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FINANCIAL INCENTIVES AND ADVANCED CONSTRUCTION PROCUREMENT SYSTEMS

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ABSTRACT

Construction clients often use financial incentives to encourage stakeholder motivation and commitment to voluntary higher-order project goals. Despite the increased use of financial incentives, there is little literature addressing means of optimizing outcomes. Using a case study methodology, the examination of a successful Australian construction project demonstrates the features of a positively geared procurement approach that promotes the effectiveness of financial incentives. The research results show that if the incentive system is perceived to be fair and is applied to reward exceptional performance, and not to manipulate, then contractors are more likely to be positively motivated.

Keywords: goal commitment, financial incentives, contracts, motivation, construction projects, built environment.

INTRODUCTION

The use of advanced contracting options such as financial incentives has been identified as a way to promote increased motivation and commitment in construction projects (Bresnen & Marshall, 2000). A financial incentive built into a contract can act as a reward system based on a contractor's ability to satisfy specific cost or performance objectives (Washington, 1997). Similarly, according to Bower, Ashby, Gerald, and Smyk (2002, p. 43), financial incentives aim to "simply take advantage of a contractor's general objective to maximize their profits by giving them the opportunity to earn a greater profit if they perform the contract efficiently." This can potentially be achieved by having contract agents (including project consultants) share in the client's success from the project. It is generally accepted within the incentive literature that, to ensure that an adversarial relationship does not occur between the contracting parties, the incentive systems should focus on positive incentives, rather than on penalties (Lahdenpera & Koppinen, 2003).

Nevertheless, there has been very little analysis of the means to promote financial incentive effectiveness in a construction project environment. The limited literature that exists is dominated by Bresnen and Marshall (2000), who argue that there are limitations to the use of incentives. They point out that financial incentives will not automatically result in high levels of motivation and commitment. They suggest instead that the overall procurement approach needs to be complementary, although little detail is provided in terms of how this might be achieved. This paper responds to this gap in the literature by exploring the research question

"What are the specific project drivers that enhance financial incentive mechanism (FIM) effectiveness?"

This paper examines a very successful large Australian infrastructure project completed in 2005, to identify the positive motivation drivers that encouraged stakeholders to achieve above "business as usual" (BAU) goals. These are voluntary higher-order goals that exceed base contract commitments. On this project, the above-BAU goals equated with the FIM goals, and as these were achieved, stakeholders were allocated the full incentive pool.

The first section of this paper provides background information on the range of financial incentive design options in construction contracts and discusses the complexities associated with implementing incentives into a highly interdependent project environment. This theoretical background will inform the subsequent case study discussion.

FINANCIAL INCENTIVES AND CONSTRUCTION CONTRACTS

Financial incentives as part of construction contracts are typically either cost-plus incentives or performance incentives (Bubshait, 2003). They aim to promote motivation by offering either a profit-sharing arrangement or a performance bonus, respectively, to the contract agent for above-minimum performance standards.

Cost-plus Incentives

In cost-plus incentive contracts, the client's target cost is introduced into a reimbursable contract and acts as the fulcrum around which the incentive mechanism is driven. As this incentive type aims to promote favorable project cost outcomes, savings achieved below the target cost are split between the contractor and client based on a predetermined share profile (Broome & Perry, 2002). The aim of this arrangement is to motivate the contractor and client to work together to minimize actual costs, as the contractor is able to maximize their profit margin by sharing the benefits of reduced project cost, and the client is motivated to minimize the total cost paid out (Broome & Perry, 2002).

Performance Bonus Incentives

The second type of financial incentive used in construction contracts is the performance bonus incentive. These can be used in fixed price and cost-plus contract types but, depending on the project goals, have been argued to work best when used in cost-plus contracts (Berends, 2000). The main objective of performance bonus incentives is to motivate the contract agent by providing them with a financial bonus in addition to their prescribed fee for exceeding minimum acceptable levels of performance; and distribution is generally based on evaluations undertaken after performance has been achieved (Washington, 1997). Performance bonus incentives can be used to motivate the contract agents in many areas other than cost, which is usually more simply managed by the cost-plus incentive contract mechanism. Performance bonus incentives are applied to a wide variety of areas, such as schedule (e.g., project completion prior to target dates) and technical performance (e.g., achievement of safety and quality assessment targets).

Specifically, schedule incentives offer stakeholders a bonus for project completion earlier than the target dates and are usually based on a predetermined amount paid for each day of early completion, and are closely linked to project costs, since time delays usually increase costs (Arditi & Yasamis, 1998). Therefore, schedule incentives should be negotiated concurrently with cost incentives, as incentives encouraging early completion will reduce

construction costs. Scheduling risks can be high if the scope is likely to change during the project and if the impact of these changes cannot be predicted with reasonable accuracy. Thus, the level of stakeholder risk in committing to the schedule objectives should be consistent with the reward offered (DAU, 2001).

