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The influence of clients' leadership in relation to construction health and safety in South Africa

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Abstract

The South African Construction Regulations realise the contributions by each member of a project team to health and safety (H&S) improvement. These Regulations amplify the roles and contributions of clients to project realisation. The tenets of the Regulations conform with the observation that clients' H&S leadership and behaviours are an effective means of improving construction H&S performance in the industry. This article reports on a study that examined current clients' leadership approach and expectations in terms of H&S in South African construction. The review of relevant literature provides the platform for the research survey, which was conducted among selected clients of the industry. The findings show that clients' H&S leadership roles and behaviours have a significant influence on construction H&S performance in South Africa. Findings reveal that unethical behaviour, in terms of procurement and contract awards, is a serious challenge to the improvement of H&S performance in the industry.

Keywords: Behaviours, clients, construction, leadership, health and safety, South Africa

Abstrak

Die Suid-Afrikaanse Konstruksie Regulasies besef die bydraes van elke lid van 'n projekspan om beroepsgesondheid en veiligheid (H&S) te verbeter. Hierdie Regulering versterk die rol en bydraes van kliënte teenoor projekverwesenliking. Die beginsels van die Regulasies stem ooreen met die waarneming dat kliënte se leierskap en gedrag ten opsigte van H&S 'n doeltreffende manier is om konstruksie H&S-prestasie in die bedryf te verbeter. Hierdie artikel gee

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bevindinge oor 'n ondersoek wat gedoen is om huidige kliënte in die konstruksie-industrie se leierskapsbenadering en verwagtings oor H&S in Suid-Afrikaanse konstruksie te ondersoek. Die literatuurstudie het die onderbou gevorm vir die navorsingsondersoek, gedoen onder uitgesoekte kliënte in die industrie. Die bevindinge toon dat kliënte se leierskapsrolle ten opsigte van H&S 'n groot invloed het op H&S in Suid-Afrika. Onetiese gedrag in terme van aankope en kontraktoekenning is 'n groot uitdaging vir die verbetering van H&S-prestasie in die industrie.

1. Introduction

Construction sites remain one of the most dangerous and hazardous workplaces, due to the high number of reported and unreported cases of injuries and fatalities (Coble & Haupt, 1999: 211; Bust, Gibb & Pink, 2008: 585; Fewings, 2010: 165; Spangenberg, 2009: 112). According to the International Labour Organisation (ILO, 2011: 1), the risk of injuries and fatalities in construction is 7-10 times more than that in other industries. In South Africa, the Construction Industry Development Board (cidb) (2009: 3) reports that accidents in the industry are among the highest in all industry sectors, resulting in a third of all work fatalities. Construction accidents and incidents cost national economies over 5% of their gross domestic product (GDP) (ILO, 2010: 2).

Exposure to various hazards when working at heights, under water and/or with hazardous chemical substances forms part of daily work routines on construction sites (cidb, 2009: ii; Coke & Sridhar, 2010: 139). The discovery that construction workers are often at risk of an accident, ill health and fatality at work when compared to other industrial sectors is cause for concern for individuals, stakeholders, and governments (Kheni, 2008: 54; McAleenan, 2010: 39).

In South Africa, previous research focused on the causes of site accidents and occupational safety: Occupational safety (Matthysen, 1984: 10); The role of project managers in construction H&S (Smallwood, 1996: 227); Implementation of H&S on construction sites (Coble & Haupt, 1999: 211); The cost of construction accidents (Pillay & Haupt, 2008: 268); The economic and social impact of site accidents (Mthalane, Othman & Pearl, 2008: 78); A model to improve the effectiveness of the occupational H&S inspectorate (Geminiani, 2008: 23), and The impact of H&S culture on construction site performance (Okorie & Smallwood, 2010: 380). Despite this research, a gap exists between effective leadership of the key project leaders in H&S management and its positive impact on industry performance. Set against these previous studies, this gap may be connected to clients' poor H&S leadership and behaviour,

causing contracts to be awarded to contractors with poor H&S records. For the purpose of this article, the influence of the critical leadership and behaviours of the clients in South African construction that could be used to proactively influence measures for effective H&S management were examined. This exploratory article forms a basis for a more in-depth study into the drivers for client involvement and commitment to improving construction H&S.

