducted in which the authors reviewed the websites of all 61 universities to identify the courses being offered in project management discipline. The information provided on the websites was verified by contacting the concerned persons within the selected institutions.

DISCUSSION

Table 2 shows the list of different selected institutions which offer project management related courses in Islamabad. All the project management related courses along with their respective titles are shown below. Apart from few institutions such as Centre for Advance Studies in Engineering (CASE), Foundation University, and Riphah International University, the rest of the institutions

offer few project management related courses. Some of the common courses include project management, operations management, and software project management. It also shows that only 4 out of 11 institutions offer a course with the title "Project Management." A closer look at the course titles revealed that the project management related courses are being offered covering few areas such as project appraisal and evaluation, software project management, and engineering economics and management. This underlines the fact that the Pakistani institutions are lagging behind in terms of realizing the full potential of the project management discipline.

As shown in Table 3, out of 25 institutions, only 5 institutions offer 4 or more courses in project management. It is pertinent to note that 12 out of 25 institutions offer a course titled "Project management." A city wise comparison showed that a maximum number of project management related courses is offered in institutions located in Lahore. The names of the institutions offering 4 or more project management related courses in Lahore include Hajvery University, the University of Management and Technology, and University of Engineering and Technology. There were only three institutions in Faisalabad offering project management related courses. Two out of three institutions offer only one course covering limited concepts of project management. The titles of the course are operation & facility design and operations management. As shown in Table 4, in Azad Kashmir region, only one institution offered 3 project management related courses. The below mentioned titles of the courses may cover some dimensions of the discipline of the project management but may not take the holistic approach towards covering the basic concepts of the project management. It was pertinent to highlight that the selected institution, the university of Azad Jammu & Kashmir, is the only major institution that is catering to the academic needs of the students residing in the region of Azad Kashmir. Therefore, it is critical that the complete range of project management related courses should be offered in this institution. Table 5 shows the listing of the institutions offering project management related courses in Sind region. Only one institution, SZABIST Karachi, offered a total of 4 project management related courses. The remaining 14 institutions offer less than 4 courses. The majority of the institutions in Sind offer a limited project management courses. Out of 15 institutions, only 3 institutions offer the course titled "Project Management." Different titles of the selected courses such as software project management, project evaluation, engineering management, and construction management suggest that the project management has not yet been recognized as a distinct discipline by the majority of the institutions in Pakistan. Table 6 shows the project management related course offerings in Balochistan region. Only two institutions offer 3 or more project management related courses. It appeared that the engineering schools do not offer a wide range of project

Table 2. Project management course offerings at institutions in Islamabad.

University Name	Total Number of PM related courses offered	Titles of the courses
Air University	2	Production & operations MGT, Project MGT & evaluation
Bahria University	2	Project management, Operations & production management
Federal Urdu University of Arts, Sciences and Technology	1	Software project
Foundation University	6	Technology management, software project management, project evaluation, Production and Operations Management, Engineering Management, Project Management
Institute of Space Technology	1	Engineering Management
International Islamic University	3	Project appraisal MGT, operations MGT, Operations & IT project MGT
Quaid-i-Azam University	3	Operation management, management of technology, Software Project Management
Riphah International university	5	Project management, IT project Management, Operations and Production management, IT project management, Engineering economics and management
CASE affiliated with UET Taxila	8	Engineering management, Procurement management, Computer Applications in PM, Project cycle management, project quality risk, software project management, management of technology, Project monitoring, evaluation & control
COMSATS	3	Project management, Operations management, IT Project Management
National University of computers and emerging sciences	3	Software project MGT, Technology Management, Engineering economics and management

management courses to the engineering students. The Balochistan University of Engineering and Technology offers one course on “construction management planning” which may not cover all the aspects of the project management from project initiation till project closing. This may give a limited exposure to the students and result in complications if the students got the opportunity to work on a full fledged project in the future. The know-ledge of the project management domain could enable the students to understand different phases of project and the respective challenges.

