

ROLE OF CLIENTS IN DRIVING INNOVATION IN CONSTRUCTION PROJECTS

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ABSTRACT

Stakeholders increasingly recognise the benefit of innovation in construction projects and there is new thinking that soon it will become the fourth competitive dimension after cost, time and quality. Client, as a decision-maker, can make a significant influence on innovative outcomes from a project. This paper highlights how the client can promote innovation in construction projects. The paper is based on the previous research obtained through literature review augmented by the explanation of practices used in the Australian construction industry to promote innovation. The role of the client is looked at from two viewpoints: construction related strategies and management (leadership) related strategies. Construction related strategies are identified under areas such as idea harnessing, contract selection and bidding process. With regard to management (leadership) related strategies, the paper makes two principal arguments: capable project managers should have distinguishable characteristics that enable them to lead innovation; client organisations should have conducive environments with regard to innovation that support project managers who are in the pursuit of innovation in construction projects.

Keywords: client, construction, innovation drivers, leadership, project manager

INTRODUCTION

Construction organisations could reap many benefits through innovation. Dulaimi et al. (2005) show that innovative practices could increase organizational effectiveness and bring long-term benefits to the construction firms. Innovation can also result in increased organisational commitment and higher organisational motivation (Dulaimi, Ling and Bajracharya, 2003; Lu and Sexton, 2006).

Egemen & Mohamed state that the traditional assumption that clients only need projects which are completed within budget, on schedule and with a reasonable quality should start to change (Egemen and Mohamed, 2006).

According to Newton (1999), innovation has been advanced as the fourth dimension of competition in construction, along with cost, quality and time.

Although there are many stakeholders in construction projects, the client makes important decisions ranging from the need to construct the facility, the procurement methods to adopt, type of designs to be used, whom to assign the construction etc. and is most influential in leading the innovation process. This paper highlights how the client can promote innovation in construction projects.

INNOVATION AND THE ROLE OF THE CLIENT

What is innovation?

According to Barker (2001), innovation is the application of the new technology or process to a new product, service, or production or management process. The definition given by Slaughter (1998), which is "the actual use of a nontrivial change and improvement in a process, product or system that is novel to the institution developing the change", has been popular in describing innovation related to the construction industry. However, Ling (2003) provides a more comprehensive definition in the context of construction innovation. According to Ling (2003), innovation is "a new idea that is implemented in a construction project with the intention of deriving additional benefits although there might have been associated risks and uncertainties". Ling's new idea may refer to new design, technology, material component or construction method.

Client's role

There is a strong positive correlation between client's activities and innovation in the construction process. According to Nam et al. (1997) a high level of owner involvement in the project, including risk sharing, commitment to innovation and leadership in project planning and execution, appear to be critical for the success of the innovation process. Kulatunga et al. (2011) support this finding by stating that there is compelling evidence from other industries to confirm the influence that a client can exert on the generation of innovation. They further add that the position of client as the organiser of the project appear to influence the project environment by encouraging more integration among project participants.

In this paper, the role of the client to promote innovation in construction projects is looked at from two viewpoints: construction related strategies and management (leadership) strategies.

CONSTRUCTION RELATED STRATEGIES

Those clients who are in the pursuit of innovation in construction projects have many strategies to adopt. Some of these strategies are discussed under the following headings:

- (i) Idea harnessing;
- (ii) Contract selection; and
- (iii) Bidding process.

Idea harnessing

It has been shown that more new ideas are generated when people are exposed to others who do not belong to their cohesive group. Furthermore, those organizations that want to foster innovation should provide an environment where people from different backgrounds and experiences can interact and build on others' knowledge Núñez (2011). Therefore, it is vital that ideas are sought from others who are not directly involved with the project, especially in the planning and design phases. In particular, involving people knowledgeable in a spectrum of relevant disciplines such as planning, designs, construction and maintenance is more advantageous than taking decisions by people knowledgeable only in one area. External experts, in particular, can bring in many new ideas. It is preferable that discussions on projects be conducted by facilitators who are capable of using advanced idea generation techniques. Tatum (1989) says that the early involvement of construction representatives is a vital part of a supportive context for innovation in construction projects.

Idea harnessing needs to occur in all phases of a project. Purchasing and making use of the best ideas of unsuccessful contractors in design and construct contracts is one of the strategies in harnessing ideas. During the construction phase, the project manager needs to encourage new ideas from all involved – contractors, subcontractors, suppliers, and even from construction workers.

Contract selection

Some contract types offer more opportunities for innovation. Based on Australian practice, Fernando (2009) identified them as:

- (i) Design and Construct contracts;
- (ii) Alliance contracts; and
- (iii) Early Contractor Involvement contracts.

The following characteristics of these contracts favour innovation opportunities according to the experience of the principal author:

(i) These contract types are generally being used for high value, complex projects. It is more likely that all parties involved are led by more experienced and competent personnel who understand the importance of innovation and capable of managing risks. Innovation-competent project managers play a significant role in encouraging innovation.

