

Amaka Ogwueleka & Tinus Maritz

Incentive issues in the South African construction industry: Preliminary findings from project stakeholders

Peer reviewed and revised

Abstract

Incentives are regarded as motivational tools which can be used to propel construction workforces to achieve project objectives. This article contributes to the existing body of knowledge by evaluating the current practices of incentive mechanisms in the South African construction industry and identifying the challenges confronting the use of incentives. The study adopts both qualitative and quantitative methods for data collection. For the quantitative approach, a total number of 52 project stakeholders practising in Gauteng participated in the survey by completing the structured questionnaire. The questionnaire survey is used to obtain information from respondents, in order to assess their perceptions on the impact of current practices of incentives on work productivity and the construction industry. For the qualitative approach, personal interviews were conducted with selected respondents to clarify their answers.

The findings reveal 'unattainable project goals', 'poor communication processes', and 'inappropriate contractual arrangement' as the most significant challenges confronting the use of incentives in the South African construction industry. The findings reported in this article show problems frustrating the absolute absorption of incentives in the industry, and also contribute to redesigning the incentive plan so as to improve project performance.

Keywords: incentives, alliance, contract strategy, best performance, and construction industry.

Abstrak

Aansporingsmaatreëls word as motiveringswerktuig beskou wat gebruik kan word om die werkerskorps aan te spoor om sodoende prestasiedoelwitte te bereik. Hierdie artikel dra by tot die kennisgebied deur huidige praktyke van aansporingsmeganismes in die Suid-Afrikaanse konstruksiebedryf te evalueer asook die uitdagings wat met die gebruik van aansporingsmaatreëls gepaard gaan. Die studie maak gebruik van beide kwalitatiewe en kwantitatiewe metodes vir data-insamelingdoeleindes. Vir die kwalitatiewe benadering het 'n totaal van 52 projekbelanghebbendes, wat in Gauteng praktiseer, aan

Amaka (A.C.) Ogwueleka, Ph.D. student, Department of Construction Economics, Faculty of Engineering, Built Environment and Information Technology, University of Pretoria, Pretoria, 0002, South Africa. Phone: +27 12 420 2576, email: <amaka.ogwueleka@up.ac.za.>

Prof. Tinus (M.J.) Maritz, Head of Department, Department of Construction Economics, Faculty of Engineering, Built Environment and Information Technology, University of Pretoria, Pretoria, 0002, South Africa. Phone: +27 12420 2581, email: <tinus.maritz@up.ac.za.>

die opname deelgeneem deur die gestruktureerde vraelys te voltooi. Die vraelysopname is gebruik om inligting van respondente te bekom om sodoende hul waarneming oor die impak van huidige praktyke van aansporingsmaatreëls op produktiwiteit van arbeid en die konstruksiebedryf te toets. Vir die kwalitatiewe benadering is persoonlike onderhoude gevoer met sommige van die respondente om antwoorde te verklaar.

Die bevindings toon "onbereikbare projekdoelwitte", "swak kommunikasie-prosesse" en "nie-toepaslike kontraktuele ooreenkomste" as die belangrikste uitdagings waarmee die aansporingskwessies in die Suid-Afrikaanse konstruksiebedryf te make het. Die bevindings wat in hierdie artikel uitgelig word, dui op probleme wat ondervind word met die volkome aanvaarding en dwarsboring van aansporingsmaatreëls in die bedryf. Verder dra die artikel ook by tot 'n nuwe benadering vir die herontwerp van die aansporingsplan om projekprestasie te verbeter.

Sleutelwoorde: aansporingsmaatreëls, alliansie, kontrakstrategie, bestewerkverrigting, konstruksiebedryf.

1. Introduction

Over the years, construction activity has recorded a significant increase in the complexity of contract service delivery and this resulted in the quest for a better contract strategy to promote best performance (Ogwueleka, 2010: 209). The general view and concern about achieving best performance is focused on developing capacity issues. Capacity development does not automatically translate into better performance; it requires some fundamental elements to propel it so as to achieve the desired outcomes (Boesen & Therkildsen, 2004: online). The use of traditional construction contracts to meet clients' expectations and contractors' objectives has led to distrust and conflict between clients and contractors (Egan, 1998: 21). The demand to improve performance through cooperative strategies, thereby reducing confrontations and promoting equity in allocation of risks amongst the contracting parties, has led to the introduction of partnering in the early 1980s in Japan and in USA (Naoum, 2003: 72). Bygballe, Jahre & Swardt (2010: 239, citing CII, 1991) define partnering as a "long term commitment between two or more organisations for the purpose of achieving the specific business objectives by maximizing the effectiveness of each of the participants". Partnering has to do with having a working relationship between stakeholders based on respect, trust, teamwork, commitment and shared goals (OGC, 2003: online).

Lu & Yan (2007: 243) establish the collaboration of partnering as good faith which cannot be sufficiently reinforced. Previous studies have emphasised that it is difficult to achieve and maintain collaboration between clients and contractors without a formal commitment (Bresnen, 2007: 367; Laan, Noorderhaven, Voorijk & Dewulf, 2011: 100).

Recent studies have advocated the process of drafting a formal contract to promote joint learning process, mutual understanding, and long-term and trusting exchange relationships (Popp & Zenger, 2002: 799; Vlaar, Van den Bosh & Volberda, 2006: 1620). This has led to the incorporation of alliance contracting into partnering in order to overcome the weaknesses associated with the use of partnering. Alliance contracting is reinforced by incentive design, whereby the sharing of resources, risks and profits/losses is properly defined among contracting parties in a moral/contract agreement measured against performance indicators (Tang, Qiang, Duffield & Young, 2008: 460). Henneveld (2006: CD-ROM) defines alliances as "incentive-based contracts in which the parties agree to work together as an integrated team in a relationship that is based on the principles of equity, trust, respect, openness, no dispute and blame". The recent use of alliance has also faced challenges relating to the design of appropriate risks and reward systems which can motivate project participants (Rose, 2008: 45).

