

Chapter 1

Information Technology and Construction Industry

ABSTRACT

For thousands of years, construction engineering has played a vital role in the advancement of human civilization. Humans have always aspired to build taller, grander, and more robust constructions either for civilian purpose or to defend cities and towns from invading armies. The architectural splendour of the pyramids in Egypt and the Great Wall of China are not only awe-inspiring examples for the engineering feats of the ancients but also remarkable for the robustness in evidence for having stood the test of time for over thousands of years since these were built. Modern civil construction engineering, too, requires optimum resource utilization, speed of execution, and adherence to best engineering practices. The rapid strides made in information technology makes it possible for architects and engineers to achieve those goals. This chapter discusses the role and impact that information technology has in the domain of civil engineering and construction sector.

The influence of information technology in construction industry today is undeniable. Software technology and tools have made it possible to process data from multitude sources and present such into meaningful information for humans. The construction industry, like any other, has reaped the benefits of utilizing information technology. Construction companies need to operate remote sites producing disparate sets of data. Computers and information technology makes it possible to perform complex tasks to process extremely

DOI: 10.4018/978-1-7998-5291-9.ch001

large volumes of data flowing through a typical organization in construction sector. Today, construction companies use a wide variety of software tools that address requirements of architectural designs, civil engineering drawings, project planning, financial management, procurement, quantity surveys, site management, contracts, valuation, marketing, etc. The world of information technology has completely revolutionized commerce and industries across all sectors are conducted. The construction sector has been no exception to the influence that information technology has cast on trade and manufacturing across the globe.

The initial acceptance of information technology in the construction scene was sedate if not a complete crawl in comparison to comparable industries in infrastructure and manufacturing sectors. For most part in the 1980s, personal computers were used in handful construction companies. Construction firms mostly used personal computers for administrative functions related to accounts, wages, salaries, etc. Very few companies, back then, used information technology to plan their production schedules or digitize their core operations. By late 1980s, a growing number of construction companies began using personal computers to produce digitized versions of engineering drawings, use spreadsheet and word processing software, as well as use computers for planning and monitoring. The growing reliability and personal computers made it possible for construction companies to begin experimenting with the idea of allowing information technology to slowly aid in complex data processing functions. It was not long before businesses and organizations engaged in civil engineering and construction activities realized the need to adopt information technology. The highly complex communication structure in civil engineering projects, and the intricate details which are involved in project management of a construction project, cried out for a systematic and robust system to manage and monitor progress and data flow. While information technology has now gone on to considerably ease the burden of managing vast array of construction processes involved, there have been gaps in adoption of information technology itself by civil engineering and construction companies. Productivity gains from information technology had not been clearly in evidence initially. As modern information technology evolved and allowed integration between software applications for data and information sharing, companies engaged in construction activities gradually began to see gains in productivity. It is without doubt that there remains a scope for improvement at any level. In a competitive world, construction companies can ill afford to ignore emerging trends in information technology. Computers and software allow for better integration of production processes and, thus,

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