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MOTIVATING CONSTRUCTION ORGANISATIONS THROUGH INCENTIVES: A CASE STUDY FOR CLIENT-SIDE PROJECT MANAGERS.

Timothy M. Rose and Karen Manley

*Project Management Academy, Queensland University of Technology, Brisbane,
Queensland, Australia.
tm.rose@qut.edu.au*

ABSTRACT

Client-side project managers face challenges in motivating project organisations to pursue exceptional design and construction performance. One approach to improving the motivation of project organisations is by offering a financial incentive reward for the achievement of voluntary performance standards above the minimum required standard. However, little investigation has been undertaken into the features of a successful incentive system as a part of an overall procurement strategy. In response to a lack of information available to client-side project managers tasked with the initial design of an incentive system, the paper explores motivation under a successful incentive and identifies key learnings for client-side project managers to consider when designing incentives. Our findings are based on the results of a large Australian case study which is interpreted against a conceptual framework based on both economic and psychological perspectives of motivation. The results suggest that motivation towards incentive goals is influenced by the value the project organisations place on the incentive reward as a commercial opportunity to increase their profit margins. However, perhaps more important are the relationship management processes that promote commitment to the project; and pride in the achievement of project goals. In the case study, these processes intensified the direct motivational effect of the incentive reward on offer. The findings also highlight the importance of ensuring that incentive goals and performance measurement processes remain relevant to the organisations throughout a project to continuously encourage motivation under changing project conditions.

Keywords: construction projects, contracts, financial incentives, motivation, stakeholders.

INTRODUCTION

Many contractual arrangements between construction clients and contractors are confrontational, reflecting considerable mistrust and leading to high contractor premiums to cover significant risk levels (Zaghloul & Hartman, 2003). More effective

use of contracting options such as financial incentives can improve the balance between the allocation of risk and reward for performance gains (Howard *et al.*, 1997). A key objective of incentive contracting is to provide the opportunity for contractors to earn additional profit for higher performance (Bower *et al.*, 2002). Generally, financial incentives aim to align the motivations of interdependent project stakeholders within a temporary project organisation. This is achieved through client gain-sharing, that is, by providing the contractor and/or consultants a share in the client's success from the project.

Financial incentives can be combined with any type of base construction contract and can be designed to reward the achievement of an infinite range of project objectives. Generally, incentives motivate a contractor by:

- the method of payment of the contract price, which encourages the contractor to meet cost objectives, where overruns or delays will cause the contractor additional expense. Lump sum contracts penalise the contractor if fixed costs increase, as profit margins are diminished (Levine and Rickman, 2000)
- a profit sharing (cost-plus) incentive arrangement, where the actual cost savings can be distributed between the client and the contractor in predetermined ratios (Arditi and Yasamis, 1998).
- a performance bonus for meeting performance targets based on one or more client goals (Bower *et al.*, 2002).

Although, penalties can act as a strong motivator to prevent failure to comply with the contract conditions, to ensure that an adversarial relationship does not develop between the contracting parties, the incentive systems should focus on positive incentives, rather than penalties (Lahdenpera & Koppinen, 2003). Another argument in favour of the balanced use of positive incentive systems is that penalties will only encourage a contractor and/or consultant to deliver the minimum contract specification, where positive incentives aim to encourage performance above the minimum.

A key objective of financial incentives is motivation towards cost containment. Cost containment rewards are one of the most widely used forms of incentive and can be applied to either fixed price, or modified cost reimbursable (cost-plus) contracts, depending on how the incentive is structured (Russell, 2003). Generally, under a cost-plus incentive arrangement, the client's target cost is introduced into a reimbursable contract and acts as the fulcrum around which the cost containment mechanism is driven, where 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 maximise 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).

One of the most common forms of financial incentive is a performance bonus which can be integrated into a wide range of contract types, including standard lump sum and cost reimbursable contracts. Simply, performance bonus incentives aim to motivate the contractor by providing them with a financial bonus that is additional to their prescribed fee for exceeding minimum acceptable levels of performance

(Washington, 1997). Generally, performance is evaluated *ex ante* and the reward is distributed from a separate client bonus pool specified at the start of a project. As the financial incentive is drawn from a separate bonus pool, there is a wide range of performance areas that can be rewarded, including schedule, environmental, quality, safety and design performance targets. However, important to the success of bonus incentives are specific, mutually agreed and measurable targets. If the output deliverables cannot be well defined, then an incentivised contract should not be pursued (HM Treasury, 1991). The down-side to such arrangements is that they can be time consuming to establish goals and benchmarks; and measurement processes need to be clearly defined and specified to prevent ambiguity.