Many researchers have advocated the use of incentives as motivational tools to reduce misalignment of objectives, fragmented association between contracting parties, and risk-averse behaviours (Martin, 2008: online; Drake, 2008: 398). In the South African construction industry, the stakeholders have continuously expressed concern regarding the use of incentives. Some have attributed the use of incentives to the 'big guys' in the construction industry, which has attracted sympathy among government and regulatory bodies. The quest to discard the use of incentives is on-going, and if successful, what will be the fate of best performance in the industry? This article aims to evaluate the current practices of incentive mechanisms in the South African construction industry and the challenges confronting the use of incentives.

2. Incentive mechanisms in construction projects

Broome & Perry (2002: 60) define an incentive as "an inducement to motivate an organisation or an individual in order to place greater emphasis on how to achieve an objective or to act in a certain way." Incentive is the internal psychological process or internal power that is guided by the goal or object to stimulate and to maintain individual activities (Porter & Lawler, 1968: 25). This process includes three connotations: the first is to meet the individual's target or outcome; the second is to determine the goal or outcome and how to achieve the mental processes and the third is the social process in which the individual's behaviour is influenced by others. The concept of

incentive contracting is to give a contractor the opportunity to earn greater profits if s/he achieves the client's expectations by taking full advantage of contractors' objectives (Bower, Ashby, Gerald & Smyk, 2002: 37, citing Blyths, 1969). Incentive schemes consist of two attributes: to align the objectives of the contracting parties through the use of performance measures and to link them to payment (Richmond-Coggan, 2001: online).

The general view and concern about achieving best performance is focused on developing capacity issues. Capacity development does not automatically translate into better performance; it requires some fundamental elements to propel it in order to achieve the desired outcomes (Boesen & Therkildsen, 2004: online). Incentive systems and motivations are critical for capacity development, thereby propelling the individuals and organisations to perform their functions effectively, efficiently and sustainably (Boesen & Therkildsen, 2004: online). The general principles of incentive systems are to ensure that risks and rewards are commensurably and fairly distributed among the parties concerned, and that they are tailored to achieve specific project objectives (Bresnen & Marshall, 2000: 588). Incentive mechanism is still a developing field of knowledge and expertise in the construction industry; it has attracted many researchers from different countries. This reveals a wide recognition of incentive on project success. Empirical research on the motivation and performance in the context of construction projects is sparse (Ling, R'ahman & Ng, 2006: 58; Chapman & Ward, 2008: 660; Rose & Manley, 2011: 766).

The literature scan reveals that the majority of previous researchers focus on a single incentive plan (Berends, 2000: 168; Brenen & Marshall, 2000: 588). The single incentive plan does not reflect the weights of performance metrics, thus resulting in investing one's effort in one area at the expense of other areas (Ittnera, Larcker & Meyer, 2003: 728; Beer *et al.*, 2004: 42). The common types of contractual incentives for construction projects are cost, schedule/delivery, technical/performance, and safety (Bower *et al.*, 2002: 33; Bubshait, 2003: 67; Lahdenpera & Koppinen, 2003: 483; Meng & Gallagher, 2012: 354). Incentive schemes can be designed in three different forms, namely financial, semi-financial and non-financial schemes.

2.1 Financial incentive schemes

The offer of a financial reward to enhance the motivation of employees to work harder and smarter so as to attain project goals that is above minimum standards (Rose & Manley, 2005: 441). The use of financial incentives can improve the work quality and reducing

time and cost effectively (Ajayi, 2007: 61). These schemes are focused on inducing employees to achieve the stipulated project objectives in anticipation of monetary benefits, in some cases; they may be diametrically opposed to motivation (Whitmore, 2012: online). Grant & Singh (2011: online) highlight three important risks that the excessive reliance on financial incentives may create as: a) they may enhance performance but do not guarantee that the performance improvement will come with ethical behaviour and actual improvements; b) they can demoralise employees who do not get them and actually reduce performance and fuel turnover; and c) they can generate a sort of addiction especially, where the employees are working for incentives. Examples of financial incentive schemes are premium bonus, profit sharing, measured day work, simple piece work, geared incentive schemes and group incentive schemes (Saka & Ajayi, 2010: 583).

2.2 Semi-financial incentive schemes

Semi-financial incentive schemes may be classified as those which have some monetary benefits, but which are not directly linked to output and wages. They are geared towards compensating for jobs that cannot be subjectively measured (Chavan, 2010: online). Saka & Ajayi (2010: 585) emphasise that the use of semi-financial incentive schemes produces the most satisfactory results when compared to other incentive schemes. The efficiency of these schemes relies on the company goals, existing employee attitudes, and managerial capabilities adopted during implementation (Saka & Ajayi, 2010: 585, citing Liska & Snell, 1993: 669). Examples of semi-financial incentive schemes are health schemes, saving schemes, housing, site welfare provision, and pension schemes (Saka & Ajayi, 2010: 585).

2.3 Non-financial incentive schemes

Non-financial incentive schemes are indirect rewards, which focus on providing psychological benefits for employees. These are centred on conveying appreciation to individual employees or teams in memorable ways, showing the task performed is inherently meaningful (Silverman, 2004:3). The schemes are embedded in theories of motivation, where the motivation to achieve quality of output is best achieved through satisfaction of higher needs (*Maslow's theory*), awareness of the role of groups in the workplace (*Mayo's theory*), and the need to provide motivators (*Herzberg's theory*). Examples of non-financial incentive schemes are recognition, praise of good work, communication, empowerment, job autonomy, enlargement, and rotation (Armstrong, 2010: 161).

