

*Full Length Research Paper*

# Status of project management education in Pakistan

Faisal Manzoor Arain<sup>1\*</sup> and Syed Awais Ahmad Tipu<sup>2</sup>

<sup>1</sup>Construction Project Management Department, Southern Alberta Institute of Technology, Calgary, Canada.

<sup>2</sup>College of Business Administration, University of Sharjah, UAE.

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**Emerging contractual delivery systems, collaborative partnerships, new management initiatives, and global product markets require professionals and students to have a broader awareness of construction methods and project management issues. This paper presents the state of the project management education in 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 authors reviewed the web-sites of all 61 universities to identify the courses being offered in project management discipline. The analysis revealed that the concept of project management is relatively new to the Pakistani institutions. The private sector institutions offer more project management related courses in comparison to the public sector institutions. However, there was a lack of a comprehensive independent degree program in project management at graduate, postgraduate, and doctoral level in Pakistan. There is a need to encourage project management education in engineering schools of Pakistan. The paper suggests that the Government of Pakistan should consider the PM as an essential component in the educational sector of Pakistan and encourage the PM education in less developed areas as well. It would be a complete paradigm shift for Pakistani institutions to consider PM as a distinct discipline. Keeping in view the central role of project management approach - that is essential for today's organizations, the business as well as engineering schools should play pivotal role in equipping our future managers with the project management skills to face the challenges of dynamic business world. This paper sets the foundation for future research focusing on developing project management curricula for selected degree levels in Pakistani universities.**

**Key words:** Project management, education, developing countries, Pakistan.

## INTRODUCTION

The business and construction industry is becoming increasingly global and the role of the project management professional now includes many front end services, which increases the required skill set of new graduates (Choudhury, 2000; Kay, 2001). Project management is no longer a special need management (Arain, 2005a). Alternative contractual delivery systems, collaborative partnerships, new management initiatives, and global product markets require professionals and students to have a broader awareness of construction methods and project management issues. Duncan (1996) defined project management as the application of knowledge skills, tools and techniques to project activities in order to meet or exceed stakeholder needs and expectations from the

project. Project management is rapidly becoming a standard way of doing business (Arain and Assaf, 2003). An increasing percentage of the typical firm's effort is being devoted to projects. The future promises an increase in the importance and the role of projects in contributing to the strategic direction of organizations (Arain, 2005b). In the developed world, many academic disciplines inside and outside the project management education have successfully used study abroad programs as an effective means of broadening project management students' academic, personal, and professional views of the world (NASFA, 2003). This certainly is the dawning of the age of project management in the developing countries. Duncan (1996) identified different stages of project management such as project initiation, planning, execution, control and the closing process. Bryde (2003) discussed different terms which have emerged since the beginning of 1990's to describe the project management approach. These terms include: modern project management, ma-

\*Corresponding author. E-mail: [faisal.arain@sait.ca](mailto:faisal.arain@sait.ca). or [faisal.faisal.arain@gmail.com](mailto:faisal.faisal.arain@gmail.com).

agement by projects, projects (project management) culture, and beyond the Gantt chart.

### Significance of project management

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 (Leintz and Rea, 1995). 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. 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 and Low, 2003; Arain et al., 2004; Arain, 2005a). Turner and Muller (2003) 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).

Project management is similar to professional construction management, which was first originated in the US (Fisk, 1997). Professional construction management was rather an informal method until the late 1960s, but as the construction costs increased drastically during the early 70's and delayed projects become more frequent, the need for the new approaches and techniques for managing entire construction programme become more evident (Clough and Sears, 1994).

Project management is the overall planning, coordination and control of a project from inception to completion aimed at meeting clients' requirements in order to produce a functional and financially viable project that will be completed on time within authorized cost and to the required quality standard (CII, 1994).

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 Low, 2005). 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 initiation till closing. The engineering managers have to work 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 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. Watkins (1996) wrote that the issue of lack of project management skills has been realized by the business schools and there is an encouraging sign that business schools are considering to develop a complete project management curriculum.

Management decides and implements the ways and means to effectively and efficiently utilize human and non human resources to reach predetermined objectives (Bryde, 2003). Project managers are expected to marshal resources to complete a fixed-life project on time, on budget, and within specifications. Project 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, project 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, 2005a). Certainly, resource optimization for successful project management is a unique and challenging task. Jones et al (2004) wrote that the cost overrun and time delays are two main issues faced by the software industry companies working on software related projects. Cusing (2002) pointed out that the underlying reasons of the issues, such as time delays and high cost, could be lack of knowledge of the project management skills.

