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Effective Financial Incentive Mechanisms: An Australian Case Study

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ABSTRACT

The use of financial incentives in construction projects has been seen as a way to improve short term motivation, collaboration and reinforce long term commitment between project stakeholders. Yet, very little empirical research has been conducted into *how* financial incentives should be applied in the context of particular project types in order to maximise their effectiveness. The aim of this research paper is to identify the motivation drivers that influenced the effectiveness of financial incentives in an Australian Government large building project and to explain their characteristics in the project context. As part of a larger research project, this case study was undertaken to explore the perceptions of senior construction managers in response to a failed Financial Incentive Mechanism (FIM) in a relationship-based procurement environment. It was found that the strength of the financial reward on offer was not the major determinant of FIM effectiveness. Instead, a range of context dependent influences are identified and five key recommendations likely to improve the effectiveness of an FIM on similar projects are proposed.

KEYWORDS: F**inancial Incentive Mechanism, Building Project, Contracts, Motivation, Australia**

1. INTRODUCTION

FIMs built into a project contract aim to promote motivation and to reward contracting parties for achieving improved performance above 'business as usual' (Washington, 1997). The types of FIMs applied in large building projects include:

- Profit sharing incentives. Profit sharing incentives operate around a target construction sum (TCS), where cost savings from the actual construction sum (ACS) are distributed between the client and the contracted parties in pre-determined portions (Broome & Perry, 2002).
- Performance incentives. Performance incentives are offered on the achievement of set performance targets that are related to specific project goals (Bower *et al.*, 2002). This financial incentive type can be applied to a number of performance goals such as technical goals (e.g. safety, training, operation, non-disturbance, quality of work) and schedule goals (practical or actual competition prior to a target completion date).
- Mixed incentives. Financial incentive mixes are characterised by the combination of profit sharing (cost outcome) and performance financial incentives. Multiple incentive mixes can include a multi-objective system, where the total incentive amount awarded to participants is the sum of the partial incentives, and the partial loss of one of the incentives does not affect the opportunity of attaining the other bonus amounts (Lahdenpera and Koppinen, 2003).

Generally, it has been identified from Australian construction industry reports that procurement approaches that include equitable incentive mechanisms applied across the entire project team are recommended to improve the performance within this industry (APCC, 1997; Sidwell *et al*., 2002). Further, a major report by the Australian Procurement and Construction Council found that governments, as major clients, are in an ideal position to promote industry development by leading the way in their own procurement initiatives, including the use of 'compatible incentive regimes' (APCC, 1997). The report argued that government clients should be seen to be achieving the best 'value from money' from tax revenue for the social and economic benefit of Australian citizens. They should also provide a best practice model for the private sector to emulate. This paper aims to assist Government client's in the application of FIMs by outlining the motivation drivers that have influenced project performance in a large scale building project. The paper also fills a gap in the literature by providing a more detailed understanding of motivation under FIMs on construction projects, than has previously been available. The qualitative findings reported here provide a robust basis for the design of quantitative measures to be applied on multiple projects in future research.

2. FINANCIAL INCENTIVES AND THE PROJECT CONTEXT

There is currently a simplistic view within the construction literature that the motivation is automatically assured if a financial incentive mechanism is present in a construction project (Bresnen & Marshall, 2000). It is argued in this paper that due to the complexity of the motivational environment,

incentives can in fact fail to promote the desired level of motivation and commitment if not strategically applied in consideration of the project context.

Large-scale building projects are characterised by ‘one-off” designs that are constructed in a unique location with a wide variety of project stakeholders connected by a complex array of contractual relationships (APC, 1999; Cole, 2002). As each large-scale building project is unique, it is important to determine the influence of context on motivation drivers and FIM performance. The following case provides an example of failure and the negative motivation drivers that influenced its failure, shedding new light on the dynamics between the FIM design and the project environment. The case is an example of an Australian large-scale building project commissioned by a government client under a relationship-based contract containing FIMs.

3. CASE PROJECT

A case study approach was selected as the most appropriate method to explore the complex subject of motivation on construction projects, given the absence of relevant, substantive pre-existing research in the literature.