(ii) Generally a large number of experienced external professionals work in these contracts from early stages. Their ability to provide innovative ideas makes more opportunities for innovation.

(iii) Design and construct contracts offer more flexibility and constructability to convert innovative ideas in to practice as in these the designer and the contractor is one entity.

(iv) In alliance contracts, the opportunity for innovation exists due to the collaborative manner the work is performed and the flexibility available where changes are easy to be made. The risk reward mechanism also provides a monetary incentive as savings from innovations can be shared between parties.

Due to the same reason of encouraging collaborative behaviour, contracts with relationship or partnering charters provide a better platform to exploit innovation in construction projects.

The above are supported by several researchers. Manley (2008) has emphasized the importance of the competency of project actors and the value of improved relationship and collaboration in enhancing innovation in construction projects. Rahman et al. (2012) have identified Early Contractor Involvement contracts as an innovative form of contracts. They also have highlighted the importance of contractor's expertise, experience and understanding of the construction process and the consideration of buildability issues earlier in the design process. Meanwhile, Davis et al. (2011) have identified Alliance as a form of innovative contracts and underlined the importance of collaboration and improved relationship in enhancing innovative outcomes.

Bidding strategies

Mostly based on Australian engineering practice, Manley (2006) and Fernando (2009) have identified some strategies that can be taken by clients to promote innovation during the tendering stage. They include the following:

- (i) Providing financial incentives within contracts;
- (ii) Use of value-based selection of tenders;

- (iii) Designing pre-qualification systems that assess innovation history; and
- (iv) Use of alternative bids in the bidding process.

Providing financial incentives is one way of encouraging innovation by contractors in projects. Innovation based performance criteria could be used to introduce financial incentives within contracts. In addition, contract documents could include financial incentive clauses that allow contractors to keep some of the savings if innovations are introduced by them, which result in savings. It is not necessary that all incentives be financial. Guaranteeing contractors who perform well in the area of innovation with future contracts could be another form of incentives.

Australian construction industry research shows that the selection of contractors based on their value rather than the contract price could enhance project performance (Manley, 2006; Rose and Manley, 2010). Inclusion of a non-price selection criterion to demonstrate innovative potential of consultants and contractors helps encouraging innovation in construction contracts. Prospective consultants and contractors are to be requested to demonstrate their innovative skills through examples from previous projects and to provide evidence of organisational arrangements made within their organisations to promote innovation. This same value-based selection could be extended to prequalification systems, using the innovation history as one criterion, assessed similar to previous situation.

Another way of embedding innovation in a construction contract is to encourage alternative tenders. This allows contractors to use their expertise for competitive advantage and clients to use the same for project performance improvement. However, there are following barriers in making use of alternative tenders:

(i) Assessing alternative tenders requires considerable time and effort, often involving specialist knowledge. As with any other innovation, the risk is generally high and therefore, needs careful consideration. Many contract administrators, especially in low value contracts, do not have time and expertise to deal with alternative tenders.

(ii) There is also the risk of litigation on the ground of equal treatment and fairness for treating contracts which are not conforming in terms of the original invitation. Sidwell et al. (2001) has suggested some ways of overcoming this barrier including having tender conditions that define alternative tenders and the client organisations to have a policy on how nonconforming bids should be formulated and documented in the invitation documentation (Sidwell, Budiawan and Ma, 2001).

MANAGEMENT (LEADERSHIP) STRATEGIES

Roles of the CEO and the senior managers

Research undertaken by Nam and Tatum (1997) suggests that the conducive attitude and the commitment of top management towards innovation are critical for success. The main role of the Chief Executing Officer (CEO) and the senior managers in a client organisation is to provide an environment in the organisation where the importance of innovation is recognised and encouraged.

Research in construction innovation indicates that an organizational climate that is supportive towards innovation fosters successful innovation (Tatum 1989). Research by Dulaimi et al. (2005) shows that construction organisations could foster innovation on projects by creating proper organizational climate—the support for innovation and resource supply—and by creating an environment or culture that is conducive to nurture and facilitate the project manager’s role as a champion of innovation. Although the above research is applicable to any organisation in the construction industry, it is particularly relevant to client organisations.

An organisation with a culture oriented to facilitate innovation has distinguished characteristics. Some of the characteristics identified in the literature (taken from Dulaimi, Tatum and Fernando) are given below:

- i. Acknowledgement of and reward for creativity;
- ii. Value innovation and change and has a clear strategic vision for the company;
- iii. Understanding and a belief of management that creativity, imagination and innovation are intrinsic to their roles;
- iv. Persistent pursuit of improved productivity;
- v. The arrogance to question everything;
- vi. Pride in finding ways to improve;
- vii. Encouragement and support for the development and exploration of ideas;
- viii. Trust of employees with a degree of freedom of thought and action to act in the direction of organisational goals;
- ix. Toleration of failures and mistakes if done in the process on innovation;
- x. Careful risk consideration and management;
- xii. Commitment of necessary resources (manpower, money, information and time);

- xii. Recognition, encouragement and support from all levels of employees towards innovative activities;
- xiii. High level of knowledge flow within the organisation;
- xiv. Effective knowledge content management;
- xv. Availability of networking facilities within and outside the organisation; and
- xvi. Strong relationships with clients and stakeholders.