Different courses offered at the selected institutions in NWFP are shown in Table 7. The institutions which offer 4 project management related courses include Institute of Management Sciences, Peshawar and Sarhad University of Science and Technology, Peshawar. It appeared that only standard courses are more common in the selected institutions such as project management and software project management. It shows that different other critical dimensions of the project management are ignored such as project risk management, project communication management, and project human resource management.

There is a need of more specialized courses in these areas. The city wise course comparison highlighted that more institutions offer courses in Peshawar in comparison to other cities in NWFP such as Dera Ismail Khan, Jamshoro, and Swabi.

Figure 1 shows the core and elective course offerings in the selected institutions. The more common core course is ‘production and operations management’ and the least common core course is ‘technology management’. Only 16 out of 61 selected institutions offer ‘project management’ as a core course. It showed that the course of ‘project management’ is not considered as critical by the majority of the selected institutions. Only 7 institutions offer project management course as elective. It appeared that there is a need to acknowledge the crucial importance of the field of project management and introducing it as a core course.

Figure 2 shows those selected courses which were offered by at least 3 institutions. Out of 61 institutions, only 25 institutions offer courses on ‘software project management’ and ‘production and operations management’. Only 24 institutions offer course on project ‘man-

Table 3. Project management course offerings at institutions in Punjab.

University Name	Location	Total Number Courses	Titles of the courses
Islamic University	Bahawalpur	4	Operations management, project appraisal, project evaluation and monitoring, project management
National Textile University	Faisalabad	1	Operation & Facility Design (garment manufacturing)
University of Agriculture, Faisalabad	Faisalabad	3	Production and operations management, Project evaluation, software project management
University of Faisalabad	Faisalabad	1	Operations management,
Gift University	Gujranwala	2	Principles of operations MGT, project management
National College of Business Administration & Economics	Lahore	2	Production & operation MGT, software project MGT
Government College University	Lahore	2	Project management, Operations MGT
Hajvery University	Lahore	5	Production and operations management, project management, plant location & layout, work measurement, production MGT
Imperial College of Business Studies	Lahore	3	Production and Operations Management, Project analysis and feasibility studies, project management
Institute of Management Sciences, Lahore	Lahore	3	Project appraisal & evaluation, production MGT, software PM & quality
Lahore College for Women University	Lahore	2	Production management, software project management
Lahore University of Management Sciences	Lahore	2	Operations management, project management
The Superior College, Lahore	Lahore	2	production and operations management, software project management
The University of Management & Technology	Lahore	5	Operations Management, Management of Technology, project management, software quality and project management, technical project management
University of Central Punjab	Lahore	2	Operations management, purchasing and metrial management
University of engineering & technology	Lahore	5	Project evaluate., Project planning and site MGT, construction mgt & planning, Production and operations management, construction management
The University of Lahore	Lahore	3	Project management, Operations and production management, engineering economics & management
University of the Punjab	Lahore	2	Operations management, project management

ment'. It shows standard course offerings such as project management and software project management. There

should be more focus on specialized courses in the areas such as project integration management, project scope

Table 3. Continues

University of South Asia	Lahore	1	Production and operations management
Virtual University	Lahore	3	Production and operations management, project management, software project management
Bahauddin Zakariya University	Multan	4	Operations management, construction planning and management, construction management and project scheduling, engineering management
Fatima Jinnah Women University	Rawalpindi	2	Project management, Software project management
National University of Sciences & Technology	Rawalpindi	3	Operations management, project management, engineering economics and engineering management
COMSATS	Lahore and Attock	3	Project management, Operations management, IT Project Management
National University of computers and emerging sciences	Islamabad, Karachi, Lahore, Peshawar	3	Software project MGT, Technology Management, Engineering economics and management