The incentive system can be designed either through one or a combination of these schemes to achieve satisfaction among the individual, the group or the organisation in order to motivate them positively. Ncube, Bussin & De Swart (2013: 4-5) emphasise the importance of designing an incentive plan to incorporate both financial and non-financial metrics. Motivation of employees is a tricky trade which requires a clear understanding of concepts, principles and myths about motivation in order to effectively utilise it (Shanks & Dore, 2012: 43-51). Employees are different, act in different ways and are motivated by different things. Motivation is focused on redirecting the employee's energies towards optimistically job-related behaviours (Manion, 2005: 44). This requires a good understanding of the employee's strengths and weaknesses so as to establish what will be needed to get specific employees to perform and also on how to capitalise on the ways in which these employees learn in order to motivate them correctly (Brickingham, 2005: 76).

3. Current practices in the South African construction industry

Globally and in South Africa, the construction industry has the highest workforce and has remained a vital player in the economy. The South African construction industry is crucial as a whole because of its labour-intensive nature, and its role in supporting other economic sectors through the provision of buildings and construction (CETA, 2008: online). The construction sector in South Africa is recognised as very large, diverse and complex in nature with vast numbers and ranges of employees (CETA, 2008: online). Yet the total number of liquidations decreased by 39.4% in March 2012 and the employment in construction also declined by 14.3% between 2008 and 2010; 6.7% in 2011, and 4.4% in 2012, with the current total population of 986 000 employees (State of the Construction Industry, 2012: online). The contribution of the South African construction industry to GDP has also declined from 7% in 1970 to approximately 3% in 2000 (Dlungwana, Nxumalo, Huysteen, Rwelamila & Noyana, 2002: CD-ROM). In 2012, the contribution of the industry to GDP was regarded as insignificant with a relative of 3% of GDP (Statistics South Africa, 2012: online). Rust & Koen (2011: 2) emphasise that the slowdown in growth is a result of the lack of national planning coordination.

South Africa has a sophisticated construction sector with a large number of employers. However, approximately 95% of the firms can be characterised as small and micro-enterprises (CETA, 2008: online). It consists of a handful of large contractors of about five

leading construction firms, representing 75% of the total industry output (BMI, 2013: online). Table 1 shows the structure of contractors in South Africa. The main contractors engage in the business strategy of subcontracting with the view to avoiding uncertainties in the construction market (CIDB, 2013: online). Subcontracting has become predominant in the industry, with over 70% of the building projects and 30% of the civil engineering works being subcontracted out (CIDB, 2013: online). This allows the subcontractors to play a major role in infrastructure development. The contractual relationship between the main contractors and the subcontractors is on an *ad hoc* basis, where there is no formal contract; this restrains the advocacy for best performance through equity in allocation of risk. Hinze & Tracey (1994: 279) stipulate that subcontractors play a significant role in the project execution; there is a scarcity of publications about the actual process whereby they are initiated or how award arrangements are made. The key challenges faced by subcontractors are identified as lack of security payment, bid price pressure from main contractors, poor management, poor attitudes within subcontracting organisations, and general industry-wide factors including high level of competition, lack of working capital and skills shortages (CIDB, 2013: online). The use of incentives was recommended as one of the measures to resolve these challenges (CIDB, 2013: online).

Table 1: The structure of contractors in South Africa (Dlungwana *et al.*, 2002: CD-ROM)

Category	Economic sector	Annual turnover	Management skills level
Small	Formal	Less than R10M	Very poor, fair
	Informal		
Medium	Formal	R10M – R50M	Poor, fair, good and very good
	Informal		
Large	Formal	Above R50M	Fair, good and very good

Previous documentation and interviews also reveal that the South African construction industry has adopted incentives. The incentive design is focused on disincentive/penalty, where the project duration is used for performance assessment. Figure 1 illustrates the structure of an incentive plan adopted by the Department of Public Works, South Africa.

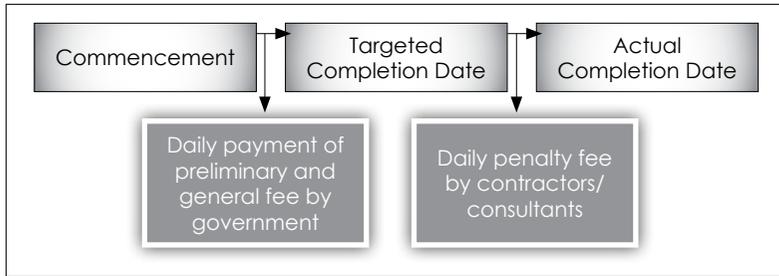


Figure 1: An illustration of the incentive plan adopted by the Department of Public Works

Source: Ogwueleka & Maritz, 2013: 90

The CIDB (2007: 2) reports that the construction sector has progressively declined since 1990, thus witnessing over 200 000 job losses in 2001. This challenge has been exacerbated in recent times by an increase in infrastructure investment. Business Monitor International (2013: online) reveals that the market infrastructure is still below average, with an acute shortage of skilled workforce across different sectors. CIDB (2007: 6) advocates that the remedy to shortage of skilled workers is not merely to equip new entrants with skills, but also to gain the appropriate workplace experience in order to consolidate their craftsmanship, as well as, supervisory and professional capabilities. There is a need to provide an environment for a bigger pool of skills in order to plug the gap of skill shortage (CIDB, 2007, citing Maleka, 2006: 2). This requires a focus on improving the project environment by correctly motivating project participants.

4. Research methodology

The research problem addressed is that incentives have been advocated as tools to propel individuals and organisations to perform their tasks effectively, efficiently and sustainably. However, in South Africa's construction industry, their functions have not been properly utilised. This article identifies the current practices and challenges associated with the use of incentives. The exploratory nature of this study requires a combination of both quantitative and qualitative methods of data collection. For a quantitative approach, surveys by means of questionnaires were found to be effective because of the relative ease of obtaining standard data appropriate for achieving the study's objectives. A questionnaire survey was used to obtain information from respondents in order to assess their perceptions on the impact of current practices of incentives on work productivity and the construction industry. Amendments were made on the drafted

questionnaire based on the suggestions of the reviewers. According to Farrell (2011), the use of a qualitative method for data collection may be difficult to obtain an answer, but the data captured are rich. Personal interviews were conducted with some respondents in order to clarify their answers.