The challenges discussed above are equally important to the organizations operating in developed as well as developing countries (Arain and Sevanandran, 2005). However, it could be more critical for organizations in a deve-

loping country to optimize the output by making their operations more effective and efficient.

## PROJECT MANAGEMENT EDUCATION IN DIFFERENT COUNTRIES

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

### Project management education in USA

Different approaches are being applied by US universities to give 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 southeastern 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 chal-

lenge 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.

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 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.

### Project management education in UK

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 was as follows:

- i) Introduction to project management.
- ii) Change control, risk management.
- iii) Performance monitoring.
- iv) Managing implementation.
- v) Critical path analysis.
- vi) Project control, standards.
- vi) Leadership and motivation.
- vii) Project life cycle.
- viii) Planning a project.
- ix) Safety and risks.
- x) Managing implementation.
- xi) Project timing.
- xii) Networks and schedules.
- xiii) Financial controls.
- xiv) Contract law.
- xv) Contract administration.
- xvi) Team, team selection, leadership.
- xvii) Finance accounting, cash flow.
- xviii) Quality and business process reengineering.
- xix) Contract and project reviews.
- xx) Roles and responsibilities of project management.
- xxi) Networking and scheduling (PERT and GANTT charts, WBS).

The above mentioned list of topics indicates the multi-disciplinary 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 topics that is project management overview, defining the project, work breakdown structure, project activity charts, defining the project network, finding the critical path, calendar scheduling, elements of the GANTT chart, what if analysis, resource histogram, resource optimization, time/cost trade-offs, tracking progress and advanced cost controls were also included in the course contents. The contents of computer based learning modules of project management reflect that the computer based instructions could be beneficial in terms of developing the project manage-

ment curriculum and teaching various project management topics.

### PROJECT MANAGEMENT EDUCATION IN DEVELOPING WORLD

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.

#### Project management education in India

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 that is facility layout, facility location, work measurement and 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 that is engineering management, management of technology, master of enginee-

**Table 1.** Statistics of Institutions offering PM related courses in the selected sectors

	Engineering	Business	Both	Total
Private	3	1	22	26
Public	6	2	27	35

**Table 2.** Statistics of institutions offering PM course: Region-wise comparison

	Engineering	Business	Both	Total
Islamabad	2	1	8	11
Punjab	2	1	22	25
Sindh	3	1	11	15
Balochistan	1		2	3
Sarhad	1		5	6
Azad Kashmir			1	1

ring management, technology management, industrial management, systems engineering, engineering science, manufacturing management, production management and diploma in technology management

The titles mentioned 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.

### Project management education in Pakistan

Mehdi and Rizvi (2001) conducted a study focusing on engineering education in Pakistan and found that the engineering education receives less attention from the government. Their study highlighted different engineering disciplines being offered in the engineering universities of Pakistan such as civil, mechanical, electrical communications engineering etc. Though the discipline of project management is central to the successful implementation of the engineering projects, it was evident from their study that the discipline of project management is largely ignored by the engineering universities in Pakistan.

Raouf (1998) pointed out that the Pakistani universities are more focused on business education but not catering to the needs of operations management field. He particularly mentioned that the discipline of industrial/systems engineering is largely ignored by the universities in Pakistan. He further gave the example of the Ghulam Ishaq Khan Institute of Engineering and Technology, Pakistan where the courses in operations management and management sciences are offered in the department of mechanical engineering. At the aforementioned institute, there was also an option of short courses in the field of operations management.

### Research approach

The analysis is based on course offerings at 61 private and public sector universities in Pakistan. Only those universities were selec-

ted which were recognized by the higher education commission of Pakistan. A comprehensive online search was conducted in which the authors reviewed the web-sites of all 61 universities to identify the courses being offered in project management discipline.