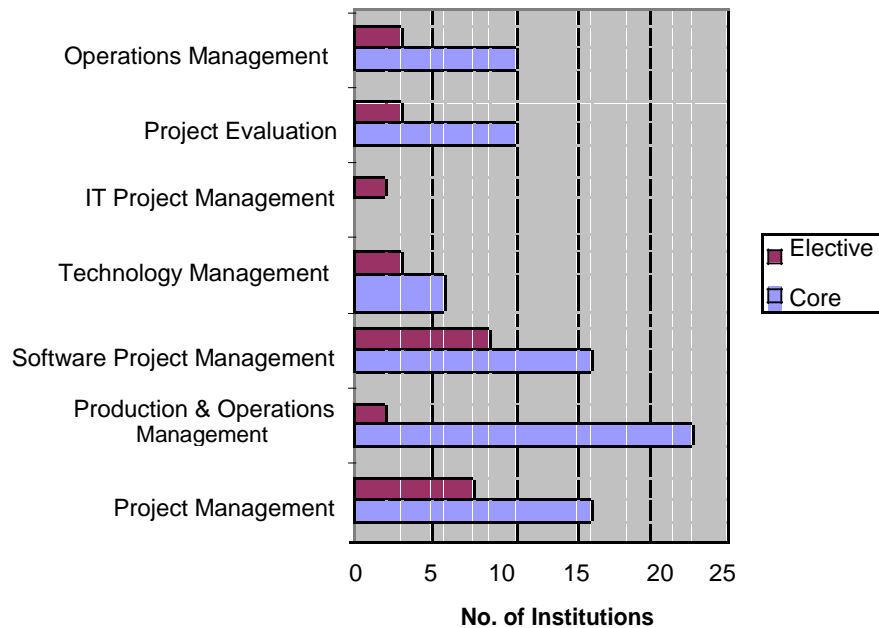


Figure 1. Selected project management related courses offered as core or elective in selected institutions

Table 4. Project management course offerings at institutions in Azad Kashmir.

University Name	Location	Total Number of PM related Courses Offered	Titles of the courses
University of Azad Jammu & Kashmir	Muzaffarabad, Azad Kashmir	3	Software project management, operations management, engineering management

Table 5. Project management course offerings at institutions in Sind.

University Name	Location	Total Number of PM related Courses Offered	Titles of the courses
Mehran University	Jamshoro	1	Software project management
IBA	Karachi	3	Operations & technology management, production and operations management, software project and quality management
Hamdard University	Karachi	2	Operations Management, Software project management
Dadabhoj Institute of Higher Education	Karachi	2	Operations & Supply chain management, project evaluation
Greenwich University	Karachi	2	Project management, production and operations management
Institute of business management	Karachi	3	Project appraisal, software project management, production and operations management,
Iqra University	Karachi	3	Project evaluation, Technology management, engineering economics and management
Mohammad Ali Jinnah University	Karachi	2	Software project management, project planning & evaluation
NED	Karachi	1	Engineering management
SZABIST	Karachi	4	Software project management, Technology management, project management, project planning & evaluation
Sir Syed University of Engg. & Technology	Karachi	2	Construction Management, Software project management
University of Karachi	Karachi	1	Software engineering and project management
University of Sind	Karachi	1	Operations management, Project evaluation
IBA Sukkur	Karachi	1	Software project & quality management
Karachi Institute of Economics & Technology	Karachi	2	Project evaluation, project management

management, project time management, and project risk management.

The review of a total of 160 courses revealed some common and not common courses being offered in the selected institutions. The list of those courses is presented in Table 8. Some of the common areas include production and operations management, software project management, and operations management. However, few institutions offered courses in areas such as plant location and layout, project analysis & feasibility studies and project cycle management. It appeared that the courses which fall under the category of not common courses do not cover all the critical aspects of managing a project.

The course offerings at the selected degree level are shown in Table 9. It appeared that the maximum course offerings are available to the BS or B.Sc. students. A total of 11 different course titles are available to these students. On the other hand, very few course offerings are available to the M.Sc., BCS, and MCS students. A total of 10 different course titles were available to the MBA students. It is also pertinent to highlight that a variety of courses should be offered to the PhD students in order to encourage research in the field of project management in

Pakistan. Only 8 different course titles were being offered to PhD students. There is a need to encourage the doctoral students to pursue the research tracks which are focused on highlighting and tackling unique project management challenges in Pakistan.