2. The construction client

The South African Construction Regulations (RSA, 2003: 8) define clients as the people who, in the course of furtherance of business or operation, seek or accept the services of others which may be used in carrying out projects for themselves. In the context of construction projects, clients could be individuals, corporate bodies or government departments (Okorie, 2014: 151). As owners of projects, the clients have a substantial influence on the way in which a project is run (cidb, 2009: 18). McAleenan (2010: 101) asserts that the governance of any project begins and ends with the client.

2.1 Clients' H&S leadership roles and behaviour

Behm (2005: 24) and Huang & Hinze (2006: 174) stress the importance of clients' H&S leadership, particularly decisions made at the early project-planning phase through the appointment of the design team, contractors, selection of professional advisors, and procurement methods. In addition, public-sector clients are governed by legislation that requires them to treat all contractors equally, without discrimination, and to act in a transparent and appropriate manner (McAleenan, 2010: 101). The South African Construction Regulations (RSA, 2003: 12) require that clients appoint competent professional designers, project managers, and quantity surveyors. Emphasising the importance of client leadership roles for effective H&S management, Hinze (2006: 87), McAleenan (2010: 42), and Oloke (2010: 30) argue that accidents are caused by inappropriate responses to certain constraints and the environment. All of these factors impact on H&S and are directly influenced by clients. Conversely, clients' lack of visible leadership in the appointment of competent professionals often leads to awarding contracts to contractors without adequate H&S records (Musonda, Pretorius & Haupt, 2012: 71). For example, unethical behaviour and non-adherence to the procurement process in clients' organisations have been noted as major factors contributing to poor H&S performance (cidb, 2011: ii).

2.2 Clients' H&S leadership in the appointment of the design team

The Construction Regulations (RSA, 2003: 8) require clients to verify the competencies of designers such as architects, engineers, quantity surveyors, and project managers before appointing them. It is very important at the project-planning stage that clients' H&S commitment and leadership should reflect on the appointment of the project team, as their competencies have a direct and indirect influence on overall construction H&S performance. The composition of the design team is very important with respect to their advice regarding the appointment of a competent contractor. According to Hinze (2006: 316), the need for clients' commitment to project H&S stems from the rising costs of workers' compensation claims and high costs of litigation associated with poor construction H&S performance.

2.3 Clients' H&S leadership in the provision of H&S information

The Construction Regulations (RSA, 2003: 8) require clients to provide information and instructions that might affect the H&S of a worker doing work. During the design stage, clients have a legal duty to provide adequate information with respect to the site or premises to the designers who are responsible for designing H&S into the project (cidb, 2009: 19; Haslam, Hide, Gibb, Gyi & Atkinson, 2005: 22). Changing weather, cyclical economic downturns, natural occurrences such as weather, information regarding what lies beneath the ground are factors impossible of predicting and may bring uncertainty (Brauer, 2006: 167). Regardless of the argument of uncertainty in predicting the future, clients' provision of adequate H&S information to the design team has a significant impact on project H&S performance (Gambatese, Toole & Behm, 2008: 12; cidb, 2009: 19). The level of non-compliance with this important role by some clients suggests poor leadership and a lack of commitment to project H&S.

2.4 Clients' H&S leadership in the provision of adequate financial resources

The Construction Regulations (RSA, 2003: 4) require clients to make adequate financial provision for their projects. By obtaining cost advice relative to construction H&S during the project-planning stage, a client proactively takes cost risk-control measures, such as adequate budgeting for H&S and problems arising during construction (Steven, 2010: 63-64). Clients' lack of adequate financial provision for H&S during the project-planning stage has been noted as a vital challenge for H&S management (Gambatese *et al*., 2008: 13; cidb, 2009: 18).