### DISCUSSION

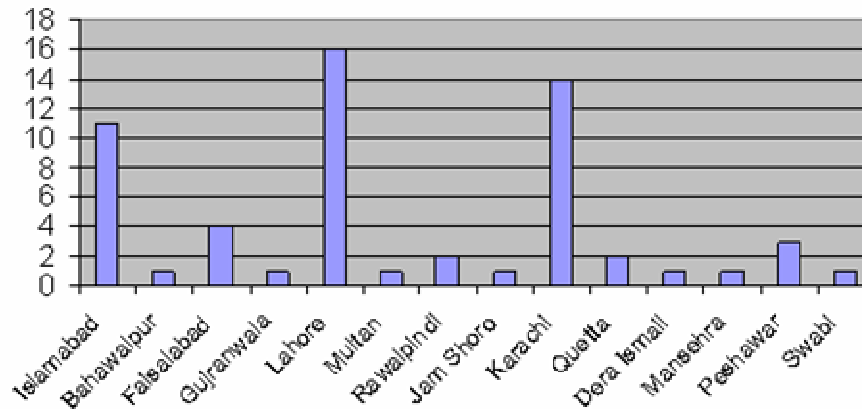
As shown in Table 1, the PM related courses are more common in those institutions which offer engineering as well as business related courses. A total of 22 institutions which cover both engineering and business domain, in private sector offer PM related courses in comparison to 27 public sector institutions. However, a total of 35 public sector institutions offer PM related courses as compared to 26 private sector institutions. The private sector needs to play a significant role in promoting the project management discipline. The public sector should strive to take the lead and offer low cost quality project management education to the Pakistani students.

Table 2 presents the region wise comparison with regard to the PM related course offerings. The Punjab region is leading with a total of 25 institutions offering PM related courses followed by Sind with 15 institutions. Few institutions cover the discipline of project management in the region of Balochistan and Azad Kashmir where total number of institutions with PM related courses is 3 and 1 respectively. The discipline of PM education is largely being ignored in the less developed regions of Pakistan such as Balochistan, Sarhad and Azad Kashmir. It is pertinent to note that the PM education could have a positive impact on the future development of these regions if the local universities offer PM related courses to the local students.

It is also pertinent to look at the city-wise comparison of institutions offering the PM related courses. It is shown in Figure 1 that there are 16, 14, and 12 institutions in Lahore, Islamabad, and Karachi respectively offering the PM related courses. There are no other major institutions in other cities of Pakistan covering this important discipline. Even though a large number of institutions offer PM courses in Punjab but the institutions are mainly concentrated in Lahore. The institutions located in other cities such as Faisalabad, Multan, and Bahawalpur should strive to offer PM courses to those students who do not have resources to go to a good institution in Lahore.

As shown in Table 3, there is more emphasis on graduate and postgraduate level courses in Pakistan institutions and very few institutions are involved in the doctoral level studies on the project management discipline. Only 6 institutions in both engineering and business discipline offer PM related courses at the doctoral level. Whereas, 43 and 47 institutions are offering PM related course at the graduate and postgraduate level respectively in both category of the institutions. As very few institutions have PM courses at the doctoral level, it appears that there is no significant research being conducted at the doctoral level in Pakistan. It also reflects the need to create awareness among the Pakistani students all in those institutions that are business schools and do

**No. of Institutions Offering PM Courses -  
City Wise Comparison**



**Figure 1.** Statistics of institutions offering PM courses: City-wise comparison

**Table 3.** Statistics of institutions offering project management related courses at selected degree levels

	Graduate Level	Postgraduate Level	Doctoral Level
Engineering	6	4	3
Business	2	3	
Both	43	47	6

**Table 4.** Statistics of Institutions with online availability of PM related course description

	Available	Not available
Private	9	17
Public	8	27

**Table 5.** Statistics of institutions offering PM related courses at selected degree level: Sector-wise comparison

	Graduate	Postgraduate	Doctoral
Private	22	24	6
Public	28	21	3

and promote PM as a distinct discipline. As shown in Table 4, the PM related courses are not being offered at not have engineering disciplines.

Creating awareness about the course offerings facilitates attracting students to a particular discipline. The research shows that very few institutions in Pakistan have the description of PM related courses available online. A total of 17 and 27 institutions in private and public sector respectively have the description of PM courses

posted on their websites. The institutions should promote the PM discipline by having the detailed description of PM courses online. This may facilitate the students in selecting course selection and knowing more about the PM discipline. Further, the research also revealed that the navigation structure of the websites of the majority of the institutions was illogical. It was very difficult to locate the PM courses on the websites of the majority of the institutions in Pakistan. It shows that there is a need to simplify the contents of the websites so that it would be easy for students to locate the desired link on the homepage of the institution.