Financial incentives can also be used to influence the quality of project outcomes in construction. A quality performance bonus works on the premise that contractors are offered additional profit if they are able to achieve predetermined quality performance levels. When assessing quality, standardized systems should be used and should be applied selectively to the most important aspects of the work (Lahdenpera & Koppinen, 2003). However, a major problem with quality assessment is that it can be subjective and difficult to measure (Washington, 1997).

Quality performance measurement tools have been developed by public clients with a high level of repeat construction, such as those used by Singapore's Construction Quality Assessment System (CONQAS) and Hong Kong's Performance Assessment Scoring System (PASS) for public housing (Tam, Deng, Zeng, & Ho, 2000). Criteria may include quality of workmanship, flaws and defect rectification, functioning of design and implementation, and amount of rework. Measuring standards should be based on objective measurements rather than relying on subjective assessments (Tam et al., 2000) to ensure that there is a clear definition of performance requirements and units of measurement.

Multiple Incentive Arrangements

Occasionally, clients offer a multiple incentive arrangement, which combines cost-plus and performance incentive arrangements (Table 1). Generally, performance is measured on the cost savings made below a target cost combined with the achievement of set performance goals (single or incremental goals). This arrangement maximizes the opportunities to incentivize all areas of performance and should be balanced to reflect client project priorities.

Financial incentives can be applied at the organizational and/or individual levels. A major problem in selecting an appropriate incentive system to motivate at either level is that, in environments where team members' tasks are highly interdependent (such as in a construction project), individual output may be almost indistinguishable from group output (Howard, Turban, & Hurley, 2002). Organizational incentives are thus used more often than individual incentives in the construction context.

One unfortunate drawback to organizational incentives is the potential to induce what economists call free-riding behavior—or the reduction of effort due to the reduced accountability in group performance. For tasks that require very little cooperative behavior, group-based rewards will produce lower levels of performance than with highly interdependent tasks, due to the potential for free-riding behavior (Wageman & Baker, 1997). On the other hand, in a highly interdependent context such as a construction project, free-riding behavior is more difficult. Team member contribution is very interdependent and therefore highly visible to the entire team, potentially making cheating difficult. Further, organizational incentives can help unify the focus on multiple goals among team members, encouraging mutual cooperation and increasing the level of commitment to their individual goals.

	Profit sharing incentives	Performance incentives	Multiple incentive mix
Performance measurement	Incentive measurement is based on construction cost savings around a target construction sum—i.e., if actual construction sum (ACS) comes in below target construction sum (TCS), savings are distributed among participants. Usually the share of savings is capped.	Incentive measurement is based on achievement of set performance criteria (key performance goals). Performance can be assessed throughout the project or at completion.	Incentive measurement can be based on: 1) cost savings made below a TCS; and 2) achievement of set performance targets that determine the allocation of incentive pool.
Reward allocation	Share ratio determined by straight percentage (%) agreement or distribution function—e.g., the greater the savings, the greater the percentage share on offer.	Incentive allocation sourced from a separate bonus pool (usually built into the project budget). It can be allocated based on a single goal or on incremental goals.	Incentive allocation is usually based on a share of cost savings and an incentive pool amount for the achievement of set performance goals (single or incremental goals).
Incentive options	Profit-sharing is based on a wide range of share profiles (e.g., 50/50 percentage capped) aligned with project risks and opportunities.	Performance incentives can include benchmarks in areas such as: • schedule performance • operation • non-disturbance • safety • design integrity • quality There are many variations in the application of this incentive type.	Many variations in the combination of both profit-sharing (cost outcome) incentives and performance incentives. However, the client should ensure that goals do not conflict.
Positives	Provides motivation for the client and contractor to work together and minimize actual project costs. Can be relatively easy to manage due to an objective measurement system and distribution at the conclusion of the project.	A wide range of incentive goals can be used to align project priorities and improve contractor performance. Argued to be best used in cost-plus incentive contracts.	Maximizes the opportunities to incentivize all areas of performance based on project priorities. Multiple incentive goals should be balanced to reflect project priorities.

Negatives	Potential for "moral hazard" problems in other project performance areas (i.e., contractors prioritizing cost savings to the potential detriment to other areas such as quality and safety.	Requires ongoing management and potentially high upfront costs to develop and measure incentive performance. Care must be taken not to overemphasize a particular goal to prevent imbalances in contractor priorities.	Can be complicated to administer. Requires ongoing management and upfront costs to develop and measure the performance incentives.

Table 1: Key financial incentive designs

In summary, there are a wide range of FIM options that can be applied to a construction contract. These include profit-sharing arrangements in cost-plus incentive contracts, built-in bonus performance provisions, and financial incentive mixes. Also, there is the option of individual- and/or team-based incentives to consider based on the level of task interdependence and individual impact on organizational and inter-organizational performance. The suitability of a specific option is clearly context-dependent.