The study population consists of construction firms who are involved in both building and civil engineering works in the Gauteng province. Gauteng is the smallest of the nine provinces in South Africa, but has the highest population of about 12.3 million. It is regarded as the economic centre of South Africa, which accounts for over 34.8% of the country's total GDP. The majority of the construction companies have their headquarters in the Gauteng province which has recorded the largest infrastructural development in South Africa. Kothari (2003: 32) stipulates that survey protocol of random sampling procedures allows a relatively small number of people to represent a much larger population. The study targeted project stakeholders including clients, designers, consultants, project managers, contractors and subcontractors. First, the questionnaire was distributed by means of open access, capturing project stakeholders in Gauteng and, second, the questionnaire was also distributed electronically to sixty-five (65) project stakeholders. The majority of the respondents did not respond; therefore, face-to-face delivery was adopted to promote clarification of any arising queries and to raise the response rate. A total number of 65 questionnaires were administered to the construction professionals, but 13 opted out due to lack of awareness on the use of incentives; only 52 construction professionals participated in the research, with a response rate of 80%. The survey was carried out from March 2013 to June 2013.

5. Data analysis and interpretation

The questionnaire is categorised into three parts. Part one investigates the demographic information of respondents, while part two assesses the current practices of incentive mechanisms in the South African construction industry. Respondents are asked to evaluate the challenges confronting the effective use of incentive design in construction projects using a Likert-scale of 1=not significant, 2=slightly significant, 3=moderately significant, 4=significant, 5=very significant in part three. The demographic information of respondents are analysed using the basic descriptive statistics, such as frequency counts, percentage and cumulative percentage. Data collected in part two was computed based on frequency distribution and are expressed as a percentage of the sample size using a line chart. In

part three, responses from the respondents are calculated using relative important index (RII) method to determine the effect of incentive design in the construction industry. Memon, Rahman & Azis (2012: 46) used RII to evaluate responses from respondents based on time and cost performance in construction projects (see equation 1). RII is calculated with the following expressions:

$$RII = \sum W / AN \quad \text{equation (1)}$$

Where W represents weighting given to each factor by respondents and it ranges from 1 to 5 (for this study); A is the highest weight, which is 5 in this study; and N is the total number of respondents (52 for this study). The absolute deviation of the mean, variance, and standard deviation of the distribution are calculated to mean the scatter about the mean. The coefficient of skewness is computed to measure the distribution of the extreme value. SPSS is also used to determine the Cronbach's alpha reliability test of their responses.

6. Findings and discussion

This section presents the analysis and discussion of the findings obtained from the copies of the administered questionnaire. Table 2 reveals the demographic data of respondents. The analysis shows that respondents are involved at different levels in the industry. Their responses can thus be generalised for the construction sector. Table 2 also reveals that 46% of the respondents have more than ten years' working experience in the construction industry; 21% have between eight to ten years; 18% have between five to seven years, and 15% have between two to four years' experience. Therefore, their responses are of great value to this research. The contract procedure reveals that 73% of the respondents have been involved in both partnering and non-partnering projects. A total of 54% of the respondents are engaged in projects with average contract sums of between R20 million to R50 million.

Table 2: The demographic data of respondents

	<i>Frequency</i>	<i>Percentage</i>	<i>Cumulative percentage</i>
<i>Profession of respondents (N = 52)</i>			
Clients	10	19	19
Designers	5	10	29
Consultants	11	21	50
Project managers	6	12	62
Contractors	12	23	85
Subcontractors	8	15	100
<i>Construction industry sector</i>			
Public sector	12	23	23
Private sector	8	15	38
Both	32	62	100
<i>Working experience</i>			
Less than 1 year	0	0	0
2 to 4 years	8	15	15
5 to 7 years	9	18	31
8 to 10 years	11	21	52
More than 10 years	24	46	100
<i>Contract procedure</i>			
Partnering	8	15	15
Non-partnering	6	12	27
Both	38	73	100
<i>Average contract sum over the past 12 months</i>			
Less than R1m	8	15	15
R1m to R20m	11	21	36
R20m to R50m	28	54	90
R50m to R 100m	5	10	100
Above R100m	0	0	0
<i>Project type</i>			
Civil engineering	8	15	15
Building/Electrical	23	44	59
Both	21	41	100

6.1 Types of incentive scheme in projects

This section identifies the most frequently adopted incentive scheme in construction projects. Figure 2 reveals that 56% of the respondents have most frequently used cost/financial incentives in projects and that 39% have used schedule/delivery incentives in projects. Five per cent of the respondents agreed to have used multiple incentives, while none of the respondents ever used technical/performance

incentives. This reveals that cost/financial and schedule/delivery incentives are often adopted in the construction industry.

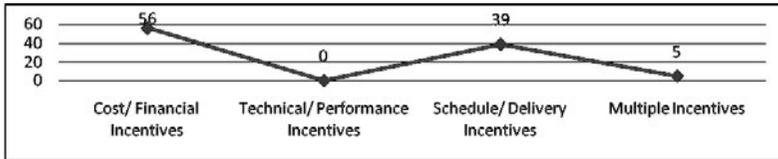


Figure 2: Types of incentive scheme frequently adopted in projects

6.2 The design of incentives in the construction industry

This section seeks to establish how the incentives are designed in the construction industry. Figure 3 shows that 55% of the respondents were involved in projects, where the incentives are designed by client and consultant only, and that 45% of the respondents were involved in incentives through negotiation between the contracting parties. This reveals an irregularity in the design of incentives in the construction industry.