2.5 Clients' H&S leadership in pre-qualification of contractors

Contractor pre-qualification is crucial to both the client and the contractor organisations, as it helps them meet regulatory compliance and achieve H&S improvement performance (cidb, 2009: 17). Pre-qualification is an effective means of identifying which contractors meet the client's requirements to perform the work in the most effective and efficient manner. Pre-qualification enables clients to assess relevant information with respect to contractors' H&S management systems such as H&S historical and performance records, insurance records, workers' H&S training, and employees' competencies. Clients evaluate the information against pre-established criteria to determine whether the contractor is qualified to bid for the work and, if not, client organisations can exclude unsafe contractors from client lists (Lutchman, Maraj & Ghanem, 2012: 174).

Client organisations' lack of H&S pre-qualification allows contractors, without the prerequisite competencies, to carry out their construction projects; this often results in fatalities and injuries on site.

2.6 Clients' H&S leadership in the contract-procurement process

Procurement is the process of clients selecting or appointing the most economically viable or competent contractor to carry out construction projects (McAleenan, 2010: 111). However, construction process and contractual relationships between clients and contractors differ from other ordinary contracts in many respects. Construction-project contracts are governed by legislation and regulations at both provincial and national levels. For example, the Construction Regulations (RSA, 2003: 12) require that clients, who wish to procure a construction project, should take every reasonable step to ensure that the person (contractor) appointed or engaged is competent to carry out the work in the safest and most efficient manner. Notably, the public sector is the largest client of the South African construction industry, with the responsibility of providing quality products. In meeting this obligation, public-sector clients are governed by legislation that requires them to treat all contractors equally, without any discrimination, and to act in a transparent manner (McAleenan, 2010: 111).

According to McAleenan (2010: 112), clients that have visible leadership and that are committed to follow a procurement policy governed by ethical behaviour enable best values to be achieved and encourage the improvement of the procurement process early in the supply chain (McAleenan, 2010: 112).

2.7 Clients' H&S leadership in the awarding of contracts to contractors

Awarding a contract to a successful bidder (contractor) by a client organisation (public and private) follows a due process. Construction-procurement guidelines for the public sector (clients), that set common minimum standards for procuring and awarding contracts to contractors, can be found in terms of the National Home Builders Registration Council (NHBRC) and the Preferential Procurement Policy Framework Act (PPPFA) (RSA, 2001: 2).

The NHBRC outlines the following conditions under which registered contractors' tenders will be evaluated for awarding contracts: financial capability; technical competency; construction experience, and management. Instances have shown that the Council does not strictly adhere to these guidelines. As noted by the cidb reports (2011: 21), the poor quality of work completed by some contractors who are registered under the NHBRC raises a big question as to how contracts were awarded to them. Investigations as to why contracts were awarded to these contractors showed that the tender process was poorly managed and, more specifically, that it was open to abuses such as bribery, fraud, corruption, and nepotism (cidb, 2011: 21). These abuses constitute unethical behaviour and indicate poor leadership. The consequences of awarding contracts to contractors without adequate competencies are poor project performance, including H&S.

The Preferential Procurement Policy Framework Act (PPPFA) (RSA, 2001: 2) provides for both the evaluation of tenders and the awarding of contracts in the public sector on the basis of price and preference; response to the proposed scope of work or project design; quality control practices and procedures; qualifications and demonstrable experience of the key staff, and demonstrated experience of the tendering entity with respect to specific aspects of the project and comparable projects. Conversely, these policies and procedures are hardly adhered to by the appointed construction H&S officers in construction, as noted by Fourie (2009: 45). The non-adherence to these procedures is a manifestation of poor leadership and a lack of commitment (Fourie, 2009: 41). The cidb (2011: 22) report also notes that there have been instances where contracts are not awarded in accordance with a client's procurement policy, for example, overturning the recommendations of a tender evaluation committee, due to political interference. A survey conducted by the cidb construction industry in 2009 indicated the extent of contracts that were not awarded in accordance with client-procurement

policies to be: 22% for provincial, 16% for national corporations, 7% for national departments, and 7% for local authorities. It has also been noted that political interference and lack of transparency frequently result in the appointment or awarding of contracts to contractors that do not have the necessary abilities to carry out the work in a safe and efficient manner (cidb, 2011: 23).