METHODS

This paper addresses the research problem that project managers have little information available to them on how to incorporate incentives in their projects (as a part of an overall procurement strategy) nor do they fully understand the impact of incentives on project motivation (Rose, 2008). In response to this, a case study is employed to identify the positive motivation drivers that can underpin the successful achievement of the above-BAU incentive goals. By identifying the positive motivation drivers, conclusions can be drawn about the impact of FIMs on motivation and about procurement initiatives that can promote their effectiveness.

A case study methodology was chosen to explore the research question "What are the specific project drivers that enhance FIM effectiveness?" This was seen as the best method given the complexity of project environments, and the need for in-depth understanding of the dynamics surrounding project-based motivation in order to effectively scope and identify drivers. This case study method promised to result in more valid and reliable findings than a broader quantitative approach. Although there are acknowledged shortcomings with case studies in terms of external validity due to the small and selective samples, the aim of the current research was to derive analytical generalization and not statistical generalization of the motivation drivers impacting on incentive goal performance (Yin, 2003). The general themes and patterns identified form the background for future statistical research.

Case study findings were triangulated across the following data sources: semi-structured face-to-face interviews, project and contractual documentation (including project briefs and minutes from meetings), industry publications, and a site visit. Extensive preliminary data were collected, which helped shape the interviews. The interviews were semi-structured, with questions based on a set of four motivation indicators derived from organizational management and motivational theory literature. The indicators comprised:

Goal Commitment (Hollenbeck & Klein, 1987).
Commitment implies extension of effort over time toward the achievement of a difficult goal, culminating in its attainment. Goal commitment refers to the determination and motivation to try for a goal; in the case of this research, the performance goal associated with the financial reward. To clearly define this indicator and its elements, Hollenbeck and Klein's (1987) model of goal commitment was used. They applied an expectancy theory framework first developed by Vroom (1964), and expanded by Porter and Lawler (1968), to study goal commitment and determined a set of antecedents and consequences of commitment to difficult goals.

Distributive Justice (Colquitt, 2001; Leventhal, 1976).
A financial incentive system should be set at an appropriate intensity to fairly compensate for the agent's risk and to promote effort. Incentive intensity, according to economic motivation theories, is a major determinant of an agent's level of effort in an incentive contract. This is because higher intensity increases the agent's margin in response to their increased effort (Zenger, 2000). Therefore, the reward must be great enough to motivate the agent (based on the effort/cost to achieve), but should not exceed the value of the benefits to the principal. This is also supported by distributive justice and equity theory, where, if the size of the financial reward does not *fairly* equate with the desired level of performance, it can fail to motivate.

Process Fairness (Colquitt, 2001; Thibaut & Walker 1975).
According to justice theory, based on Adams' (1963) equity theory, process fairness focuses on the fairness of the procedures that are used to make distribution decisions. In the context of this research, process fairness refers to the fairness of the performance measurement process that determines the distribution of the financial reward. Procedural fairness perceptions in groups need to be stronger as task interdependence increases (Colquitt, 2004). Therefore, as task interdependence between project stakeholders is high in complex construction projects, it is predicted that procedural justice may be a very important requirement for maintaining motivation and commitment towards project goals.

Interactional Justice and Reciprocity (Fehr & Falk, 2002; Bies & Moag, 1986).
Interactional justice relates to the aspects of the communication process between decision makers and recipients, such as honesty and respect. This can relate to treatment from a supervisor or source of justice such as a client representative. In this research, it is argued that interactional justice predicts a negative reaction to poor treatment by a client/contractor representative. Interactional justice principles are closely supported by economic reciprocity theory (see Fehr & Falk, 2002), which states that the agent prefers an environment of fairness, where the principal's (client's) reward intention is perceived to be honorable. Where creativity and agent discretion are important, structuring financial reward systems as a symbolic gesture of trust can promote reciprocal behavior and restriction of opportunistic instincts (Kreps, 1997).

Rose (2008) provides further information on the theoretical development of these motivation indicators, which were used to structure interview questions. The interviewees comprised eight senior managers; two from each of four key stakeholder types (client, head contractor, consultants, and subcontractors), who were heavily involved in the procurement and delivery of the case project. All interviews were in-person, ranged from 60 to 90 minutes in duration, and were based on structured and unstructured questions. Interview data was captured by note-taking and digital recording and transcribed verbatim in order to develop an accurate and

comprehensive database. Informal field notes were also taken during site visits and the interviews.