Although positive financial rewards offer potential to promote motivation towards incentive goals, they can be challenging to design and implement. A key consideration for client-side project managers (referred to henceforth as 'client managers') in the context of a construction project is how the bonus or profit sharing reward will be distributed, that is to say, who are the reward recipients and will the reward be fairly distributed to those who have contributed to the performance gains? To effectively assess the optimal balance, client managers need to consider the possibility of individual- and/or team-based incentives and how performance will be measured across the various vertical and horizontal levels in a project.

This challenge is further compounded by the one-off nature of construction projects and the 'blurring of the lines' of performance contribution due to the high levels of task interdependency. The construction product supply chain is commonly characterised by disjointed relationships between contracting parties (Rahman and Kumaraswamy, 2004), where a large team is brought together on a one-off basis. As such, there can be limited scope to build cohesive team relationships over time. As a project can be viewed as a temporary organisation with its own social system (Gareis, 2008), the dynamics and social complexity between construction stakeholders provide further challenges for client managers when designing an incentive mechanism.

The ability of a social system to provide constructive dynamics in such a complex environment is influenced on its ability to develop complexity of its own in areas such as project organisation, culture and context dimensions (Gareis and Huemann, 2008). These issues suggest that client managers tasked with the initial design and implementation of incentives require a clear understanding of not only the incentive mechanism, but also the organisational and social context in which it is implemented. Consideration must be given to the incentives interaction with other procurement initiatives and the social and productive repercussions of its differential impact across the supply chain. For example, what happens if contractors are rewarded, but subcontractors are not?.

Although the design of incentive systems is generally context dependent, client managers can benefit from the development of broad guidelines on how to incorporate incentives in their projects and how procurement initiatives can support their incentive design – to improve the effectiveness of the project organisation to meet incentive objectives.

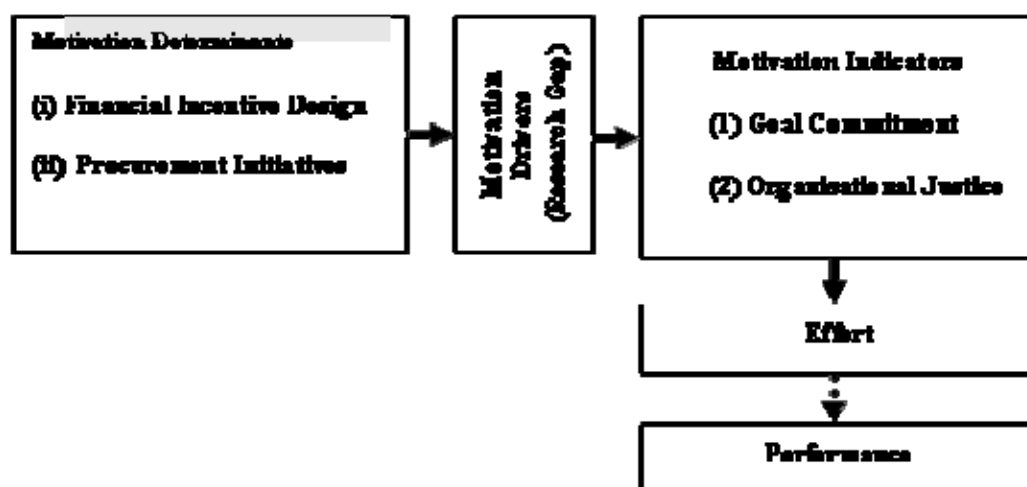
CONCEPTUAL FRAMEWORK

The previous section highlighted the challenges faced by construction client managers when designing incentive systems. Despite these significant challenges, little information is available to managers on what should be considered when designing financial incentives as a part of an overall procurement strategy. Arguably, there is a general assumption in the construction management literature that financial incentives automatically promote motivation with little regard to the context in which they are applied. However, research undertaken by Bresnen and Marshall (2000) shows that reliance primarily on extrinsic rewards such as incentives as a motivator can be construed by contractors and consultants as a ‘calculative’ approach, where such organisations are deemed to be motivated by short-term economic self-interest. In response, the findings stress the importance of understanding the limits of financial rewards to generate more intense forms of motivation and suggest the overall procurement approach needs to be complementary to the reward’s intention, although Bresnen and Marshall provide little detail about how this might be achieved. This paper responds to this gap in the literature by exploring what supporting mechanisms and incentive design configurations may produce a well-rounded approach to promoting team motivation towards voluntary project goals.