The data was collected through semi structured interviews with eight senior managers from four stakeholder groups, comprising client, managing contractor, consultant and subcontractor. Each interview was undertaken over a period of 90 minutes or more. The primary data comprising the interview transcripts were supported by secondary data such as project and contractual documentation, industry publications and site visits. The data was manually analysed and coded into motivation drivers according to the research conceptual framework. The data were collected between March and June, 2005.

The project was an Australian government 14-story non-residential building with a construction cost of $130+ million. It was a landmark project with a complex and novel design. Despite contractor and consultant budget problems during the project, the project team successfully achieved the mandatory requirements in the contract, by meeting time and quality objectives. However, FIM goals beyond these mandatory requirements were not achieved.

Procurement approach and FIM design

The procurement approach on the project was a Managing Contractor – Design and Construction Management – Guaranteed Construction Sum (MC – D+CM (GCS)). Under this procurement approach, the managing contractor was appointed by the government client at the end of schematic design stage, through a competitive tendering process. The contractor was

appointed to manage the design documentation and construction of the project, based on a selection process that, unusually, emphasised non-price criteria (70% weighting) over price criteria (30% weighting). The tender was based on the conceptual brief and schematic design developed by the client and the consultants prior to the managing contractor's engagement. Once the managing contractor was appointed, they took on the responsibility to manage the design documentation through the design consultants who were novated across to the managing contractor. During this stage, the government client maintained control over the design process. It was a requirement under the contract that client representatives approve all design changes nominated by the managing contractor, considering the original project brief, schematic design, program and cost plan.

Once design was complete, the managing contractor managed the construction trade packages and provided ongoing management to the consultant's production of construction documentation. The managing contractor held the majority of risks for design and construction cost overruns as they were not entitled to price adjustments under their design and documentation management fee, their construction fee or the nominated Guaranteed Construction Sum (GCS), which in combination comprised the Target Construction Sum (TCS) agreed during tender stage.

Therefore, if actual costs exceeded the TCS amount, then it was the managing contractor's responsibility to absorb these cost overruns. This procurement approach requires the managing contractor to have efficient cost management skills, as in most cases the contractor bids on partially completed documents to propose to the client a construction sum that will not be exceeded (Hampson *et al*., 2001). FIMs are suited to this procurement approach if there is potential to bring the actual construction costs in below the target construction costs (and then share savings).

The financial incentive mechanism in the project was a performance-based FIM. It involved an incremental allocation from an incentive pool of $1.6 million built into the original project budget. The incentive offer was based on the completion of specific 'stretched scope' construction items outside the mandatory scope of the contract. Overall, the FIM was intended to motivate the managing contractor, the consultants and subcontractors to achieve savings below the TCS and complete the stretched scope work items. Thus, if they saved money below the TCS and redistributed that money into the completion of the stretched scope, they received a share of the incentive pool. The incentive pool allocation was based around an exponential measurement equation. Therefore, the more stretched scope items completed, the larger the allocation percentage, up to a cap of $1.6 million for all items. It was intended that the FIM be distributed to the managing contractor, consultants and major subcontractors, based on how much each contributed to achieving the stretched scope.

Relationship management

Common to the 'Managing Contractor' procurement approach, the project had extensive relationship management arrangements built into the project agreements. These arrangements encouraged the project participants to act as a single unified team, to foster relationships across organisational boundaries and to avoid adversarial behaviour. The relationship management process involved relationship workshops to develop team mission statements and introduce new team members to relationship management principles. There was a one day workshop prior to the commencement of site-work, involving the client, managing contractor and key consultants. Following this, there were monthly follow-up reviews involving the same stakeholders to monitor relational quality and teamwork.

The contracts dictated that all team members would act in good faith towards one another for the betterment of the project. The contract set out a clear dispute resolution process to prevent problem escalation. Relationship workshops and monthly relationship surveys were conducted to induct new team members and to assess the overall 'health' of the relationships via key performance indicators set out in the contract.

The market conditions

The managing contractor and their team of consultants and subcontractors experienced significant financial pressures during the construction stage.

Market prices were rising sharply between the time that the GCS was agreed and the time the subcontractor pricing was agreed. The market rise was due a major increase in demand in the larger residential building market, which filtered across to the non-residential market in the major trades, particularly the key structural and finishing trades. This resulted in a major battle for the project parties, particularly the managing contractor, to complete the project within the TCS. To counteract these rising costs, the project team undertook comprehensive value engineering exercises, which resulted in approximately $5 million worth of construction savings with client approval.