Raw interview data was reviewed using content analysis. This involved manually aggregating and categorizing responses from the interview transcripts and the secondary data to identify the key motivation drivers. The identification and refinement of driver categories was achieved by inductive coding. The primary data amounted to approximately 8,000 words contained in interview transcripts. The coding process involved interpretation of each interviewee's transcript, organized around the four motivation indicators. Each coding category was revised and refined until clear lines could be drawn between the motivation drivers. Care was taken to identify driver categories that covered all instances, were limited in number, and were mutually exclusive. Due to the subjective nature of content analysis, an expert panel was formed to test content analysis accuracy and ensure inadvertent bias was minimized. The category allocations of the three expert panel members reflected over 80% accuracy, providing evidence of the reliability of the coding. The case study presented in this paper was selected in a purposive manner, as it represents an example of the successful design and implementation of a financial incentive system as part of the overall project procurement approach.

CASE PROJECT BACKGROUND

The project was a large Australian government acute care hospital redevelopment with a design and construction cost of AU$91.2 million, completed in 2005. This redevelopment was in response to a review of the existing facilities that were identified as not meeting their operational requirements and health service delivery models. This project included the demolition of much of the outdated infrastructure and replacement of all hospital wards. The hospital was designed to accommodate future growth.

The hospital was operational throughout the construction stage, and the project required the flexibility to meet changes in operational requirements and ongoing commissioning of new wards. The project was completed in two major phases, with a minor completion stage for finishing off the buildings. A unique aspect of the delivery approach was that Furniture, Fixtures, and Equipment (FFE) procurement was assigned to the managing contractor as well as construction management; traditionally FFE would be outsourced to a specialist contractor.

At the master planning stage, the project had been classed as a standard "lump sum" arrangement. A team of consultants including the architect (primary consultant), mechanical and civil engineers (secondary consultants), and a cost planner had been appointed under a lump sum arrangement to do master planning work. Under a traditional "lump sum" contract, the client appoints design consultants for the full extent of design and documentation. Once documentation is complete, a contractor is engaged by the government client under a lump sum contract and through a competitive tender process, to construct the building based on the completed design. Thus, the contractor is responsible for, and carries the risk for, construction cost (based on the agreed-upon contract sum) and construction schedule.

After several months, the client representatives identified the project as high risk and it was decided that a "relationship-based" procurement approach would be more suitable. Also, due to its large size and complexity, the project was identified as a possible exemplar project; with an objective to showcase innovative procurement initiatives.

Two key components defined the "relationship-based" approach in this project. They comprised a Managing Contractor (Construction Management) contract and an innovative stakeholder management arrangement.

First, the contractual conditions agreed to between the government client and contractor significantly influenced the project relationship. Under a Managing Contractor (Construction Management) form of contract, the contractor is generally appointed under a competitive two-stage tender arrangement (via price and non-price selection criteria), to provide input into design and documentation and is contracted to manage the construction process. They do not take on the risks associated with construction documentation changes but still provide input into the design process as a consultancy service. It was anticipated that their input would improve design constructability, thereby decreasing construction risks.

In Australia, this is sometimes called a "junior" managing contractor role, as the government client appoints the design consultants for the full extent of their services, but they are not put under the responsibility of the contractor prior to construction. Under this contract, the managing contractor is responsible for the construction trade packages, which are managed through an open-book tender process. Generally, the managing contractor is appointed under a cost-plus arrangement that includes a construction management fee arrangement (CM professional fee), where actual cost-overrun risks are jointly managed by the project team on behalf of the client. Under the contract conditions, the contractor was required to act "in good faith" in maintaining actual costs within the client's budget. The government client believed that this arrangement would provide better value for money than under a lump-sum contract (where the contractor is solely responsible for the construction of completed design). Generally, the project stakeholders agreed that the use of a financial incentive was suited to this form of contract because of the requirement to motivate the contractor and consultants to deliver performance beyond their professional management fee and minimize project costs below a target construction sum (TCS), through a value engineering processes.