Comparing the criteria for tender evaluation in both the NHBRC and the PPPF Act 2001, there was no reference to H&S. The lack of inclusion of an H&S management system as a pre-qualification criterion in the South African procurement policy and guidelines could be a factor for clients' inadequate budgeting for H&S during the project-planning stage (cidb, 2011: 27). The cidb (2011: 28) notes in a report that lack of commitment to H&S, and lack of transparency during tender evaluations resulted in the awarding of contracts to contractors without adequate H&S records.

2.8 Clients' H&S leadership in the appointment of contractors

Oloke (2010: 39) and Musonda *et al.* (2012: 71) contend that clients have a pivotal leadership role in setting and achieving high standards in construction H&S performance. The consensus of various H&S researchers regarding the influence of clients in improving construction H&S converges on the central idea that clients' H&S leadership is desirable for effective H&S management (Brauer, 2006: 12; Huang & Hinze, 2006: 175; Gambatese *et al*., 2008: 2; Spangenberg, 2009: 56; Conchie, Taylor & Charlton, 2011: 1209). They set the tone for projects, have overall control of contracts and the way projects are undertaken, make key decisions such as those related to budget and time, and appoint the design team and contractors. Huang & Hinze (2006: 178) and Musonda *et al*. (2012: 23) argue that high standards of H&S are achieved on projects where clients are committed and demonstrate transparent leadership. The importance of clients' H&S leadership in both the public and the private sectors, leading to the award of a contract to a competent contractor, is highly desirable for effective H&S management.

2.9 H&S project monitoring by clients

As the owners and financiers of construction projects, clients have a legal obligation to monitor and ensure that the principal contractors have put in place all arrangements with respect to a construction-phase H&S plan on site. Lingard & Rowlinson (2005: 163) maintain that effective H&S management entails adequate monitoring and reporting of performance and process to review

performance and make improvements. According to Musonda *et al*. (2012: 111) and Hinze (2006: 121), active and reactive monitoring provides clients with the information needed to review activities and decide how to improve workers' H&S on site. Hinze (2006: 121) argues that successful H&S management requires clients to regularly attend site H&S meetings to discuss H&S matters. Clients' visible H&S leadership, commitment to workers' H&S and active involvement through monitoring their project H&S can contribute to effective H&S management.

Krause (2003: 3) and Hopkins (2008: 31) point out that the ultimate success of project H&S management is, to a large extent, dependent upon clients' H&S leadership and commitment. The influence of clients can be found in the work of Huang & Hinze (2006: 23), which shows that construction H&S performance can be measured and ultimately changed through the various commitments of clients as the owners and financiers relative to a particular construction project. These commitments depend on their visible leadership in the appointment of the design team; provision of H&S information; allocation of adequate financial resources to H&S; pre-qualification of contractors on H&S; contract-procurement process; awarding of contracts to contractors with good H&S records, and monitoring workers' H&S on sites (Musonda *et al*., 2012: 75). Documented research findings (Behm, 2005: 2; Hinze, 2006: 102; Huang & Hinze, 2006: 2; Suraji, Duff & Peckitt, 2006: 1; Chinda & Mohammed, 2008: 2; Musonda & Smallwood, 2008: 2; cidb, 2009: 39) maintain that clients can contribute to improvement in construction H&S performance.

3. Research methodology

A qualitative research approach is commonly employed in studying complex situations, particularly in research involving people (Sutrisna, 2009: 57). According to Borrego, Douglas & Amelink (2009: 54), qualitative research is good for approaches in which a theory or hypothesis justifies the variables, the purpose statement, and the direction of the narrowly defined research questions. The hypothesis: 'Clients' poor H&S leadership and behaviours lead to the award of contracts to contractors with poor H&S records' is being tested through the phrasing of research questions which aim to determine to what extent clients exude H&S leadership and commitment in construction projects.

The review of the literature resulted in the formulation of a structured questionnaire, which forms the basis for the semi-structured questions for the focus-group discussions. Focus-group interviews

were conducted among public and private clients in the four major provinces of South Africa, namely Eastern Cape, Gauteng, KwaZulu-Natal, and Western Cape. The selection of the interviewees was conducted by searching the data bases of the National and Provincial Offices of the Department of Public Works (DPW) and the South African Property Owners Association (SAPOA). The purposive sampling technique was used for selecting directors and senior managers considered to be sufficiently knowledgeable for the enquiry. Time, cost, experience, and a small sample needed for the group discussion were the special circumstances that were considered in the choice of the purposive sampling technique for this study (Sutrisna, 2009: 71). The participants from the public sector included architects, quantity surveyors, and H&S officers; while those from the private sector were in top-management positions.