Due to the difficulty in completing the mandatory project scope within the TCS, it was perceived that it was unlikely that the team would complete any of the stretched scope work items, and therefore would not be eligible for any of the $1.6 million bonus pool.

4. MOTIVATION DRIVERS

In this paper, the 'motivation drivers' are defined as the drivers that have impacted on the level of motivation towards the achievement of the FIM goals. The motivation drivers were identified and analysed using an inductive case study approach utilising constant comparative analysis

across primary and secondary data sources. The fieldwork was based on a conceptual framework developed from a comprehensive literature review into psychological and economic motivation theory and financial incentives in construction projects. For further information on the research conceptual framework please refer to Rose & Manley (2005).

Positive motivation drivers

Although the FIM applied in the case project was deemed a failure by the client, there were aspects of the project conditions that were perceived to have a positive impact on motivation towards completion of the stretched scope incentive goals. Table 1.1 describes the positive motivation drivers identified from the interview data.

Interview data indicate that the project workshops were effective in developing harmonious project relationships and in promoting motivation and commitment, despite the failure to achieve the FIM goals. According to the client, managing contractor and consultant representatives, the relationship workshops enhanced the project relationships, which in turn improved their ability to deal with financial pressures on the project and contributed to the successful achievement of the client's mandatory time, cost and quality objectives. The managing contractor and consultant representatives also felt that the client representatives were willing to fairly approve cost saving design changes to alleviate some of the financial pressures on the managing contractor.

Motivation was also intensified by future work opportunities. For the managing contractor, this instilled a sense of commitment to the project, particularly as the client undertakes repeat work in the industry, and generates a substantial proportion of the building work in the Australian state concerned. Further, the managing contractor has a history of working with the client, creating a strong and direct motivation to protect and extend future work opportunities through successful delivery of an iconic project.

The managing contractor and consultant representatives were initially driven to complete the stretched scope goals, not only by the financial incentive reward on offer, but by the desire to maintain and improve their reputation with the Government.

Table 1.1 Positive Motivation Drivers

Motivation Driver	Description
Relationship Workshops	Initial relationship workshops assisted the formation of strong project relationships and established a 'best for project' team culture, driven by the relationship management requirements of the project agreements.

Client Flexibility	Client representatives were willing to approve cost saving design changes to alleviate the financial pressures on the managing contractor, in part driven by the 'act in good faith' contractual obligation.
Future Work	The desire by stakeholders to improve their reputations, through successful delivery of an iconic project, increased the attractiveness of achieving greater than 'business as usual' performance.
Value-driven Selection	A value-driven tender selection process, with an unusually high (70%) weighting on non-price criteria, generated a desire by the project team to prove that the system worked and that the client's selection of them was justified.
FIM Reward Distribution	Under a team agreement, the financial incentive reward was on offer to all major project team members who had input to achieving the stretched scope work items, including subcontractors.

Another positive motivation driver in the project was the value-driven selection process that was measured on 70% non-price criteria. The client, managing contractor and consultant representatives perceived that the selection process positively promoted initial motivation towards the FIM goals. This was due to their perception that they had been fairly treated in the selection process, which they valued.

In terms of the FIM design, the managing contractor and consultant representatives appreciated the client's decision to allow the team to decide how the FIM would be distributed. This action encouraged the potential FIM recipients to perceive the system as fair. Although, the client's approach to distribution was valued, the interviewees expressed that it was all in vain as the incentive goals were ultimately unattainable.

Negative Motivational Drivers

Despite the existence of the five positive motivation drivers above, which focused stakeholder attention on the FIM goals, the managing contractor experienced significant financial pressures, which discouraged them from striving for the stretched scope FIM goals. Table 1.2 summarises the overwhelming negative motivation drivers that influenced the failure of FIM in the project.