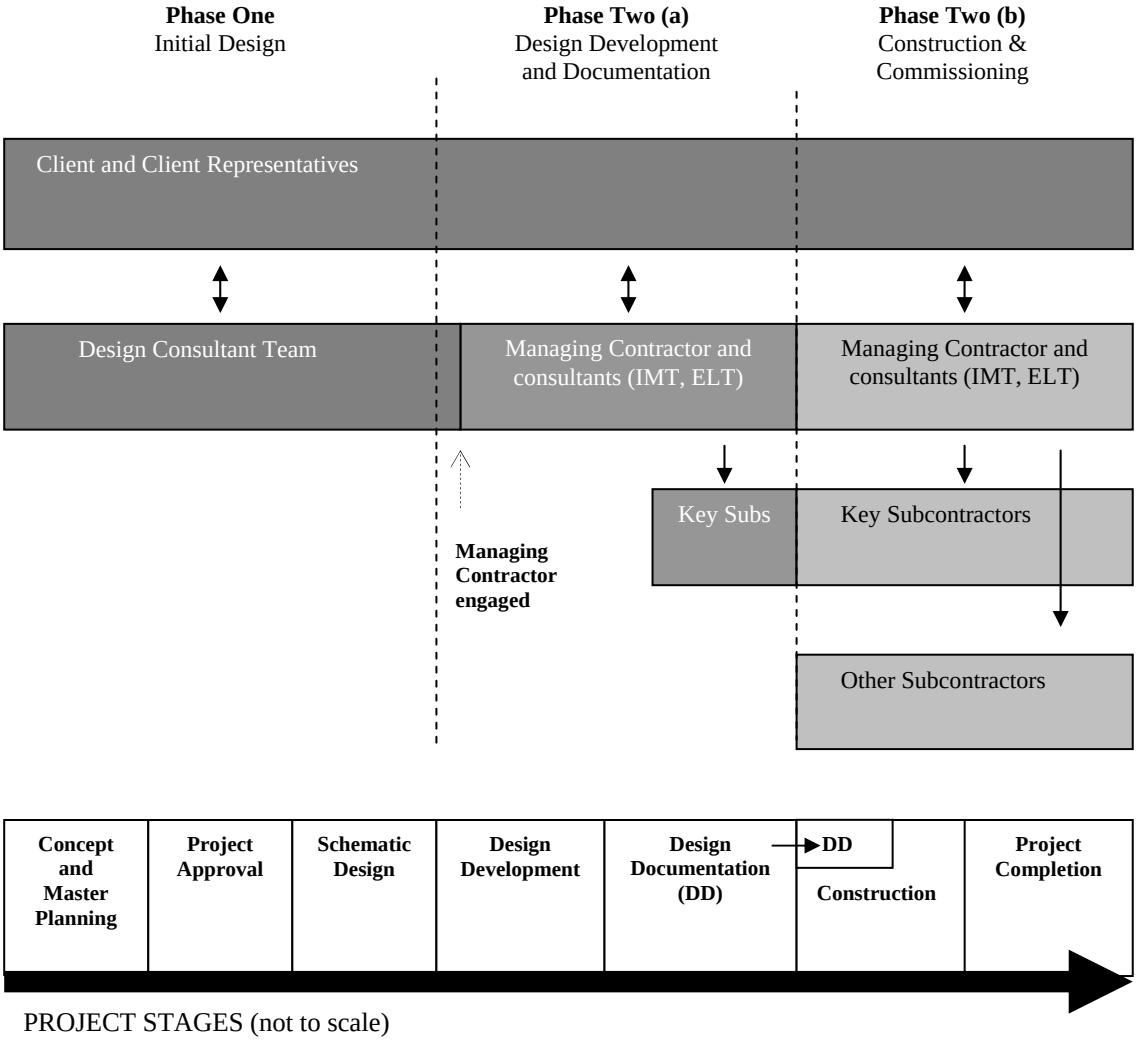
The managing contractor contract conditions set the foundation for improved stakeholder relationships through a willingness of the client to jointly manage project time, cost, and quality risks. However, a key factor in the success of the chosen "relationship-based" procurement approach in the case study was the innovative stakeholder management strategy that operationalized the joint approach to managing the project.

The stakeholder management strategy developed for the project aimed to align the project parties' commercial objectives with the project objectives, further mitigate the client's design and construction risks (through closer integration of the project team), and improve decision-making and problem resolution. This innovative strategy was first proposed by the government client representatives in response to several failed projects, where failure was partly attributed to adversarial relationships and a lack of teamwork and stakeholder cohesion. Although a management framework was in place that defined organizational responsibilities, many details of how the project would be managed were developed in the initial project relationship workshops. All of the major project parties including the key subcontractors attended the initial workshops, which aimed to define stakeholders and their expectations and help develop common goals for the team.

A key feature of the stakeholder management strategy was the abolition of the traditional hierarchical structure in favor of a "round table" approach. The consultants, managing contractor, and key subcontractors were engaged directly to the government agency responsible for the project. This was intended to promote honesty and openness in project meetings between the major parties. The project was managed by two primary teams,

comprising an executive leadership team (ELT) and an integrated management team (IMT). Theses teams involved all of the major stakeholders and their leaders. The IMT included the individuals from the major parties who were in charge of the day-to-day management of the project, while the ELT involved the higher-level management personnel who were responsible for the holistic direction of the project, much like a steering committee. It was intended that if project issues could not be resolved at the IMT, they would be delegated to the ELT. Workgroups were formed within the IMT to identify above-BAU benchmarks and to measure and reward performance in the key project priority areas. These workgroups were formally established during the design development and documentation stages. The end-users were involved in the ELT and IMT, to provide their input to the building's functionality requirements.

In summary, the consultant team was appointed during the conceptual design stage, to take the project to the design development stage. The managing contractor was appointed during design development to provide input to the consultants on the design, particularly concerning constructability. The key subcontractors were appointed during design documentation to further enhance the design and negotiate their subcontract tender price. A relationship consultant was appointed during the project's conceptual stage to establish and formalize the management structure, facilitate relationship workshops, and provide relationship coaching. The management structure and the stages of appointment are illustrated in Figure 1.



