



Book Review

Managing Performance in Construction

Leonhard E. Bernold and Simaan M. AbouRizk, Wiley, UK, 2010, i – xix, 1 393 plus indices, Instructors companion site, ISBN 0470- 171642 (hardback) AUD 160.00, NZD 180.00 £ 85.00, € 100.00

Performance of a construction project, a portfolio of construction projects, a company involved in construction, the regional and national construction sector, and the international construction sector has been a topic for research discourse for many decades. In recent years, the debate was reignited in the United Kingdom by the 1998 “Rethinking Construction” report developed by Sir John Egan¹. In 2004, Teicholz sparked this discussion by highlighting decline in construction productivity in US by graphically capturing the “Construction and Non-Farm Labour Productivity Index” from 1964 to 2004². Egan and Teicholz set in motion research focussed upon the importance of measuring performance of the construction sector at various levels; focussing more on the output to the Gross Domestic Product of a nation. Spatial and temporal comparison, of the typically comparison resistant, construction sector was forged as a topic of research. However, little renewed attention has been paid to the development of new tools, models, methods and approaches for measuring construction performance at the workforce level. The textbook entitled “Managing Performance in Construction” fills this important gap by providing a textbook for construction project management students and a handbook for construction professionals to measure performance in the field. With a rich combination of traditional textbook material, simulation software, innovative website, and an exhaustive list of references the book offers a complete source of guidance on this topic. The authors by combining productivity and effectiveness, and by discouraging a productivity only view, present a compelling business case for a holistic performance management system in construction. While keeping the workforce view point the authors encourage an encompassing view of performance that includes the process level and the supply chain level.

In the first chapter the authors describe the current state of the industry by discussing implications of advanced digital modelling techniques, sustainability and eco-efficiency metrics, modern communication technologies, and other latest developments in construction equipment technology. The authors argue that even in this changing landscape measuring performance is extremely important. The second chapter in the book provides an overview of productivity and effectiveness, bringing forward the concept of performance management. While productivity is defined as a ratio of output and input; efficiency is defined as the reduction of input for the same number of output. The chapter, in addition to describing basic productivity measurement techniques, provides work-flow view of a process to capture the concept of performance measurement. A highlight of the chapter is the description of a control mechanism based on the first proportional process control procedure developed in 1789. The process involves measuring one or several output parameters to allow real-time feedback to a controller resulting in automatic generation of directives to adjust input to achieve targeted output and then modification of input flow parameters. With the help of several construction examples the authors provide insight into the concept of value-adding and non-value adding tasks. The chapter also discusses lean principles in the context of construction processes.

The third chapter entitled “Cornerstones of Efficient Site Operations” discusses the linkages between construction process, works breakdown structure and organization breakdown

¹Egan, J. (1998) Rethinking Construction: Report of the Construction Task Force, London: HMSO.

²Teicholz, P. (2004) "Labor Productivity Declines in the Construction Industry: Causes and Remedies." AECbytes Viewpoint, Issue 4 April 14, 2004.

structure. With the help of examples important linkages between a construction process and supply chain of the construction company are highlighted. Chapter four and five are dedicated to the description of discrete-event simulation in construction. Modelling and simulation of construction processes and operations is described in detail. With the help of real-world examples modelling of construction production systems is detailed out. A case-study of tunnel construction is used to describe how simulation can be used for assessing, modelling, and simulating real-life projects. Using Symphony as a template based simulation toolkit numerous examples of construction productivity measurement and improvement are provided including steps needed for process and supply chain synchronization.

Topics of knowledge management, learning organization and core competencies are described in detail in chapter six. In this chapter the generic work competencies for the twenty-first century are outlined. In the seventh chapter the authors describe in brief issues related to worker health and safety. Job stress and physical and emotional stress are touched upon in this chapter. The eighth chapter covers fundamentals of human motivation. Maslow's, Herzberg's, and Vroom's work on human motivation are described.

Chapter nine deals with performance factors of leaders and teams. By answering questions like "is a manager a leader" the authors have described leadership skills needed to effectively manage construction projects and construction companies. The Managerial Grid Model; Theory X and Theory Y; Fiedler's Contingency Model; Burn's Transactional and Transformation Leadership Model; and Hersey-Blanchard Situational Theory are discussed in this chapter. Techniques for measuring emotional intelligence, team dynamics, group dynamics, and high-performance teams are described. An interesting topic in this chapter is related to creativity. Attributes of a creative individual, left-brain and right brain collaboration, and convergent and divergent thinking are discussed in detail.

Chapter ten presents the importance of communication and communication systems for improving construction performance. Historical roles of architects and engineers in construction are revealed. Introduction of two-dimensional and three-dimensional computer aided design coupled with the growth of the internet have produced some useful mechanisms for communication on construction projects. With the advent of online content-management and collaboration services communication on construction projects has been significantly impacted. The authors describe a pervasive system in which RFID tags, sensors, sensor networks, wireless networks, local area networks, and other information and communication technologies are deployed in unison to provide the right information at the right time to the right person on a construction site.

The last chapter combines all the various concepts, methods and theories presented in earlier chapters to provide a holistic performance management system. It is shown that managing performance is more important than measuring performance. At the organization level this translates into the Balanced Scorecard approach. Performance measurement and management at the supply chain level, process level and task level is described in this chapter.

Using performance measurement and management as the key concept this book brings together a plethora of ideas and connects them. It makes a strong case for construction companies to pay attention to productivity and effectiveness simultaneously. With over 450 pages and well over 400 references this book is a single source of extensive knowledge on managing construction performance.

Professor Anil Sawhney
School of the Built Environment, University of Technology Sydney