Table 1.2 Negative Motivation Drivers

Motivation Driver	Motivation Driver Description
Inequitable risk	The risk profile of the Managing Contractor contract was perceived to be inequitable where the managing contractor took on the majority of construction cost risks under the Guaranteed Construction Sum (GCS). With rising market conditions outside of the project team's control, risks of cost overruns escalated, resulting in major financial pressures.
Inadequate Price Negotiation	There was a very little negotiation allowed for in the contract over price between client and managing contractor to establish a fair and accurate Guaranteed Construction Sum based on market conditions.
Late Engagement	The managing contractor and subcontractors were appointed too late resulting in a failure to predict market movements and prevented their full input in the design process.
Single goal	The failed single goal incentive (based on cost) did not reward performance in other project priority areas such as quality or program.
Performance Measurement	The exponential curve system used as the performance measurement function was perceived as unfair under difficult financial conditions.

It was perceived by the client, managing contractor, consultant and subcontractor representatives that the contract type discouraged motivation towards the achievement of the financial incentive goals under the market conditions. These interviewees believed it was unlikely that the market conditions could have been predicted, but if the construction risks had been equitably allocated under the contract in the first place, it would have improved their chances to achieve the stretched scope goals. Simply, under this contract, the managing contractor was unable to control construction costs, limiting the opportunity they had to invest money into achieving the stretched scope.

The managing contractor and consultant representatives also felt that the managing contractor was under significant pressure from their client to negotiate and submit the GCS under an unrealistic time frame, in order to provide timely input to their project budgets, with a minimal negotiation process. This, in combination with the lateness in the managing contractor's appointment during design development, (decreasing their ability to provide cost-saving design options because the building design was already well established) compounded the financial pressures on the project.

As such, these cost pressures became so overwhelming that the stretched scope goals could not be completed, resulting in failure to achieve FIM reward. The managing contractor, consultant and subcontractor representatives also noted that the involvement of subcontractors in the design stage may have assisted the project team in identifying early cost saving design options and improve the accuracy of the GCS through negotiated subcontractor tendering.

The managing contractor, consultant and subcontractor representatives felt that there should have been multiple goals set in the allocation of the $1.6 million incentive pool. They felt that the singular stretched scope incentive goal was too restrictive and in the end, they were not duly rewarded for other positive project outcomes such as schedule performance and value engineering efficiency.

Another area of the FIM design that was perceived to have had a negative impact on motivation under the project conditions was the exponential measurement equation. Under the difficult financial conditions on the project, the managing contractor and consultant representatives felt that this was an unfair measurement system (also supported by one of the client representatives). They felt that the incentive amount on offer to achieve a proportion of the stretched scope work items was not enough, based on the effort required to achieve it. This significantly impacted on their commitment to achieving the FIM goals.

5. LESSONS LEARNT

The management team, especially the managing contractor, experienced significant financial pressures due to a rising subcontractor market. It was unlikely that the project team could have predicted the extent of the increase, however these pressures could have been minimised though an improved GCS negotiation process, equitable risk allocation and earlier involvement of the managing contractor and subcontractors in the design stages. It was generally agreed by the interviewees that the financial pressures, combined with perceived injustices in the FIM design and project conditions, decreased the effectiveness of the FIM.

Analysis of the dynamics underpinning the motivation drivers discussed above indicates that clients could design more effective FIMs and associated contract conditions. Indeed, five recommendations for clients to improve FIM performance can be identified:

Recommendation One: *The incentive participant should have control over their performance to achieve the FIM goals*

In the project, the managing contractor, consultants and subcontractors felt they had very little control over their ability to achieve the FIM goals, which ultimately led to the failure of the FIM. To effectively improve controllability of FIM performance in a rising market, it is

recommended that construction risks are shared equitability between the client and contractor, and that flexibility is provided in the contract to handle unforeseen conditions.

According to von Branconi & Loch (2003), ensuring that there is an equal balance of power and 'room to manoeuvre' in the allocation of risks between project parties will allow a joint response to unforeseen circumstances and prevent disputes and retaliatory action. However, they also argue that the appropriate allocation of risks in construction contracts cannot completely solve the issues associated with unforeseen project circumstances, which is where trust and informal relationship links fostered through cooperative behaviour can promote 'win-win' outcomes.

Financial pressures on the case project were also compounded by inaccuracies in GCS estimates due to a lack of informed negotiation and late managing contractor and subcontractor engagements. It is recommended that if a MC-D+CM (GCS) contract is applied to projects of similar nature in the future, then an open book negotiation process occurs over the schematic design and design development stages to develop a fair and accurate GCS. The managing contractor should be appointed earlier than in the case project (usually at the beginning of schematic design) to improve buildability knowledge during design. This will allow the managing contractor and their consultant's greater opportunity to manage construction cost risks.