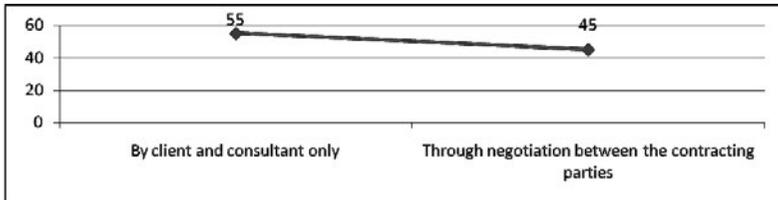


Figure 3: How the incentive scheme is designed in the construction industry

6.3 The stage for adopting the incentive schemes in projects

The aim is to establish the stage in which the incentive schemes are initiated during project implementation. Figure 4 reveals that 36% of the respondents agreed that the incentive scheme was initiated during the bidding stage, whereas 27%, 19% and 18% of the respondents agreed that the incentive schemes were introduced during the planning stage, the design stage and the construction stage, respectively. The analysis shows lack of consistency in the design; this implies that there is no informal incentive scheme design.

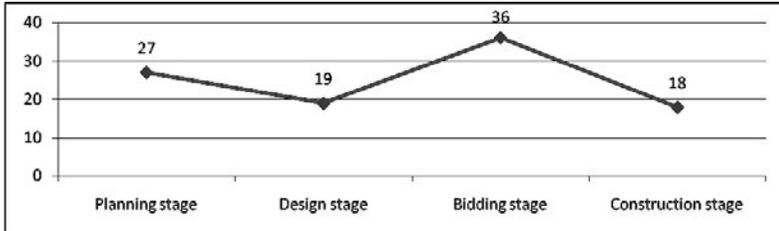


Figure 4: At what stage do you adopt incentive schemes?

6.4 The percentage range of incentive payoff compared to project cost

This section aims to ascertain the percentage range of incentive payoff when compared to the project cost. Figure 5 reveals that 67% of the respondents were involved in incentive payoff of between 6% and 10%, whereas 17% and 18% of the respondents had received incentive payoff of between 0% and 5%, and between 16% and 19%, respectively. This shows that the largest incentive payoff in the construction industry is between 6% and 10%.

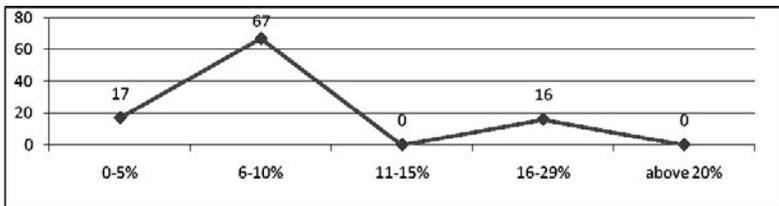


Figure 5: The percentage range of incentive payoff compared to project cost in projects

6.5 Incentive payoff to construction workforce to achieve the specified objectives

This section assesses the respondents' opinions on how incentive payoff should be distributed. Figure 6 shows that 38% of the respondents agreed that it should be distributed among the workers, whereas 26%, 24% and 12% of the respondents agreed that it should be given to the subcontractors, middle and top management, respectively. This reveals that each group desires a share in the incentive payoff.

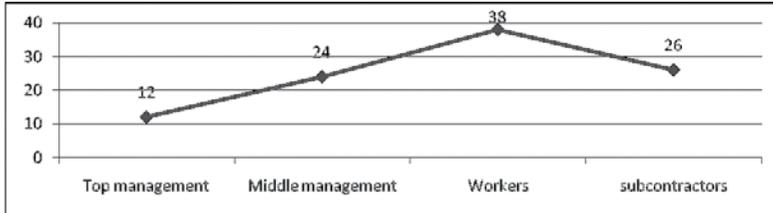


Figure 6: The most appropriate workforce group to benefit from incentive payoff

6.6 Benefits of incentive schemes during project implementation

This section examines the respondents' perspectives on the impact of the use of incentives on projects. Figure 7 reveals that 57% of the respondents agreed that incentives can be used to expedite the construction work, whereas 36% of the respondents agreed that incentives can encourage reduction cost. Only 7% of the respondents agreed that incentives can encourage quality and safe work, whereas none of the respondents agreed that incentives can promote cooperation and appropriate allocation of risks among the contracting parties. The general principles of incentives are unknown to the project stakeholders.

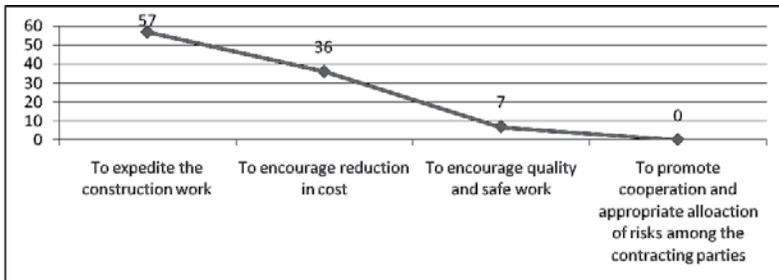


Figure 7: The most essential benefits of incentive scheme design in projects

6.7 Participation in incentive projects over the past five years

This section evaluates the level of respondents' participation in incentive projects over the past five years. Figure 8 shows that 62% of the respondents did not participate in incentive projects over the past five years, while 38% of the respondents did participate. This reveals a low level of participation in incentive projects.