PROJECT STAGES (not to scale)

Figure 1: Project management structure and engagement stages.

ELT = executive leadership team; **IMT** = integrated management team.

The managing contractor tender process was managed by all members of the initial project team (client representatives and consultant team including the relationship consultant and cost planner) with equal input in selection. It involved a two-stage tender process: first, to assess tendered construction estimates, and second, to assess non-price criteria.

As with the managing contractor, the consultants were employed directly by the client under a professional fee arrangement. Notably, the cost planner was assigned directly to the client's risk manager to ensure that the client had an independent third party to review all cost claims and monitor budget performance. The key subcontractors (mechanical, electrical, and intelligence/communication systems) were selected under a two-stage tender. First-stage selection was based on non-price and price criteria. These subcontractors assisted the consultants in the design documentation and in developing shop drawings. This gave them significant input to the design and the value engineering process. In the second stage, they were appointed to complete the trade package for the negotiated tender price. The remaining subcontractors were appointed to the managing contractor under a lump sum price arrangement.

A key component of the procurement approach was the use of a performance-based financial incentive. The FIM was developed by the ELT members, who delegated the responsibility of its implementation to the IMT through the project workgroups. A capped financial incentive pool of AU$1.5 million was offered by the client and financed through the preservation of contingency amounts, which linked the client's objectives to the cost outcomes on the project.

The two contingency sums were the principal's contingency and the design and construction contingency. The client representatives could spend the principal's contingency on discretionary items outside the scope of the works, as they saw fit. The construction and design contingency could be used for project initiatives and for extra works as determined by the construction and design teams. If the team was able to preserve the design and construction contingency (cost performance), the FIM would be allocated at the conclusion of project according to performance in Ecological Sustainable Development (ESD), community relations, training, and program performance. The IMT decided that the financial incentive reward would be distributed to each team member based on their fee proportion.

The IMT went through a workshop process to determine: first, how they could maximize project savings without impacting on functionality and develop the incentive pool, and second, how the FIM performance would be benchmarked and measured. They decided that 40% of the incentive pool would be based on project outcomes, and 60% on cost outcomes. Therefore, if the team managed to secure an incentive pool from contingency savings while meeting all project objectives, 60% would be automatically distributed. The remaining 40% was made available if the project team achieved three out of the four project performance benchmarks. The ELT decided that there would only be positive financial incentives on the project. Thus, there were no negative incentives such as liquidated damages clauses in the contract.

The client, managing contractor, and consultant representatives all recognized that there would be significant pressure on the initial budget if the objectives of the project were to be met, especially for FFE. There had been miscalculations in the estimate of how much of the existing equipment could be reused and of expected market prices at the time of purchase for new equipment. The original budget estimate for FFE was 6% of the total project cost (approximately AU$4.2 million), but ultimately cost approximately AU$12 million. This budget shortfall placed pressure on the project team to recoup the required funds in project savings. In the end, the budget shortfall was met by extra funds from the client, but also through the savings made by the project team (value engineering recouped approximately AU$1.8 million) and an agreed redistribution of half of the incentive pool.

Approximately halfway through the project, the incentive capped amount on offer was halved through negotiation between the stakeholders. This occurred when the client predicted that the project team would most probably achieve the AU$1.5 million in contingency savings, although at that stage, their final performance in the benchmarks had not been determined. As there were identified major shortfalls in the FFE budget, the client asked the project team to forgo half of their share (AU$750,000) of the FIM pool and redistribute it to the FFE budget. Although the client had a contractual obligation to pay the full incentive pool, the managing contractor and consultants agreed to the redistribution because of their commitment to the FFE outcomes. As a compromise, the client agreed to extensions of time, giving the team a greater chance to meet the program.

By the conclusion of the project in May 2005, the project participants had achieved all of the budget and revised program, the ESD (recycling, water usage, and energy), community relations, and training benchmarks. Participants were paid the full AU$750,000 incentive according to their fee proportion. Another positive element for the major project parties was their automatic reappointment for Stage B of the hospital redevelopment. This was intended by the client as a reward for successfully meeting all project goals. This strategic reappointment was thought to be unprecedented in large government building projects in Australia.

POSITIVE MOTIVATION DRIVERS

Figure 2 illustrates the motivation drivers that were nominated by the majority of interviewees as contributing to the successful achievement of incentive goals on the project. The discussion of these drivers provides guidance for client project managers wishing to optimize the impact of financial incentives within an advanced procurement approach.