Figure 3 shows the name of those institutions which offer 5 or more courses in the field of project management. The maximum number of course, that is, 8, were being offered at the CASE institute, Islamabad followed by Foundation University, Islamabad, which offered 6 project management related courses. Only 6 out of 61 institutions offer 5 or more project management related courses which shows that the discipline of project management is not very well recognized by the Pakistani institutions. It is also relevant to underline that those institutions which offer 5 or more courses were located in Lahore and Islamabad. It appeared that the students of other regions do not have a wide range of project management courses to select from.

A closer look at the region wise comparison revealed that a maximum of 68 project management related courses were offered at different institutions in Punjab followed by 37 courses in Islamabad. Only 30 courses were offered to students under different titles in Sind. In

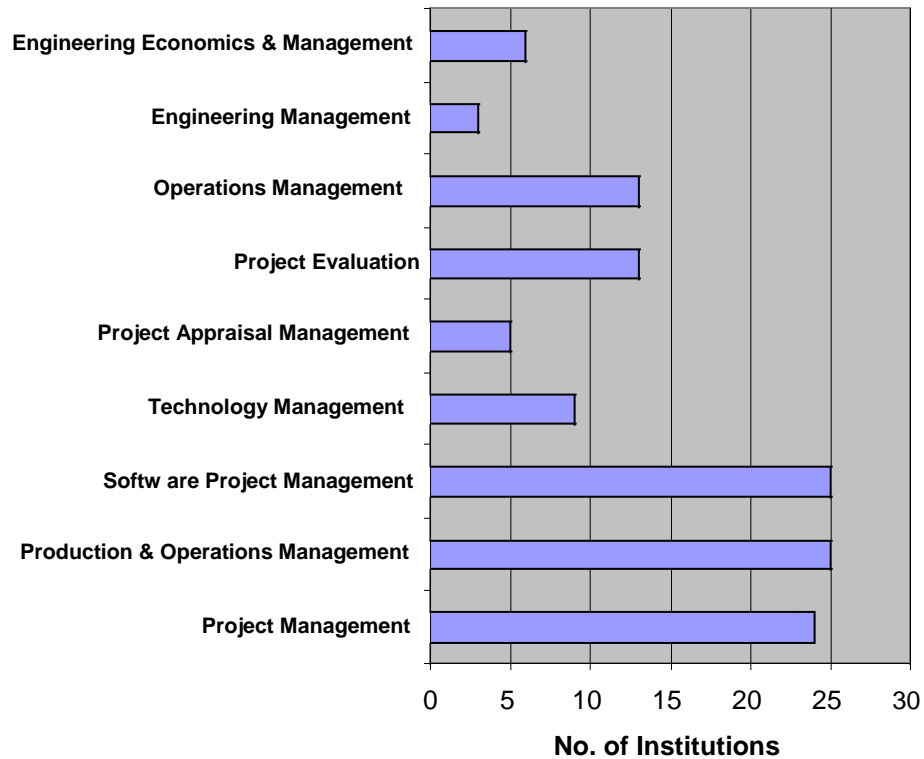


Figure 2. Selected courses offered at minimum 3 institutions.

Table 6. Project management course offerings at institutions in Balochistan

University Name	Location	Total Number of PM related Courses Offered	Titles of the courses
Balochistan University of Engineering and Technology	Khuzdar, Balochistan	1	Construction management planning
Balochistan University of Information Technology and Management Sciences	Quetta	3	Project management, project appraisal, software project management
University of Balochistan.	Quetta	3	Project financing & evaluation, Project management, production and operations management

comparison to Punjab and Islamabad, the institutions located in Sind should strive to offer a wide range of courses on project management. It appeared that there is a need to encourage the project management discipline in regions such as NWFP, Azad Kashmir, and Balochistan. Only 15, 7, and 3 courses were available at institutions in NWFP, Balochistan, and Azad Kashmir respectively as shown in Figure 4.