For the questionnaire, closed-ended questions were preferred, as they reduce the respondent's bias (Akintoye & Main, 2007: 601). From the 560 questionnaires distributed, 143 were returned; this resulted in a response rate of 25.5%. The response rate achieved for this research is similar to that achieved in other surveys (Sutrisna, 2009: 84; Collins, 2010: 43). It could be inferred from Sutrisna (2009: 56) and Dainty (2008: 6) that performing a statistical analysis in a survey with response rates equal to, or above the threshold of thirty (30) is acceptable. Thus, 143 responses achieved in this survey provide reasonable data for analysis.

Open-ended semi-structured questions were developed to guide the focus-group discussions. The questions allowed the participants to share as much or as little as they wished with respect to their H&S practices and behaviours that can bring about H&S performance improvement in South African construction. The questions allowed the participating clients to discuss the following areas that involve their leadership skills and behaviours: appointment of the design team; provision of adequate H&S information; financial provision for project H&S; pre-qualification of contractors on H&S; procurement policies, guidelines and contract award; monitoring and implementation of project H&S plans, and clients' H&S leadership.

Out of the thirty (30) people who were invited to participate in the study, only eleven (11) took part in the focus-group discussions. The number of participants was considered sufficient for a quorum, since Gillen, Kool, McCall, Sum & Moulden (2004: 235) and Babbie (2007: 56) suggest that three to six participants should be brought together in a typical focus-group discussion. Gillen *et al.* (2004: 23) further contend

that smaller groups increase participants' opportunity to fully express ideas without interruptions.

Multiple methods of outreach, including the posting of the structured open-ended questions, telephone contact, and e-mails, were employed to contact participants. The discussions were conducted with due regard to ethical considerations governing research of this nature. Although qualitative research involves studying respondents in their true setting, no research can truly capture the full effect of the setting or respondents, because they are complex entities (Sutrisna, 2009: 56).

3.1 Data analysis and interpretation of findings

3.1.1 Questionnaire

For the questionnaire survey, a 5-point Likert-scale measurement was used to obtain the opinions of the respondents and to analyse the results. Leedy & Ormrod (2005: 185) maintain that Likert scales are effective to elicit participants' opinions on various statements.

For the purpose of analysis and interpretation of mean scores, the following scale measurement was used: 1 = Minor extent; 2 = Near minor; 3 = Some extent; 4 = Near major extent; 5 = Major extent. The Statistica (version 10.0) statistical analysis software package was used to generate the descriptive and inferential statistics. The Microsoft Excel Ranking function was used to compute the rank of mean scores recorded in the data analysis. This ranking method enabled the researcher to evaluate the importance of problems, parameters and individual statements relative to each other. When using Likert scale-type scales, it is imperative to calculate and report Cronbach's *alpha* coefficient for internal consistency and reliability for any scales (Gliem & Gliem, 2003: 88). Maree & Pietersen (2007: 216) suggest the following guidelines for the interpretation of Cronbach's *alpha* coeffient: 0.90 – high reliability; 0.80 – moderate reliability, and 0.70 – low reliability. The questionnaire survey shows a moderate reliability Cronbrach's *alpha* of 0.89.

3.1.2 Focus group

For the focus-group discussions, the principal researcher served as the group leader to facilitate the discussion and the debriefing. The participants were reminded of the voluntary nature of their participation in the study as well as the ethics of group confidentiality. Discussions that were transcribed v*erbatim* were recorded on iPhone with permission of the participants. The transcribed versions were sent

to the participants to vouch for accuracy. At the end of the one-day group discussion, the data was captured on a computer. The facilitator of the group discussions listened several times to the recordings and personally transcribed them. To enhance the validity of the findings, the transcribed versions were sent to the participants who vouched that accurate versions of the discussions had been realised.