Table 5 shows the sector-wise comparison of institutions with PM courses. The research shows that the private sector institutions offer more courses at postgraduate and doctoral level than the public sector institutions. A total of 24 and 6 private institutions offered project management courses at postgraduate and doctoral level respectively. However, 28 public sector institutions offered courses at the graduate level in comparison to 22 private sector institutions. This analysis calls for more significant role played by the public sector institutions encouraging project management discipline at the postgraduate and the doctoral level. The public sector institutions need to encourage PM education at the doctoral level. The research also revealed that out of total 35 public sector institutions, only 21 institutions offer one or more PM related courses at the postgraduate level. This shows that the PM discipline is still at the infancy stage and Pakistani institutions are not yet recognized the project management as a distinct discipline.

As there were more institutions offering PM related courses in Lahore, Karachi, and Islamabad, a further analysis was carried out to identify courses at selected degree levels in each sector. As shown in Table 6, the analysis revealed that the private institutions in Lahore

**Table 6.** Statistics of institutions in Lahore, Karachi, and Islamabad offering PM related courses at selected degree levels: Sector-wise comparison.

	Lahore			Karachi			Islamabad		
	Graduate	Post graduate	Doctoral	Graduate	Post graduate	Doctoral	Graduate	Post graduate	Doctoral
Public	5	5	1	3	4		5	5	1
Private	10	10	2	6	8	1	2	3	2

**Table 7.** Statistics of institutions in Lahore, Karachi, and Islamabad offering PM related courses at selected degree levels: Comparison based on type of Institution

	Lahore			Karachi			Islamabad		
	Graduate	Post graduate	Doctoral	Graduate	Post graduate	Doctoral	Graduate	Post graduate	Doctoral
Engineering	1	1	1		1		1	1	1
Business	1	1			1		1	1	1
Both	13	13	2	9	10	11	5	6	2

Were actively pursuing the discipline of project management with 10 institutions offering courses at graduate and undergraduate level. However, in Karachi, 6 and 8 institutions offer graduate and post graduate level courses respectively in comparison to only 2 and 3 in Islamabad. The public sector institutions were comparatively less involved in project management courses. There were 5 institutions in Lahore and Islamabad offering graduate and post graduate project management courses. In Lahore and Karachi, the private sector institutions are better in offering PM related courses in comparison to the public sector institutions. However, in Islamabad, more public sector institutions offer PM related courses as compared to the private sector institutions.

It was equally important to identify the institutions with selected degree level based on the school type. It was found that the project management education is being encouraged in those schools which cater to both disciplines of engineering and business. For example, in Table 7, there were 13, 10, and 6 institutions offering PM related courses at the postgraduate level in Lahore, Islamabad, and Karachi respectively. It was also revealed that the primarily engineering institutions do not impart sufficient project management knowledge to the engineering students. It is imperative for the engineering students to learn about the project management approach. Furthermore, it was found that there is equal emphasis on graduate and postgraduate levels in terms of course offerings. For example, as shown in Table 7, a total number of 13 institutions in Lahore offer PM courses at the graduate level and an equal number of institutions that is 13, offer PM related courses at the postgraduate level.

## Conclusions

The paper revealed that the concept of project management is relatively new to the Pakistani institutions. The private sector institutions offer more project management related

courses in comparison to the public sector institutions in Pakistan. However, the Pakistani institutions lack in offering a comprehensive independent degree program in project management at graduate, postgraduate, and doctoral level. The Pakistani institutions need to work carefully developing the PM curriculum for selected degree levels. The doctoral level research is largely being ignored in Pakistan in the PM discipline. Under present circumstances, it would eventually be difficult to attract the doctoral level students in Pakistan to conduct research in the PM discipline. There is also a need to encourage project management education in purely engineering schools of Pakistan. The engineering schools offer some elective courses on project management, whereas, there is a need to consider the education of project management as a separate discipline. Currently, the diffusion of the PM education in the less developed areas would be very difficult. The Government of Pakistan should consider the PM as an essential component in the educational sector of Pakistan and encourage the PM education in less developed areas. It would be a complete paradigm shift for Pakistani institutions to consider PM as a distinct discipline. This might be possible only if there would be a strong commitment from both the public as well as the private sector institutions. Keeping in view the central role of project management approach and thinking which is essential for today's organizations, the business as well as engineering schools should play a pivotal role in equipping our future managers with the project management skills to face the challenges of dynamic business world. This paper sets the foundation for future research focusing on developing project management curricula for selected degree levels in Pakistani universities.

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