Conclusions

The developed nations have pioneered the innovative

concepts and techniques in the field of education such as project management. Academic institutions in developing world could benefit a lot from the methods and concepts employed by the developed world institutions. A paradigm shift is needed so that the developing world starts realizing the importance of rapidly emerging business concepts which could be easily implemented in the developing world. However, it is not possible without bridging the gap between academia and industry especially in the developing world. The close contact between academia and industry would reveal and strengthen the importance of the concept of project management. The objective of

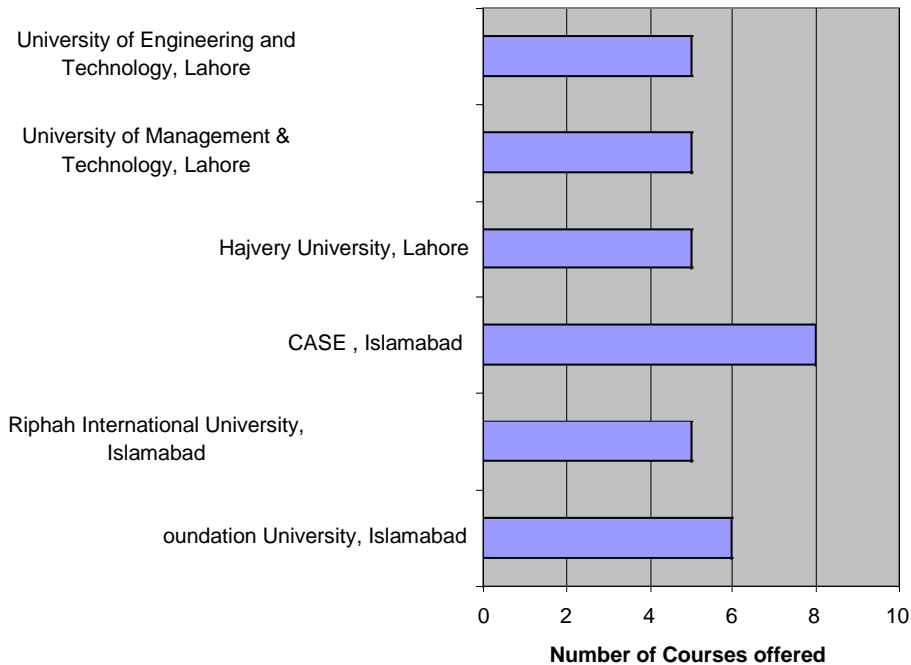


Figure 3. Institutions offering 5 or more courses in project management.

Table 7. Project management course offerings at institutions in NWFP.

University Name	Location	Total Number of PM related Courses Offered	Titles of the courses
Gomal University	Dera Ismail Khan	2	Project evaluation, Software project management
Mehran University	Jamshoro	1	Software project management
Institute of Management Sciences	Peshawar	4	Project planning & management, software project management, Health project monitoring & evaluation, production and operations management
Sarhad University of Science & Information Technology	Peshawar	4	Software project management, project management, production and operations management, project appraisal
University of Peshawar	Peshawar	2	Project management, project planning and management
Ghulam Ishaq Khan Institute of Engineering Sciences & Technology	Swabi, NWFP	2	Software project management, project management

Table 8. Common and not common areas in project management in selected universities

Common / Not Common Courses in Project Management	
Common Courses	Not Common Courses
<ul style="list-style-type: none"> * Production and Operations Management * Software Project Management * Operations Management * Project Management 	<ul style="list-style-type: none"> * Plant location & layout * Work measurements * Project analysis & feasibility studies * Engineering Management * Civil construction planning & management * Project cycle management

