

THESIS

**DEVELOPMENT OF QUALITY MANAGEMENT SYSTEM FOR
CONSTRUCTION OF A WATER RESOURCES PROJECT**



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(2002-PG-WRE-19)

For the Degree of

MASTER OF PHILOSOPHY

IN

WATER RESOURCES ENGINEERING

CENTRE OF EXCELLENCE IN WATER RESOURCES ENGINEERING
University of Engineering and Technology, Lahore, Pakistan.

2005

ABSTRACT

Management of development projects is quite complex task especially with regards to water resources projects. Water resource projects are much more sensitive and need more vigorous and sophisticated involvement of procedures because of quite immense and multi-dimensional environmental impacts. The control and check and balance on TIME, COST and QUALITY along with Safety , Health and Environmental (SH & E) is an essential key for successful management of any type of project. Adoption of Quality Management System (QMS) ensures the health, safety and well-being of stakeholders of a project. It encourages a positive health and safety culture .Quality Assurance (QA) aims to continuously improve safety, performance and ensure safe operating practices. The main objectives of the present study were:

- (1) To highlight the necessity and impacts of Quality Management Systems .
- (2) Comparison of various Quality Management System (QMS) models.
- (3) Development of a Quality Management System for a case study water resources project namely Jinnah Hydropower Project (JHP).
- (4) Integration of construction planning software Primavera Project Planner P3 with developed Quality Management System (QMS).

The methodology adopted to attain the objectives of the study included the literature review, collection and analysis of the data, and use of a construction planning computer software Primavera Project Planner P3. It was concluded from the study that the adoption of QMS in construction industry has become mandatory with the advent of WTO in 2005. The integration of QMS with construction planning software will not only be helpful in controlling Cost, Time and Quality values but will

also ensure safety, health and environmental protection. QMS makes the system fool proof by avoiding irresponsible and unsafe actions, attitudes, behaviors and habits. The sense of the notion of sustainable development and management of water resources is to integrate environmental, social and economic aspects.

There are many benefits like training, resources, improved compliance postures, achievements of competitive advantages & savings, which can be realized by integrating ISO 14000 requirements into an existing ISO 9001/9002 Quality Management System. Total Quality Management (TQM) was found to be far better than ISO 9000 Quality Management System as TQM is a principle-centered approach and a total philosophy which leads to Quality Culture. However, full potential of TQM requires a fundamental cultural change which requires a long-term commitment and recognition that the effort is an unending journey. A cultural transformation to full use of the TQM will occur only gradually. Changing a culture so that it never regresses, especially in typical perspective of infrastructure, societies & communities of countries like Pakistan , is easier said than done. Steps have been identified for development of Quality Management System (QMS) for Jinnah Hydropower Project. Guidelines for preparation of Quality Manual, Quality Inspection Plans and level- IV documents (Inspection Forms) have also been prepared for Jinnah Hydropower Project. Construction schedule prepared, for main civil work fronts, by exploiting Primavera Project Planner P3 determines that project completion time is four years. The roles and responsibilities of all stake holders of the project have also been identified. Some recommendations for further and advanced research have also been suggested.