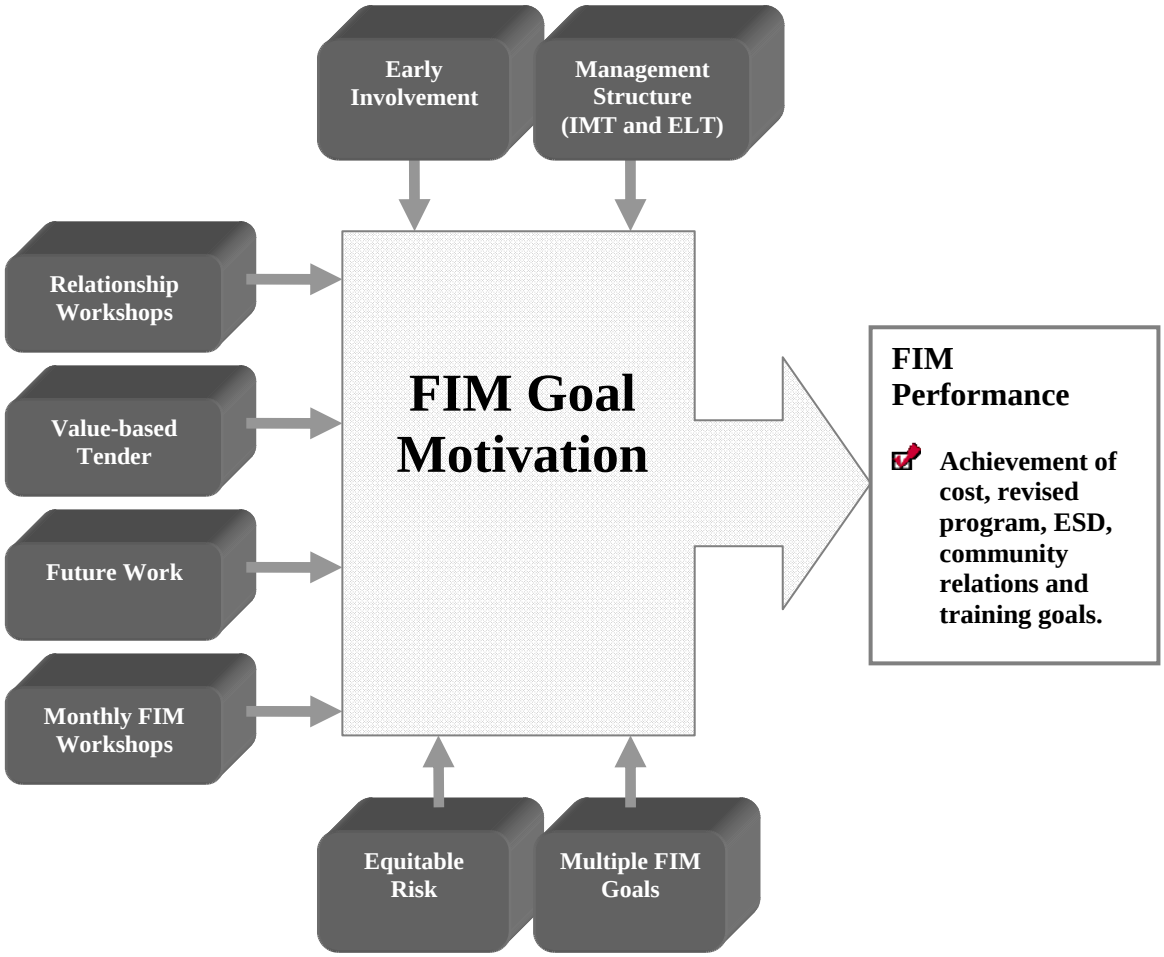


Figure 2: Positive motivation drivers.

FIM = financial incentive mechanism; **ELT** = executive leadership team; **IMT** = integrated management team; **ESD** = ecological sustainable development.

Management Structure

The "round table" project management structure (facilitated through the monthly IMT and ELT project meetings) positively impacted on the project stakeholder commitment to the FIM goals. The meetings promoted the expectancy that the team could achieve the FIM goals, as each team member had an equal influence in the decisions that were made. The project team's control of performance was also increased because the managing contractor and key subcontractors were involved in the design stages.

Early Involvement

Having the managing contractor and key subcontractors involved in the design development and documentation stages improved the project stakeholders' ability to manage design and construction integration and to control construction costs (particularly for the managing contractor). This promoted goal commitment. This was particularly relevant in the value engineering exercises, where cost-saving design solutions were required to minimize

contingency spending, in order to build the financial incentive pool and recoup FFE budget shortfalls.

Relationship Workshops

The relationship workshops (including the initial breakthrough workshop and the ongoing relationship reviews) positively supported project relationships and promoted a "best for project" culture. This motivation driver, in combination with the project management structure, induced personal commitment to the deliverables on the project, beyond the organizational commitment, therefore increasing the attractiveness of FIM goal attainment. This personal commitment intensified the level of motivation induced through the FIM reward. Interviewees also expressed that the strong relational quality (i.e., the extent that the stakeholders feel confident and have trust in dealing with one another) formed on the project improved the perception that their client's intentions were honorable.