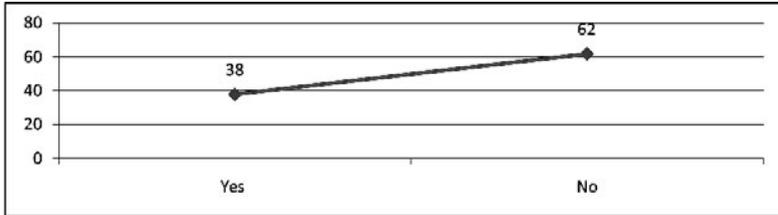


Figure 8: The level of participation in incentive projects over the past five years

6.8 Challenges confronting the effective use of incentive design in the construction industry

This section seeks the respondents' opinions on the challenges confronting the use of incentives during project implementation. The respondents ranked the parameters using the Likert-scale of 1 to 5 as described in section 5, the RII for each parameter is calculated, and the absolute deviation of the mean, variance and standard deviation of the distribution are calculated to measure the scatter about the mean. The coefficient of skewness is computed to measure the distribution of the extreme value to indicate how it has affected the mean. Table 3 reveals the results of the analysis.

Table 3: Incentive issues in the construction industry

Parameters	Indices(I)	Rank	Mean deviation	$(I-\mu)^2$
Inappropriate procedural justice (transparency and fairness in decision-making)	3.19	10th	-0.30	0.09
Payment problems	3.59	4th	0.10	0.01
Inappropriate risk allocation	3.41	7th	-0.08	0.01
Unattainable project goals	3.68	1st	0.19	0.04
Poor reward intensity (compensation for risk and effort)	3.47	6th	-0.02	0.00
Poor communication processes	3.66	2nd	0.17	0.03
Low level targets (sharing ratio)	3.35	8th	-0.14	0.02
Neglect of the subcontractors in the incentive design	3.59	4th	0.10	0.01
Lack of integrity among the contracting parties	3.28	9th	-0.21	0.04
Poor organisational culture	3.53	5th	0.04	0.00
Inappropriate contractual arrangement	3.64	3rd	0.15	0.02
Poor performance appraisal programmes	3.47	6th	-0.02	0.00

The variance and standard deviation are calculated as 0.02 and 0.15, respectively. Using this formula to determine the coefficient of skewness (SK) = $3(\text{mean} - \text{median}) / s$, the result is -0.2, approximately equal to zero. This implies that the data is normally distributed. Cronbach's alpha reliability test is conducted using SPSS to examine the internal consistency of the parameters. Alpha values greater than 0.7 are regarded as sufficient (Pietersen & Maree, 2007: 216). The consistency test reveals Cronbach's alpha of 0.839, it shows a high internal consistency, which is considered acceptable in research. Table 3 reveals 'unattainable project goals' as the highest score, followed by 'poor communication processes' as the second, and 'inappropriate contractual arrangement' as the third. The range of spread between the highest score and the lowest score is 0.40, indicating that other parameters are equally significant. Goals are proven to be an effective motivation tactic; therefore, they should be set sufficiently high to encourage high performance and sufficiently low to be attainable (Ogwueleka, 2011: 345). The current reform in the South African construction industry is targeted towards increasing the skilled workforce, reducing unemployment and poverty. The findings reveal unattainable project goals as a challenge in incentive design; therefore, there is a need to redesign the existing incentive scheme in order to promote goal commitment. According to Bennett (2009: online), the goals should be specific, measurable, achievable, realistic, and timely so as to not jeopardise motivation and commitment, thereby infusing corruption, dishonesty and cutting corners. In general, people are inclined to be dishonest if they fall short of their goals (Schweitzer, Ordóñez & Douma, 2004: 428).

Construction projects are regarded as complex and risky, thus requiring the active participation of project stakeholders to achieve the specified objectives. Good communication at both intra- and inter-organisational levels can improve motivation levels and the construction processes. This is in line with the review conducted by Williams (2008: online, citing Kevin Dougherty, Florida-based consultant); it emphasises that effective communication is ranked as one of the top challenges currently facing the construction industry. Jones & Clancy (2009: 31) stipulate that it is difficult to measure the ripple costs of poor communication which prove to be a serious challenge to the construction industry. It is estimated that in 50% to 75% of all construction project time extensions, cost overruns and contractual claims could have been mitigated or eliminated by means of better up-front communication. The proper management of construction requires a constant flow of information between all the contracting parties. The findings show poor communication as a

challenge to dissemination of the incentive design in the construction projects. It is essential to address communication in the industry in order to improve its future. The third ranked is 'inappropriate contractual arrangement'. The previous findings show that there is no formal contractual arrangement for incentive design in the South African construction industry. The discrepancy in the arrangements may be a contributing factor to ineffective utilisation of incentives in the industry.

7. Conclusions

There is evidence that the South African construction industry is a crucial sector in the economy with a large number of employers. The workforce is dominated by small and micro-firms, with only a few large construction firms. The majority of construction works are executed by subcontractors, but they are not included in the provisional and general fees or so-called 'incentive plan'. The article reveals that the structure of the existing incentive plan does not encourage early completion. The interviews conducted during the review process indicate that the main contractors are not willing to complete their project works prior to the targeted completion date due to the daily payment of provisional and general fees. According to Ogwueleka (2010: 209), the early completion of project works will not only save time, but also cost and other related variables. The findings show that cost/financial and schedule/delivery incentives are most frequently adopted in the industry; this is in line with the criticism of CIDB (2013: online) that only approximately 50% of South Africa's construction tenders are evaluated based on quality. The respondents' responses based on benefits of incentive schemes disclose that the majority of stakeholders are unaware of the general principles of incentives and that there is a low level of participation in incentive projects.

This article shows that the use of incentives has been advocated by many researchers as motivational tools, which can propel contractors' objectives towards clients' expectations, but it can also induce undesired behaviours and restrain the formation of trust and cooperation between the contracting parties if not carefully designed and implemented. It is, therefore, important to design incentives to collaborate and align the entire team's effort, focusing on more efficient ways to deliver the objectives of the team and the project (Maritz & Ogwueleka, 2013: 5). The analysis of the challenges confronting the effective use of incentive design in the construction industry reveals 'unattainable project goals', 'poor communication processes' and 'inappropriate contractual arrangement' as the

most significant parameters. There is a need to redesign the existing incentive plan, with the focus on how to resolve these challenges and encourage early completion of project works; this will also be beneficial to the government.