(Dulaimi et al., 2005; Tatum, 1989; Fernando, 2006).

An organisation with such characteristics provides avenue for employees to develop competence both in managing innovation and to manage engineering projects. According to Kulatunga et al. (2011), client's competence is one of the strengths behind the effective participation in the construction innovation process. It was asserted that professional background, experience, expertise on the subject matters, up to date knowledge on the inside out of construction industry can unravel most of the complicated processes and procedures.

Another role for senior managers in client organisations is to appoint suitably qualified and experienced personnel to manage construction projects who recognise the importance of innovation and are able to lead the team to pay attention to innovation. It is also vital that client organisations hand over sufficient autonomy and decision-making powers to the appointed project manager, if benefits from innovation are sought from construction projects. According to Nam and Tatum (1997), the delegation of autonomy and decision authority to the project manager may be an important factor for success of innovation. Decision making powers combined with authority allows the project manager to take quick decisions to suit site situations without referring to other authorities. If decisions are their own, people are more likely to ensure their success, which is vital in construction projects. In addition, the autonomy helps to lift the profile of the project manager in the eyes of the other players in the construction project and to earn their respect facilitating the leadership (Nam and Tatum, 1997).

Role of the project manager

The project manager is influential at the project level to drive innovation. Dulaimi et al. (2005) point out that, project managers need technical, administrative and social skills to effectively sell new ideas in the project.

Many researchers have identified characteristics of leaders related to construction projects (Dulaimi et al., 2005; Kulatunga et al., 2011; Nepal, 2004). Although they are valid for project managers from any parties

(i.e. contractor's project manager, design team project manager), these characteristics are more relevant to the project manager from the client organisation directly dealing with the execution of the project. Based on their findings, the following characteristics of project managers who could effectively encourage innovation in construction projects are identified:

Personal

Foresight and vision, competence, respect for people, self-motivation and team player are considered key characteristics. In addition, personal commitment and proactive involvement, ability to initiate fruitful relationships to promote mutual trust and understanding, flexibility and receptiveness to change and the ability to manage risks are also required from such leaders.

Project leadership

With respect to project leadership, characteristics such as the ability to establish firm goals and priorities, direct and lead the project team to attaining project goals rank high. Required other characteristics include effective communication and coordination of work, ability to act as a resource allocator and spokesman, effective information and knowledge management, and effective management of client organisations' internal relationships.

Innovative leadership

No innovation is possible without innovative leadership with characteristics such as value judgment on innovation, foresight and vision towards innovation promotion and the ability to act as an entrepreneur, disturbance handler, negotiator, monitor and disseminator. In addition, leading, coordinating and combining the technical creativeness of the various organisations involved in the construction project is vital from a leader to drive innovation.

The above discussion reveals two principal arguments: capable client's project managers should have distinguishable characteristics that enable them to lead innovation; client's organisations should have conducive environments with regard to innovation that support project managers who are in the pursuit of innovation in construction projects.

Therefore, it is necessary for clients to select project managers with desired characteristics to lead innovation in construction projects. One of the ways of selecting a proper candidate could be to assess experience as an innovation champion in previous projects.

RECOMMENDATIONS

For the clients who are eager to reap benefits from innovation in construction projects, the following recommendations could be given based on this research study.

Construction related strategies that can be used by clients include:

(i) Take action to harness creative novel ideas from anybody associated with the project irrespective of their positions.

(ii) Select contract types which offer more opportunities for innovation. Some of them are mentioned in the paper.

(iii) A few strategies that can be taken during the bidding process are mentioned in the paper. They include providing incentives, using value-based bidding process and alternative bids. Adopting them would enhance the innovation potential of the project.

Management or leadership related strategies that can be used by clients include:

(i) Take action to develop a culture in the client organisation that encourage and support innovation;

(ii) Appoint persons knowledgeable of the importance of innovation to senior managerial positions and further educate them on leading innovation in the organisation;

(iii) Appoint project managers who could effectively encourage innovation in construction projects. Their selection may be based on their past performance in leading innovation in projects.

CONCLUSION

Stakeholders are increasingly looking at innovation in construction projects as a necessity and there are indications that it could soon become the fourth competitive dimension after cost, time and quality. As one of the most influential persons on construction contracts, the client has a major role to play to reap benefits from innovation. This paper looked at the role of the client in two viewpoints: the use of construction related strategies and the use of management (leadership) strategies. With regard to management (leadership) related strategies, two principal arguments are made: capable client project managers should have distinguishable characteristics that enable them to lead innovation; client's organisations should have conducive environments with regard to innovation that support project managers who are in the pursuit of innovation in construction projects.

Considerable research has already been done to identify management or leadership related strategies. However, there seems to be less knowledge

on construction related strategies to promote construction innovation at the project level, especially the contribution of higher level procurement methods such as design and construct, alliance and early contractor involvement models.

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