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Reengineering In Construction Industry

“EXPERT PROJECT GROUP” ACQUIREMENT APPROACH
FOR RE-ENGINEERING CONSTRUCTION PROJECT PROCESSES

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Abstract - The existing problem in the construction industry, i.e. owner or client dissatisfaction in terms of prolonged delivery times, exceeded budgets and the non-attainment of quality standards. Real problems were substantiated by the emphasis on contractual responsibilities and risks. Construction investments are generally believed to be expensive. When contractual processes are in disarray, owners' risks become bigger and more likely.

It is obvious that owner dissatisfaction and its links to contracting and procurement processes need to be explored described and discussed. Hence, it focuses on the means of reducing owners' investment and contractual risks in construction projects through the re-engineering of contracting processes.

Keywords-*constructionmanagement;reengineerin;expert project group(epg); procurement processes;design and build(DB);PFI - Private Finance Initiative PPP - Public Private Partnership*

I. INTRODUCTION

The construction industry has been facing many severe problems related to product development processes (e.g. client dissatisfaction), stakeholders (e.g. industry dissatisfaction) and contracting processes (e.g. supply chain problems) Overall, client dissatisfaction is related to late deliveries, exceeded budgets and poor quality among both public and private clients. This is due to the fact that the construction industry rarely provides best value.

Latham (1994) recommended the formulation of effective construction processes that will result in improved project performance in the UK context. Many studies have proposed integration and partnering, i.e. taking a single point of responsibility in order to avoid fragmentation that is believed to be the root cause(s) of the construction industry's ills (Latham 1994; Egan 1998). However, Cox and Ireland (2002) emphasize that the Latham (1994) and the DETR (1998) reports suffer from inappropriate methodology in analyzing the causes of inefficiency in construction procurement as well as choosing the subjective preference for partnering solutions. (9)

Readily, some of the flaws in partnering (e.g. the false dichotomy between the points of responsibilities) are well-demonstrated in the repeated formation and the

subsequent break-up of project teams when in most cases the fragmented construction is one-off or seldom repetitively embarked upon.

Nevertheless, the Egan (1998) report's five key drivers of change are adopted for designing the special task organization (EPG) approach: committed leadership, a focus on clients, integrated processes and teams, a quality-driven agenda and commitment to people.

However, integration and partnering of processes will be achieved through fragmented tasks that, in turn, will be carried out by EPGs.

In the EPG approach, a robust integrated management system will ensure that managing the fragmented task-based supply chain results in healthy competition, high specialization, balanced responsibilities sharing and finished innovative projects in terms of price, high quality and completion on time.

The EPG route involves specialist task organizations to deliver their complete parts (by integrating design, supply and installation; and maintenance).(5)

The extension of CM from the product development point of view provides a solution based on integration in

the development tasks (and organizations) and on fragmentation in the execution tasks (and organizations).

Procurement routes were chosen as the focal means because they determine contractual processes through all project phases. Procurement routes may also serve as levers for the reengineering of the construction project processes as a whole.(10)

II. OBJECTIVES, PRINCIPLES AND SCOPE

Integrated management, coupled with the integrated product development process and the fragmented execution process (contracting, design, construction, installation and handing-over) by using specialist task organizations (EPGS) to manage/execute the task packages provides a building owner with more flexibility in project processes and enables higher performance in terms of project objectives than alternative Procurement routes allow.

Main principles of reengineering(11) the Procurement processes are as follows.

- (1) To understand the philosophy and methodology of the reengineering
- (2) To apply the methodology to the processes (works) in a construction project.
- (3) To suggest EPG routes for the processes in a construction project.

This compares procurement routes within and between different practices.

It examines different type of routes along different practices. The result is synthesized and categorized as both differentiated and integrated procurement classifications.

The aim is to provide a wider platform for understanding procurement types, their relationships, and their similarities and differences before a deeper analysis of CM route is undertaken. A set of the broader and deeper comparative analyses of the CM routes along different practices were carried out in terms of responsibility distribution and risk allocation. (3)

III. SIGNIFICANCE

The new concept of the Specialist Task Organization (EPG) route is to be designed in terms of its basic definition and positioning along project delivery and financing dimensions, an operational model, contractual arrangements, communication, coordination and co-operation systems, risk allocation, responsibility distribution and compensation methods, value adding chains and some constraints. The operational mode of the suggested EPG route is to be

developed in terms of the key variables inherent in procurement processes and procedures. (2)