Given the lack of research into the impact of incentives on motivation in construction, a conceptual framework was developed, based on theoretical insights, to identify the ‘motivation drivers’ that impact on incentive goal motivation. By identifying these drivers, conclusions can be drawn about the impact of financial incentives on motivation and the types of project initiatives that should be considered by client managers when designing incentives as a part of an overall procurement approach.

The case study interprets the motivation drivers according to a conceptual framework developed by Rose (2008). This framework represents the first time that both economic and psychological perspectives of motivation have been integrated to investigate financial incentives in a project-based environment. Figure 1 below provides a summary of the main features of the model.

Figure 1 Conceptual Framework Summary - Motivation on Construction Projects



According to the conceptual framework, project-based motivation towards voluntary incentive goals is determined by the features of (i) the financial incentive design and; (ii) the supporting procurement initiatives. Within these features lie specific motivation drivers that can be uncovered by exploring two broad motivation indicators developed from a review of the organisational motivation literature – (1) goal commitment and (2) organisational justice.

These two indicators were used to identify the motivation drivers that impacted on the effectiveness of the financial incentive mechanism and the related procurement initiatives. In the case of this research, the first indicator, goal commitment (Hollenbeck & Klein, 1987) refers to the sustained determination and motivation to try for the performance goal associated with the incentive. Key antecedents of goal commitment are those that impact on *the attractiveness of goal attainment* and those that impact on the *expectancy of goal attainment* (Hollenbeck and Klein, 1987). Thus, positive drivers linked to this indicator improved the attractiveness of goal attainment and the stakeholders' expectancy that incentive goals could be achieved.

The second broad indicator, organisational justice, relates to the fairness of compensation systems for work performed. Simply, justice theories can predict how groups may behave based on the perceived levels of fairness in an organisational environment. Key antecedents of organisational justice (Colquitt, 2001) are those that impact on 1) distributive justice, or the fairness of the reward on offer relative to the effort required to achieve; 2) procedural justice, or the fairness and transparency of procedures linked to incentive distribution decisions; and 3) interactional justice, or the underlying treatment and communication processes between project stakeholders, influencing mutual trustworthiness. These framework constructs represent a theoretical contribution to the construction management literature and proved instructive during the empirical phase of this project-based research. Rose (2008) provides further information on the theoretical background to the framework.

METHODS

A case study methodology was chosen to explore the research question: 'What are the specific project drivers that impact on motivation towards voluntary financial incentive goals?' 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. 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 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 questions asked during the interviews, as did the conceptual framework shown in Figure 1. 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 and ranged from 60 to 90 minutes duration, based on structured and unstructured questions. Raw interview data was analysed using content analysis. This involved manually aggregating and categorising 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 and each coding category was revised and refined until clear lines could be drawn between the motivation drivers. Initially, key themes associated with the broad motivation indicators were categorised into features of (i) the financial incentive design and; (ii) the supporting procurement initiatives. Once all project data had been allocated in this way, each theme was revisited and driver patterns were refined. Distinct patterns were separated into coding categories and allocated motivation driver labels. The goal was to define coding categories that captured the breadth of interview experience, whilst limiting the categories to key concerns.

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.

CASE PROJECT DETAILS

The project involved the design and construction of a large-scale extension to a convention centre situated in the central business district (CBD) of Adelaide, South Australia. The original budget for this project was approximately AU\$85 million (increased to AU\$92 million near the conclusion of the project). This was a landmark building project for the state government client, as the upgraded centre was expected to significantly contribute to the state's economy.

The project involved increasing the capacity of an existing convention centre by 110%, providing approximately 7,000 square metres of new multipurpose exhibition, banqueting and pre-function facilities. The project site covered more than 1.2 hectares with a total building floor space of more than 21,000 square metres. The centre was designed to meet new multi-venue operational requirements, based on international convention centre standards and to accommodate more than 6,600 guests with undercover parking for 1,350 vehicles. The duration of the project was approximately 22 months, from 1999 to 2001.