The accuracy of the GCS can be further increased with the early appointment of subcontractors under a two-stage tender. Under this arrangement, the subcontractor provides input to design for a design fee and negotiates with the managing contractor on a fair trade package price. This can decrease the managing contractor's risk of market movements in subcontractor prices.

Recommendation Two: *Incentive goals should cover all project performance areas, based on overall project priorities*

The project performance goals and the FIM goals were misaligned. Although the project parties achieved good performance in the mandatory client goals, there was potential to improve this performance by increasing the scope of the FIM goals to incorporate other project performance priorities, harnessing the full power of the FIM. A wide range of performance goals (e.g. cost, schedule and quality goals) can assist in directing the incentive participants towards the right project performance areas, preventing single goal distortion, and maximising motivation through multiple reward opportunities.

Recommendation Three: *Incentive measurement process and reward distribution should to be perceived to be fair and equitable.*

The exponential measurement equation, as the performance measurement tool, was generally perceived to be unfair under the conditions experienced in the project. According to procedural justice

theory principles, one way to promote fairness in performance assessment is to allow participants a 'voice' in the process decisions, providing them improved control over the process (Greenburg, 2004). This can ensure that the FIM assessment process is perceived to be fair.

It is also important that the incentive reward is fairly allocated to the contract parties who contributed to performance, particularly within groups with a high level of task interdependence and collectivism (Colquitt, 2004), such as in a building project. The distribution plan was devised by the project team which promoted a perception of equity in how the reward would be distributed if goals were achieved. If the distribution plan is perceived to be inequitable, it can have a negative effect on team performance resulting in individualistic behaviour.

Recommendation Four: *FIM goals and measurement processes should be flexible*

In the project, it was initially perceived by the project team that the incentive goals were achievable. However, once it was realised this was unlikely because of overwhelming financial pressures outside of the project parties' control, the motivation power of the FIM was lost. It was perceived by the managing contractor, consultants and subcontractors that if the FIM was adaptable to the changing project conditions, the motivational power of the FIM could have been redirected toward other relevant projects priorities. Kerr (1999) refers to this as 'reversibility' in an organisational management setting and emphasises that a reward system should be reversed if it is not achieving the desired effect.

Recommendation Five: *Relationship management should be considered when designing a FIM strategy*

Drivers associated with the relationship management process were identified as having a positive impact on motivation, including the promotion of the relationship through the relationship workshops, empathetic client representatives' behaviour, emphasis on non-price criteria tender selection and the potential for future work with the government client. Although the 'above business as usual' FIM goals were not achieved, the project team did achieve their mandatory performance requirements and the managing contractor displayed a willingness to absorb significant financial losses to do so. This was generally attributed to the project relationship and the desire to maintain a good reputation. The identification of such drivers indicates that government clients should consider incorporating relationship management processes in future projects of similar nature in combination with carefully designed FIMs to promote 'overall' motivation and prevent calculative individualistic behaviour.

6. CONCLUSION

This paper has focused on the application of a failed FIM as it was thought there would be useful lessons to be derived from an anatomy of failure, and indeed that seems to be the case. The paper has discussed the motivation drivers within the project context that influenced its failure. The findings challenge a general assumption in the industry that motivation is automatically assured if a FIM is present. In the case project, the FIM was applied with good intentions - to promote motivation through positive reward - however, due to perceived flaws in the FIM design and procurement approach, it resulted in failure.

The results suggest that the motivation environment in an Australian Government large building project is complex and to gain the greatest motivational power from FIMs, they should be situated within a complementary range of interrelated systems that promote their positive nature, such as relational contracts with equitable risk sharing regimes. Without consideration of 'supporting' procurement initiatives, the FIM is likely to result in less than ideal outcomes.

This paper has provided a basis for future exploration of the motivation drivers influencing the effectiveness of FIMs. Further research by the authors will involve investigation of the relative weightings of identified motivational drivers, to provide more focused guidance for advice to clients. It is also intended to design an experiment that tests which is more important to project outcomes – relationship management initiatives or FIM initiatives, as the research reported here indicates that the impact of investment in relationships may be greater than that of investment in financial rewards.

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