References list

Ajayi, F.A. 2007. Impact of financial incentives on the productivity of construction sites workers in Nigeria. Unpublished dissertation (B.Tech). Nigeria: Federal University of Technology, Akure.

Armstrong, M. 2010. *Armstrong's handbook of reward management practice*. London: Kogan Press.

Beer, M., Cannon, M.D., Baron, J.N., Dailey, P.R., Gerhart, B., Heneman, H.G., Kochan, T., Ledford, G.E. & Locke, E.A. 2004. Promise and peril in implementing pay-for-performance. *Human Resource Management*, 43, pp.3-48.

Bennett, D. 2009. *Ready, aim ...fail, why setting goals can backfire*. [online]. Available from: <http://www.boston.com/bostonglobe/ideas/articles/2009/03/15/ready_aim___fail/?page=full> [Accessed: 12 March 2013]

Berends, T.C. 2000. Cost plus incentive fee contracting: Experiences and structuring. *International Journal of Project Management*, 18(3), pp. 165-171.

BMI (Business Monitor International). 2013. South Africa infrastructure Q1. [online]. Available from: <<http://www.businessmonitor.com>> [Accessed: 5 February 2013].

Boesen, N. & Therkildsen, O. 2004. Between naivety and cynicism: A pragmatic approach to donor support for public-sector capacity development. [online]. Available from: <<http://www.jica.go.jp>> [Accessed: 12 March 2013].

Bower, D., Ashby, G., Gerald, K. & Smyk, W. 2002. Incentive mechanism for project success. *Journal of Management in Engineering*, 18(1), pp. 37-43.

Bresnen, M. 2007. Deconstructing partnering in project based organization: Seven paradoxes and seven deadly sins. *International Journal of Project Management*, 25(4), pp. 365-374.

Bresnen, M. & Marshall, N. 2000. Motivation, commitment and the use of incentives in partnerships and alliances. *Construction Management and Economics*, 18(5), pp. 587-598.

Brickingham, M. 2005. What great managers do? *Harvard Business Review*, 3(3), pp. 70-79.

Broome, J. & Perry, J. 2002. How practitioners set share fractions in target cost contracts. *International Journal of Project Management*, 20(1), pp. 59-66.

Bubshait, A.A. 2003. Incentive/disincentive contracts and their effects on industrial projects. *International Journal of Project Management*, 20(1), pp. 59-66.

Bygballe, L.E., Jahre, M. & Swardt, A. 2010. Partnering relationships in construction: A literature review. *Journal of Purchasing and Supply Management*, 16(40), pp. 239-253.

Chapman, C. & Ward, S. 2008. Developing and implementing a balanced incentive and risk sharing contract. *Construction Management and Economic*, 26(6), pp. 659-669.

Chavan, S.K. 2010. Indirect or Semi-financial incentives. [online]. Available from: <<http://www.managementparadise.com/forums/human-resources-management/201102-indirect-semi-financial-incentives.html>> [Accessed: 9 April 2013].

CIDB (Construction Industry Development Board). 2013. *Subcontracting in the South African construction industry: Opportunities for development*. Pretoria: Construction Industry Development Board.

CIDB (Construction Industry Development Board). 2007. *Skills for infrastructure delivery in South Africa: The challenge of restoring the skills pipeline: A discussion document*. Pretoria: Construction Industry Development Board.

Dlungwana, S., Nxumalo, X.H., Huysteen, S., Rwelamila, P.D. & Noyana, C. 2002. Development and implementation of South African Construction Excellence Model (SACEM). In: Ahmad, I., Ahmed, S.M. & Azhar, S. (eds.). *International Conference on Construction in the 21st Century*. Miami, Florida, USA, 25-26 April 2002, CD-ROM.

Drake, J. 2008. Recognition and reward for academic advising in theory and in practice. In: Gordon, V.N., Habley, W.R. & Grites, T.J. (eds.). *Academic advising: A comprehensive handbook*. 2nd edition. San Francisco: Jossey-Bass, pp. 396-412.

Farrell, P. 2011. *Writing a built environment dissertation: Practical guidance and examples*. Oxford: Blackwell Publishing.

Grant, A. & Singh, J. 2011. The problem with financial incentives and what to do about it. [online]. Available from: <<http://knowledge.wharton.upenn.edu/article/the-problem-with-financial-incentives-and-what-to-do-about-it/>> [Accessed: 5 April 2013].

Henneveld, M. 2006. *Alliance contracting: Removing the boundaries for infrastructure delivery*. In: *Proceedings of the Annual Conference of the Transportation Association of Canada*. Charlottetown, Prince Edward Island, 17-20 September, CD-ROM.

Hinze, J. & Tracey, A. 1994. The contractor-subcontractor relationship: The subcontractor's view. *Journal of Construction Engineering and Management*, 120(2), pp. 274-287.

Iltnera, C.D., Larcker, D.F. & Meyer, M.W. 2003. Subjectivity and the weighting of performance measures: Evidence from a balanced scorecard. *The Accounting Review*, 78(3), pp. 725-758.

James, R.E. & Clancy, M. 2009. Job communication plans. *FMI Quarterly*, 3, pp. 30-35.

Kothari, C. 2003. *Research methodology, methods and techniques*. 2nd edition. New Delhi: New Age Publications.

Laan, A., Noorderhaven, N., Voorijk, H. & Dewulf, G. 2011. Building trust in construction partnering projects: An exploratory case study. *Journal of Purchasing and Supply Management*, 17(2), pp. 98-108.

Lahdenpera, P. & Koppinen, T. 2003. Charting of incentive payment bases for multi-objective construction projects. In: Ofori, G., Yean, F. & Ling, Y. (eds.). *Proceedings of the Joint International Symposium of CIB Working Commissions*, Singapore, 22-24 October. Singapore: Department of Building, National University of Singapore, pp. 481-493.