A major goal of the project was to achieve the target completion date, as the client had made a commitment to host a major international convention in the new venue in late 2001. Other project goals included meeting all functionality and design requirements set out in the project brief (including environmental and safety goals), defects-free by completion date, limiting errors and omissions in construction documentation, minimising industrial disputes, minimising injuries and meeting the client budget.

The general procurement approach was a Managing Contractor – Construction Management (MC-CM) arrangement. This was the first time a “relationship-based” MC-CM procurement approach had been used by the South Australian Government. They chose this approach because it allowed them complete control over the design. It also allowed them to manage construction costs through variation payments to the managing contractor and consultants. The disadvantage of this form of control was that the client took on the majority of the cost risks associated with the design (and design discrepancies) and construction. It was expected that, as the managing contractor was appointed under a fee arrangement to provide input into the design process and manage the construction trade packages, it would improve the constructability of the design, potentially decreasing design-construction integration risks.

The procurement approach also included a comprehensive relationship management process. This aimed to further mitigate the design and construction risks taken on by the client, through closer integration of the project team (the managing contractor and consultants were directly contracted to the client throughout the project) and improved decision-making and problem resolution processes. It also established shared project goals against which performance could be assessed.

The management structure was a “construction management” arrangement, with managing contractor and key subcontractors involved in design development and documentation. A unique feature on this project was the abolition of the traditional hierarchical structure. A ‘round table’ approach saw key representatives from each project organisation form an Integrated Management Team (IMT) and Project Control Group (PCG). There were monthly IMT and PCG meetings, where open and honest communication was encouraged, in an equitable environment. The IMT and PCG were established after the managing contractor was appointed, near the end of the schematic design stage, under a price and non-price criteria selection model. The IMT involved senior executive representatives, while the PCG involved management representatives from the client, end-users, cost manager and consultant and managing contractor organisations. The IMT reported directly to the government minister responsible for the project, while the PCG reported to the IMT. Any issues that could not be resolved by the PCG were referred to the IMT.

The managing contractor and early key subcontractors were brought into the design process early, during design development and documentation, to fast track the commencement of the construction stage and improve constructability. A relationship consultant was appointed during the project’s conceptual stage to establish and formalise the management structure and facilitate relationship workshops and ongoing relationship coaching. This approach aimed to foster team commitment to the project goals. All project parties were contractually obliged to ‘act in good faith’.

The financial incentive system was intended to reward the contractor for efficiently managing the client’s risks, above their standard construction management fee. The client did not wish to include risk penalties such as liquidated damages, which they saw as contradictory to relationship management principles. The positive performance-based incentive aimed to reward three main areas of project performance: innovation contribution, contingency savings and ready-for-use completion. As a part of the “value strategy”, a financial incentive was offered to the

managing contractor to seek innovative value-adding design and construction options. The managing contractor could propose innovations that would achieve cost-savings and/or program savings while preserving functionality and quality. The innovation would then be approved by the client representatives and the net benefit of the innovation would be shared on the basis that:

- 50% was placed in a managing contractor's program and cost savings incentive pool
- 50% was retained by the client to reinvest in the project.

As the client managers needed to manage the government's design and construction risks, they were motivated to promote innovative ideas and retain as much from the incentive pool as possible. The incentive was designed so that 50% of the accumulated incentive pool would be paid to the contractor if they achieved the 'ready-for-use' target completion date. However, if they failed to achieve this date, the contractor forfeited their portion of the accumulated incentive pool amount. By project completion, approximately AU\$2 million in savings was achieved from innovations by the managing contractor. As the managing contractor achieved the 'ready-for-use' completion date, 50% of this (AU\$1 million) was distributed to them as an incentive reward payment.

Despite the overall success of the project in achieving the design and quality objectives, problems with budget overruns were experienced. It was initially believed that the project budget of AU\$85 million was sufficient to achieve project objectives, including the design and construction program. However, during the project, the project team came to the consensus that due to rising 'actual' project costs attributed to a rising cost of construction across the building sector, it was unlikely that they would complete the project under the agreed specification within the original budget – despite robust management of design and construction. Joint team efforts to bring costs down were unsuccessful in capturing sufficient savings and it was agreed the original budget was inadequate to meet the scope of works. An open-book review of the project budget followed and the client agreed to an increase of approximately AU\$7 million to the budget to avoid having to compromise on construction outcomes.