Value-based Tender

The selection of the managing contractor and subcontractors on non-price criteria was a positive driver that promoted motivation towards the FIM goals. According to the managing contractor representatives, this value-based tender approach gave them a sense of commitment to their client. They hoped to show that they had been rightly selected and to uphold their reputation, thus improving the attractiveness of FIM goal attainment. They also stated that the open-book tender assessment, which involved the examination of profit and loss statements from their previous projects, broke down client misapprehension and helped develop trust. The subcontractor representatives also said that their selection, based on a tentative subcontract price and ability to contribute to the design, improved the project team's ability to manage the budget and identify cost-saving design options, promoting goal commitment.

Future Work

The project participants were strongly motivated by the potential for future work with the client. Therefore, they were driven to promote their reputation and achieve successful project delivery, increasing the attractiveness of FIM goal attainment. This driver was also related to the project participants' perception that the client representatives valued their performance by recommending them for future projects. This potential reappointment for Stage B of the project was highly valued as a reward by the managing contractor and consultants.

Monthly FIM Workshops

The involvement of the contractors and consultants in the FIM development and performance measurement process (through the monthly FIM performance workshops) improved their motivation to achieve FIM goals. They had input with regard to what the FIM goals were, how performance was to be measured, and how rewards would be distributed; and their involvement was perceived to increase the expectancy that the FIM goals could be attained. These results suggest that the clarity and consistency in the measurement process are important in upholding the perception of fairness. Also, the contractors and consultants felt that their motivation was promoted by the democratic team decision-making process at the workshops to distribute the incentive reward based on fee proportions. The workshops gave them a sense of ownership of the FIM goals and the measurement process, as they had actively participated in their development.

Equitable Risk

The modified managing contractor contract established the framework for an equitable allocation of risk that gave the managing contractor the financial flexibility to commit to the FIM goals. Also, the open-book cost negotiation process allowed the client and the managing

contractor to establish accurate construction costs, which assisted them in managing the project risks—thereby decreasing the potential for construction cost overruns.

The client and managing contractor believed that this driver improved the managing contractor's chance of conserving the contingency sum and allocating adequate resources to the project initiatives. This improved the expectancy that the FIM goals could be achieved. The client also felt that by not forcing all of the construction risk onto the managing contractor, a less adversarial project environment was achieved. This supported the "best for project" culture that they were seeking to promote.

Multiple FIM Goals

Having multiple FIM performance goals provided the reward participants greater control over their performance, as there was a wide range of opportunities to secure the FIM reward. This increased goal attainment expectancy. The managing contractor felt that the multiple goal system allowed them to focus their effort on achieving the relevant goals according to changing project priorities while still having the opportunity to secure at least a proportion of the FIM reward amount on offer, which was perceived to be fair.

CONCLUSIONS

A range of positive motivation drivers within advanced procurement approaches have been identified. These drivers promoted motivation towards above-BAU goals set by the project team. According to the key project participants interviewed, the successful achievement of these goals was attributed to:

- "Round table" design and construction management structure in the IMT and ELT
- Early involvement of the managing contractor and key subcontractors in design stages
- Relationship management workshops and ongoing relationship workgroup initiatives
- Value-based criteria tender selection process
- Potential for future work opportunities for high performance delivery
- FIM design that involved the participants in the development and performance measurement process (through the monthly FIM performance workgroups)
- Application of a multiple FIM performance goal system

These drivers were perceived to increase the level of commitment to the FIM goals through improved expectancy that the team would be able to achieve them. The drivers also impacted on the project participants' perception that the client was fair in how 1) the incentive was distributed across the team, 2) the FIM goals were developed, and 3) performance was measured.

Although there were drivers identified that related to the incentive measurement and distribution design, a significant finding was that the project participants' motivation towards the FIM goals was not heavily influenced by the actual amount of financial incentive reward offered. Although the interviewees valued the opportunity to increase their profit margin through the FIM reward, their motivation and commitment was more strongly promoted through the development of good project relationships and the offer of future work opportunities. In summary, the findings suggest that the success of an FIM is dependent on its application within a complementary range of positively geared procurement initiatives.

Without such positive initiatives, the effectiveness of an FIM in promoting motivation may be compromised.

Finally, the case study identified that incorporating FIMs into a positively geared procurement approach can advocate a positive perception of the FIM's intention, increasing its effectiveness. This finding suggests that construction clients need to promote financial incentives as a supporting tool in the development of the project relationship and not use incentives as a mechanism of manipulation.

This paper provides a basis for future exploration of the motivation drivers influencing the effectiveness of FIMs. Although the research findings are framed within the context of a specific case study, it is expected that the results will apply to a wider range of project environments than those presented here. This could include the use financial incentives under a similar contract and stakeholder management approach for *private* sector–funded projects, as client-sector did not emerge as an important variable in the case study analysis. Nevertheless, future quantitative work is recommended to extend the generalizability and validity of findings.

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