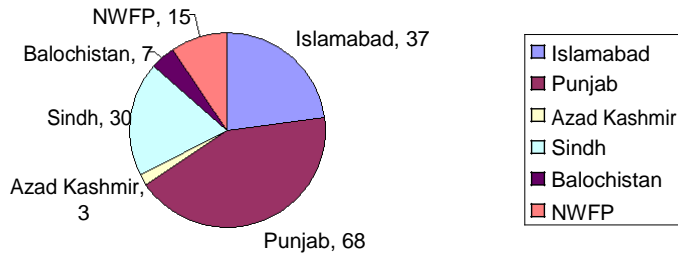


Figure 4. Total number of project management courses offered in selected institutions – regional comparison.

this research was to assess the prevailing situation in Pakistan in the context of the project management course offerings in the selected institutions. This research revealed that the discipline of project management is still in its infancy stage in Pakistan. The Pakistani institutions do not offer any degree program in the field of project management which shows that the project management has not been recognized as a distinct discipline by the Pakistani academic institutions.

The majority of the course offerings are standard in nature only covering certain dimensions of the project management field. There should be more focus on specialized courses in the areas such as project integration management, project scope management, project time management, project communication management, project human resource management, and project risk management. Only 24 institutions offer a course on 'project management'. It appeared that only standard courses are more common in the selected institutions such as project management and software project management. Few institutions offered courses in areas such as plant location and layout, project analysis and feasibility studies and project cycle management. It appeared that the courses which fall under the category of not common courses may not fully address all the critical aspects of managing a project.

The region wise comparison revealed that the variety of the project management courses is limited to certain regions such as Islamabad and Lahore. It appeared that there is a need to encourage the project management discipline in regions such as NWFP, Azad Kashmir, and Balochistan.

More courses were offered to the BS or B.Sc. students and MBA students. It is pertinent to highlight that a variety of courses should be offered to the PhD students in order to encourage research in the field of project management in Pakistan. There is a need to encourage the doctoral students to pursue the research tracks which are focused on highlighting and tackling unique project management challenges in Pakistan.

It is also relevant to underline that those institutions which offer 5 or more courses were located in Lahore and Islamabad. It appeared that the students of other regions do not have access to a wide range of project manage-

Table 9. Project management course offerings at selected degree levels.

Degree Level	Courses offered
BS or B.Sc.	<ul style="list-style-type: none"> *Engineering Management * Engineering economics & management * Construction management & project scheduling * Software engineering * Plant location & layout * Work measurement * Project analysis & feasibility studies * Operations & facility design * Program & project management * Operations management * Project management
M.Sc.	<ul style="list-style-type: none"> * Software project management * Project evaluation
BCS	<ul style="list-style-type: none"> * Project planning & site management
MCS	<ul style="list-style-type: none"> * Software project management * Software management and economics
BBA	<ul style="list-style-type: none"> * Software project management & control * Software project management * Technology management * Production & operations management * Project management & evolution * Operations & production management * Project management & evaluation * Project appraisal management * Project management * Purchasing & material management * Technology management * Production & operations management
MBA	<ul style="list-style-type: none"> * Project management * Technology management * Software project management * Project appraisal management * Project evaluation * Operations management * Operations & IT project management * Principles of operations management * Project financing & evaluation * Production and operations management
PhD	<ul style="list-style-type: none"> * Project management * Management of technology * Production management * Engineering management * Project cycle management * Project evaluation & project planning * Software project management

ment courses. In comparison to Punjab and Islamabad, the institutions located in Sind should strive to offer a

wide range of courses on project management. There is a compelling need to encourage the discipline of project management in institutions located in Balochistan, Azad Kashmir, and NWFP.

Further, the research suggests developing detailed project management curricula to be embraced by the Pakistani institutions. The role of government should be pivotal in terms of faculty training and development in the relevant field. The present course offerings of the Pakistani institutions should also be compared with the project management body of knowledge that is, the 9 knowledge areas and their competencies in order to develop a valuable project management curricula which could be embraced by the academic institutions and professional industry in Pakistan.

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