The managing contractor and finishing subcontractors were involved in a special incentive arrangement - the 'acceleration' agreement, which was implemented late in the construction stage near the conclusion of the project, after the above problems were uncovered and it appeared unlikely that the project would be finished by the target completion date under the original budget. The client proposed the acceleration agreement (as a part of the revised budget) to fast-track project completion. The managing contractor and their subcontractors were required to complete the final scope of works by the target 'ready-for-use' completion date to receive the AU\$1.2 million bonus (plus management fees). The managing contractor was offered an AU\$220,000 management fee to manage the final works; if they did not achieve the target completion date, they would forfeit their management fee. Also, the finishing subcontractors were offered extra payment to fast track completion of their trade packages. The completion date was achieved and the bonus was distributed between the contractor and finishing subcontractors, which allowed a scheduled international convention to be held.

By the conclusion of the project in late 2001, the project participants had achieved all of the project objectives, including the jointly-agreed revised project budget. The project team also produced a wide range of innovative design features that significantly improved the developed design in terms of building functionality and aesthetics. The project was considered a success by the project team, including the client, and this success was partly attributed to the financial incentive design, but also to the procurement initiatives that motivated the project team to strive for the project goals – maximising the impact of the incentive approach on team motivation. These initiatives are discussed in the following section.

MOTIVATION DRIVERS

The motivation drivers that were nominated by interviewees as contributing to the successful achievement of incentive goals on the project are examined here. These drivers emerged from the case interviews, which were based on background data and the two motivation indicators shown in Figure 1 – goal commitment and organisational justice. Again, following Figure 1, the identified drivers are discussed under two broad classes – (i) those motivation drivers that were associated with effective design of the incentive system, and (ii) those associated with the procurement initiatives that positively supported the incentive approach on the case project. Discussion of the motivation drivers below provides guidance for client managers in designing procurement approaches that incorporate similar financial incentive arrangements. Although the case study found no major negative project aspects arising from the procurement initiatives, negative aspects of the incentive design were raised and these are also discussed to aid in the design of optimal incentive systems in future projects of similar nature.

Financial Incentive Design

Although the amount of incentive reward on offer had a motivating effect, the design of the reward mechanism featured some elements that amplified this effect and some that constrained it. This suggests that incentives do not necessarily need to be large, but they do need to be strategically applied. For instance, the introduction of an acceleration agreement late in the construction stages of the project promoted goal commitment (cited by seven of the eight interviewees) by improving the expectancy the incentive could be achieved. It also gave the managing contractor access to the innovation incentive pool, as the ‘ready-for-use’ completion date then became achievable. According to managing contractor representatives, the managing contractor was rewarded with their share of the innovation incentive pool through the introduction of the acceleration agreement, which “brought reality back” to the overly ambitious budget, restoring fairness in the incentive reward distribution, thus reinstating distributive justice.

Despite the positive nature of the acceleration agreement as a part of the incentive design that promoted goal motivation, injustices in how the incentive reward was distributed across the project team and confusion over the ambiguous nature of the ‘innovation contribution’ measurement had negative impacts on team motivation. Although those who had shared in the incentive reward valued it, seven of the eight interviewees perceived that the exclusion of the consultants from this incentive demotivated the consultants and resulted in less value delivered from innovation than

might otherwise have been the case. Also, according to five of the eight interviewees, the measurement of performance under the innovation incentive was unclear. According to these interviewees, there were disputes over how an “innovation contribution” was defined and how it was measured in terms of cost savings. This resulted in perceptions of procedural injustice.

Procurement Initiatives

Five project procurement initiatives were found to support the financial incentive approach applied in the case project. They are: 1) an equitable risk profile; 2) project organisation structure; 3) value-based tender; 4) relationship workshops; and 5) future work opportunities.