A. Concept of the EPG Route :

By the mid-2000s, it seems that the primary problem of high client dissatisfaction in construction caused by severe defects inherent in procurement and supply chain management remains unsolved in the US, UK and Indian contracting systems despite the fact that several new procurement routes (e.g. DB) have been developed and adopted to improve contractual and implementation processes. (1) There are many factors that are directly associated with client dissatisfaction such as non-completion on time, excess costs, poor quality and low performance. It is herein argued that most project delivery systems; contracting systems and procurement routes are either completely fragmented or integrated with associated management systems. The latter may be effective in repetitive projects, partnering, incentive based and financing driven approaches (e.g. PFI and PPP in public projects). The insufficiencies in the current procurement routes are herein characterized as follows: (i) procurement routes are based on the extensive fragmentation of the total process (the multiple points of responsibility) or (ii) procurement routes are based on the complete integration of the total design and implementation process (a single point of responsibility). The shortcomings due to this 2-extreme edge classification take on the disadvantages of fragmentation for the advantages of integration and vice versa, leaving the total project and procurement management problem unsolved. The high client dissatisfaction triggered this to revisit the original management approaches in order to find some new ways of developing better procurement systems or routes. The work of Adam Smith of 1776 is regarded as the ultimate source of productivity and quality improvement through the division of labor (value production). Specialization emerged with the fundamental question of co-ordination of specialists for success. Nowadays, co-ordination principles are applied to both traditional production lines within the boundaries of single organizations and to managing fragmented supply chains with many organizations.(6) Heikkilä (2000) emphasizes that supply chain management is aimed at managing and co-coordinating a supply chain from raw material suppliers to ultimate customers. Readily, many manufacturing companies have recorded the major achievements in the (mass-) customer-oriented production of products with unique features by using tens of suppliers from several countries across the globe, enabled by advanced (semi-)automation and ICT systems. An onerous task of supply chain management is to co-ordinate inter and intra-company activities as specialization is exploited among multiple independent

specialized suppliers. In turn, it is herein envisioned that construction projects with their procurement and implementation processes be managed better through the combinations of new solutions for the management of project development, building design and construction production (value chain). New combinations may readily exploit the existing principles guiding both integration (e.g. D-B contracting) and fragmentation (e.g. agency CM). New combined solutions contradict the work of proponents of exploiting either extensive fragmentation or full integration. Combinations can be innovative and fragmented/differentiated under the integrated management system. They align all project parties with the common goal of producing economic, on-time and high-quality construction projects. Internal decision makers and other key actors who influence decision making processes within clients' organizations can be replaced or complemented by various external specialists who, in turn, act on behalf of clients on a contractual basis. Alternatively, a contractor or a consultant may become engaged with dual responsibilities of contracting, procurement, design and construction. This paper proposes a new concept of a specialist task organization (EPG) route for improving the current contracting systems, procurement routes and processes in construction projects. Under the robust integrated management (system), the EPG route applies the principles of specialization and innovation to carrying out the core tasks/activities through project development, building design, construction and possibly maintenance. The EPG route utilizes semi-autonomous integration in project development/building design processes and full fragmentation in construction processes. The total scope of the project/building in question is procured from among organizations that are specialized in the various development, design, manufacturing, supply, installation, construction and maintenance tasks. Along this route, an owner forms for his project an EPG management team which, in turn, procures the total project/building development plan with design documents from among specialist designers. An EPG management team comprises of designers who act under the leadership and management of a project manager. Further, an EPG team procures work packages with detailed technical engineering and design documents from among specialist contractors and suppliers. Finally, the life-cycle costing, usability, alternative materials and maintenance services form a part of competitive criteria for the tender evaluation. Each of EPGs enters into an agreement with an owner (client). The early selection of specialty contractors to act as team members allows them to provide the owner with their best services. This helps in having the most economic design and system, cost control and in

increasing the predictability of significant events and their impacts on cost, schedule and quality (Dorsey 2004).

IV. ADVANTAGES

The targeted advantages of the proposed EPG route are as follows: (i) it allows competition among many alternative designs of EPGs, (ii) it shifts competition to design, life cycle management, materials and maintenance solutions, (iii) it exploits expert knowledge in shaping construction processes project by project, (iv) it adds more value to project implementation processes due to short feedback loops and clearly defined users' requirements, (v) it prefers specialization over generalization, (vi) it eliminates paradoxically the weaknesses of the fully fragmented approaches and the fully integrated ways by utilizing the biggest merits of both of them, and (vii) it enhances construction productivity and eliminates the waste of construction resources by integrating the demand chain and the supply chain. The EPG route is more applicable to building projects where prefabricated elements and standardized materials are used as well as to large and complicated building (and infrastructure) projects.(3)

V. CONCLUSIONS

The EPG route enhances the development of better communication, coordination, co-operation and information systems. It re-engineers the current ways of arranging contractual relationships, distributing responsibilities, allocating risks and compensating for services. It is adding more value to building construction projects. Effective contractual arrangements are secured between owners and other project parties. Effective communication, co-ordination and co-operation are enabled at both the upper and lower level of integrative management. Balanced responsibilities/risks can be planned The in-built value adding mechanisms of the EPG route provide owners with more value for their money.

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