Ling, F.Y., R'ahman, M.M. & Ng, T.C. 2006. Incorporating contractual incentives to facilitate relational contracting. *Journal of Professional Issues in Engineering Education and Practice*, 132(1), pp. 57-66.

Lu, S. & Yan, H. 2007. An empirical study on incentives of strategic partnering in China: Views from construction companies. *Journal of Project Management*, 25(3), pp. 241-249.

Manion, J. 2005. *From management to leadership*. San Francisco: Jossey-Bass.

Maritz, M.J. & Ogwueleka, A.C. 2013. Construction employees' perspectives on workforce motivational drivers in Akwa Ibom State of Nigeria. *Journal of Construction*, 5(2), pp. 2-7.

- Martin, L.L. 2008. Approaches to Performance Based Contracting (PBC) for Social Sciences. [online]. Available from: <<http://www.uky.edu>> [Accessed: 3 March 2012].
- Memon, A.H., Rahman, I.A. & Azis, A.A.A. 2012. Time and cost performance in construction projects in Southern and Central regions of Peninsular, Malaysia, *International Journal of Advances in Applied Sciences*, 1(1), pp. 45-52.
- Meng, X. & Gallagher, B. 2012. The impact of incentive mechanisms on project performance. *International Journal of Project Management*, 30(3), pp. 352-362.
- Naoum, S. 2003. An overview into the concept of partnering. *International Journal of Project Management*, 21(1), pp. 71-76.
- Ncube, S., Bussin, M.H.R. & De Swart, L. 2013. Confirming theoretical pay construct of a variable pay scheme. *SA Journal of Human Resource Management*, 11(1), pp. 1-10.
- OGC (Office of Government Commerce). 2003. *Achieving excellence in construction: Procurement and contract strategies*. London: OGC.
- Ogwueleka, A.C. 2011. The critical success factors influencing project performance in Nigeria. *International Journal of Management Science and Engineering Management*, 6(5), pp. 343-349.
- Ogwueleka, A.C. 2010. Stochastic dominance in projects. *International Journal Project Organization and Management*, 2(2), pp. 208-217.
- Ogwueleka, A.C. & Maritz, M.J. 2013. A review of incentive issues: the prospects and challenges. In: Wang et al. (eds). *Proceedings of the 2013 International conference on construction and real estate management*, 10-11 October. Karlsruhe, Germany, pp. 83-98.
- Pietersen, J. & Maree, K. 2007. Standardisation of a questionnaire. In: Maree, K. (ed), *First steps in Research*, Pretoria: Van Schaik Publisher, pp. 215-223.
- Popp, L. & Zenger, T.R. 2002. Do formal contracts and relational governance function as substitutes or complements? *Strategic Management Journal*, 36(4), pp. 794-829.
- Porter, L.W. & Lawler, E.E. 1968. *Managerial attitudes and performance*, Homewood, IL: Dorsey Press.
- Richmond-Coggan, D. (ed.). 2001. Construction contract incentive scheme- Lessons from experience, Report C554. London: CIRIA (Construction Industry Research and Information Association).

Rose, T. & Manley, K. 2005. A conceptual framework to investigate the optimization of financial incentive mechanisms in construction projects. In: Sullivan, K.T. & Kashiwagi, D.T. (eds.). *Proceedings of CIB W92/T23 International Symposium on Procurement Systems*, 8-10 February. Tempe, Arizona: Performance Based Studies Research Group, pp. 439-448.

Rose, T.M. 2008. The impact of financial incentive mechanisms on motivation in Australia Government large non-residential building projects. Unpublished dissertation (Ph.D.). Brisbane: Queensland University of Technology.

Rust, F.C. & Koen, R. 2011. Positioning technology development in the South African Institution of Civil Engineering: A technology foresight study. *Journal of the South African Institution of Civil Engineering*, 53(1), pp. 2-8.

Saka, N. & Ajayi, O.M. 2010. A comparative assessment of incentive scheme between indigenous and multinational construction contractors in Nigeria. Proceedings of the 26th Annual ARCOM Conference, 6-8 September, Leeds, UK, pp. 583-591.

Schweitzer, M., Ordonez, L.D. & Douma, B. 2004. The dark side of goal setting: The role of goals in motivating unethical behaviour. *The Academy of Management Journal*, 47(3), pp. 422-432.

Shanks, N.H. & Dore, A. 2011. Management and motivation. In: Buchbinder, S.B. & Shanks, N.H. (eds.). *Introduction to health care management*. 2nd edition. Jones & Bartlett Publishers, pp. 39-55.

Silverman, M. 2004. *Non-financial recognition: The most effective of rewards?* London: The Institute for Employment Studies.

State of the Construction Industry. 2012. The State of the South African Construction Industry, 2nd quarter. [online]. Available from: <<http://www.industryinsight.co.za>> [Accessed: 10 April 2013].

Statistics South Africa. 2012. PO441-Gross Domestic Product (GDP), 4th Quarter. [online]. Available from: <<http://www.statsa.org.za>> [Accessed: 10 March 2013].

Tang, W., Qiang, M., Duffield, C.F. & Young, D.M. 2008. Incentives in the Chinese construction industry. *Journal of Construction Engineering and Management*, 34(7), pp. 457-467.

Vlaar, P.W.L., Van den Bosh, F.A.J. & Volberda, H.W. 2006. Coping with problems of understanding in inter-organizational relationships: Using formalization as a means to make sense. *Organization Studies*, 27(11), pp. 1617-1638.

Whitmore, D.A. 2012. Incentive-financial reward schemes. [online]. Available from: <<http://www.manager.net.com>> [Accessed: 5 April 2013].

Williams, P. 2000. Poor communication can take its toll on construction companies. *Daily Commercial News*. [online]. Available from: <www.dcnonl.com> [Accessed: 22 July 2013].