1) Equitable risk profile

According to the client and managing contractor representatives, the modified MC-CM contract provided the framework for an equitable allocation of design and construction risk under the project conditions and the relationship management approach. These interviewees believed that the equitable contract risk profile promoted incentive goal commitment, where the client was willing to trust the managing contractor to manage their risks associated with program and budget overrun, rather than insisting they carry all design and construction risk. This allowed the managing contractor the financial flexibility to put resources into meeting the incentive goals and therefore improved their expectancy that they could achieve these goals. These interviewees also believed that the project’s contract risk profile promoted trust and interactional justice, i.e. the managing contractor valued the client’s decision to share the construction risks under the collaborative culture of the relationship-based procurement approach.

2) Project organisation structure

According to five of the eight interviewees, the project’s organisation structure (realised through the IMT and PCG monthly meetings) was a positive motivation driver towards the achievement of the incentive goals. The project organisation structure was perceived to improve the team’s ability to control their performance, thus improving the expectancy that the project stakeholders could attain the incentive goals, promoting goal commitment. These interviewees also perceived that the Integrated Management Team and Project Control Group monthly meetings assisted the team in dealing justly with project issues such as the inaccuracies in the project budget.

3) Value-based tender

Seven of the eight interviewees said that selecting the managing contractor and subcontractors on a value-based multi-criteria tender selection process (including non-price) promoted commitment to the incentive goals. According to these interviewees, this commitment was due to the recognition of, and respect for, their ability to perform in a high-risk project. They felt inherent obligations to prove the client had been right to select them, motivating them towards the key project goals (operationalised through the incentive system). The emphasis placed on a value-based tender selection supported the relationship-based approach, where the project parties were partly selected for their demonstrated ability to embrace collaborative arrangements, and to select harmonious project team personnel on whom the client could rely to manage the project risks.

4) Relationship Workshops

Seven of the eight interviewees stated that the relationship workshops after tender selection developed a collaborative team culture which helped them to achieve the incentive goals and to minimise the impact of the project budget deficits. This driver was directly attributed to an increase in the attractiveness of goal attainment, thus promoting goal commitment. The relationship workshops were also perceived to be a promoter of interactional justice, in that the client representatives were receptive to, and respectful of, the significance of the contractor's role in the project and the importance in forming a close working relationship. The motivation induced through the project relationships was also promoted through the potential for future work opportunities and the desire to uphold reputation.

5) Future work opportunities

Another positive motivation driver was the potential for future work with the client (cited by five of the eight interviewees) and the importance placed on upholding reputation and market position in the government building sector. These representatives believed that this driver increased their incentive goal commitment, as the achievement of the project goals in a high-profile building project would improve their business reputation, potentially leading to future work opportunities, thus increasing the attractiveness of goal attainment.

CONCLUSION

These results suggest that the client's addition of the acceleration agreement near the end of the project reinvigorated motivation towards the incentive goals by improving the chances to receive the financial reward. This driver strongly impacted on the goal commitment and organisational justice indicators. Yet, there were perceived injustices in how the incentive was distributed (excluding the design consultants from the incentive distribution), and in the interpretation of 'innovative contributions' (ignoring design ideas). The case results suggest that overall motivation may have been improved if the incentive system had rewarded the entire design team for innovation contributions and not just the managing contractor. This finding emphasises the strength of team based incentives when it is difficult to define performance contribution from individual stakeholder organisations.

Although there were negative aspects of the incentive system on the project, these did not critically effect performance, as innovative cost savings were identified and the 'ready-for-use' completion date was achieved. The results suggest the reason for this was the dominance of positive drivers such as the introduction of an acceleration agreement, the equitable contract conditions and the relationship formed through the initial workshops.

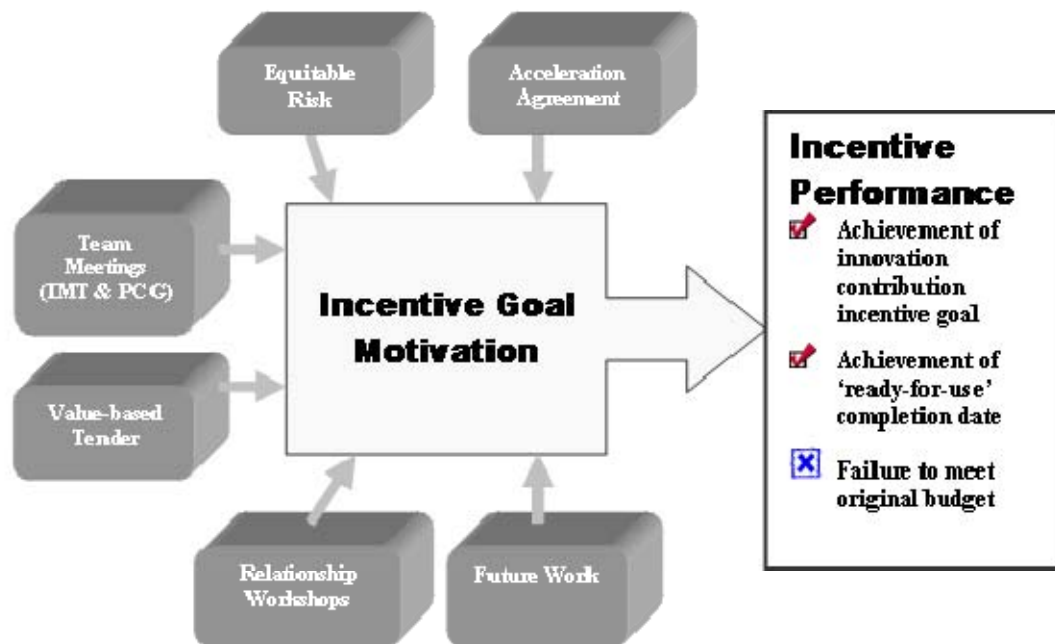
As Figure 2 illustrates, motivation towards the incentive was critically supported by the:

- flexible incentive arrangement and client's responsiveness to the changing project conditions, which allowed the introduction of an acceleration agreement – significantly improving the reward participants' chances to

achieve the ‘ready-for-use’ completion date and gain access to the innovation incentive pool

- Managing Contractor (Construction Management) contract that was perceived to be equitable by the contractors, supporting the ethos of the relationship management approach
- relationship management strategy that promoted collaboration and teamwork through the initial relationship workshops and the motivation induced by the potential for future work opportunities if the project was delivered successfully
- open-book tender for the managing contractor and subcontractors, with the majority of selection based on non-price criteria; and
- the ‘round table’ design and construction management structure established in the monthly IMT and PCG meetings.

Figure 2 Case Project Motivation Drivers



In the case project, motivation towards the incentive goals was strongly influenced by 1) the value project stakeholders placed on the incentive reward as a commercial opportunity to increase their profit margins, and 2) the quality of the project and relationship management processes that promoted commitment and loyalty to the project; and pride in the achievement of project goals. These processes intensified the direct motivational effect of the incentive reward on offer.

The findings support the general argument that the effective design of a project in the early stages requires the establishment of technical project plans, but also recognition that the project is a complex social system influenced by relationships within an organisational setting (Garies, 2008). The framework employed to distil these findings represents advancement of knowledge in the field of construction project management. Prior to this research, there was a general misguided assumption that the use of incentives translates into heightened motivation regardless of the context of application (Bresnen and Marshall, 2000). This assumption was rejected by the

authors and Figure 1 postulate the existence of motivation determinants within incentive design and associated procurement initiatives, which result in motivation drivers. Background literature review suggested the nature of such determinants and fieldwork was conducted to identify motivation drivers. Hence the research gap shown in Figure 1 has been filled. The results here indicate that motivation in a complex social organisation such as a construction project is not straightforward and is influenced by numerous vertical and horizontal organisational drivers. The identification of such drivers confirms the value of the conceptual framework and provides it with more detail, thus enhancing its policy value.

In summary, client managers should focus on maximising the impact of financial incentives systems so that stakeholders genuinely value the financial reward on offer and the incentive goals are perceived as achievable. The results also emphasise the importance of situating the incentive within a complementary suite of interrelated project procurement initiatives that promote its positive nature in recognition of high performance. Without doing so, incentive recipients may perceive the incentive's intention as calculative and potentially hostile under an unjust procurement approach. Future quantitative research is recommended to extend the validity of findings presented here and to shed further light on how to design incentives as a part of a broader construction procurement approach. In the meantime, this case study has filled a gap in the literature by providing one view of the drivers of motivation on construction projects. The study has also contributed to theory by confirming the value of the conceptual framework shown at Figure 1 to assist in understanding the nature of project motivation. The benefit of integrating both economic and psychological perspectives of motivation has been demonstrated for the first time in a construction project environment.

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