3.1.3 Hypothesis

In testing the hypothesis, the *p*-value, which is the level of significance for the t-test, was 5%. This suggests that the *p*-value may be assumed to be less than 0.05. The smaller the *p*-value, the stronger the evidence is against the null hypothesis (Agresti & Franklin, 2007: 369). The *p*-value, which was calculated by presuming that the null hypothesis H_o is true, is the probability that the test statistics equal the observed values or a value even more extreme (Samuels, Witmer & Schaffner, 2012: 45).

4. Results and findings

4.1 Questionnaire responses

The majority of the responses (66%) were received from practitioners in the public sector. Over 50% of the respondents have been involved in construction for over 15 years; 91.6% have tertiary qualifications; 62.2% hold management positions; 23.8% work for clients; 20.3% work for general building contractors; 14.7% are designers; 2.3% are project managers; 10.5% are general civil contractors; 7.7% are quantity surveyors; 11% are others; 30.8% are managers, and 22.4% are managing members and principals.

The data analysis reveals that the respondents fall within the key project participants and, therefore, their perceptions can be deemed reliable and valid. The respondents are academically qualified to comprehend the questions and their judgements are reliable, as they have the experience to make sound judgements.

4.2 Questionnaire results

A five-point Likert-scale questionnaire that provides for 'unsure' was used to examine the contributions and behaviour of clients to poor H&S performance. Table 1 indicates the perceived behaviour or contributions of clients in the construction industry to poor construction H&S performance (at-risk work practices or unsafe behaviour).

Table 1: Client-related H&S behaviour contributing to poor construction H&S performance

Behaviour/ Contributions	*Valid N*	*Unsure*	*Response (%)*					*MS*	*SD*	*Rank*
			Minor ..... Major							
			1	*2*	*3*	*4*	*5*			
Failure to ensure that the contractor has made adequate financial provision for H&S	143	2.1	7.0	11.2	23.8	32.9	23.1	3.54	1.17	1
Inadequate monitoring to ensure that contractors comply with the H&S plan	143	1.4	6.3	16.9	22.5	30.3	22.5	3.46	1.19	2
Non-facilitation of financial provision for H&S	143	4.2	7.7	12.6	28.0	30.1	17.5	3.37	1.14	3
Inadequate addressing of H&S matters during contract negotiation/ tendering process	143	2.5	3.5	18.9	31.5	23.1	19.6	3.36	1.10	4
Lack of pre-qualification of contractors on H&S	143	2.8	4.9	18.2	28.7	28.0	11.2	3.35	1.11	5
Inadequate provision of financial resources for H&S	143	0.7	8.4	16.8	26.6	30.1	17.5	3.31	1.19	6
Inadequate H&S specification provided to the design team	143	3.5	9.8	18.9	28.7	28.0	11.2	3.12	1.14	7
Inadequate project duration	143	3.5	14.0	16.8	28.7	20.3	16.8	3.09	1.27	8
Poor choice of procurement system	143	6.3	8.4	19.6	34.3	18.9	12.6	3.08	1.11	9
Inadequate provision of H&S information to the design team	143	5.6	8.5	25.4	32.4	17.6	10.6	2.96	1.09	10
Poor project brief provided to the design	143	4.2	12.0	21.1	32.4	19.0	11.3	2.96	1.16	11
Average								3.23	1.15	
Cronbach's *alpha*: 0.89 (moderate reliability) Average inter-item: 0.45										

Table 1 indicates the respondents' perceptions of the extent to which identified behaviour related to clients' H&S leadership and behaviour contributes to at-risk work practices or unsafe behaviour. It shows this in terms of percentage responses to a scale of 1 (minor) to 5 (major), and a MS ranging between 1.00 and 5.00. It is notable that nine MSs were above the midpoint of 3.00, which, with an average MS of 3.23, indicates that the respondents perceive that client-related H&S behaviour contributes to at-risk practices or unsafe behaviour of workers on site. The findings indicate that the respondents perceive that the following can be deemed to contribute significantly to at-risk work practices:

- Failure to ensure that clients have made adequate financial provision for H&S;
- Inadequate monitoring to ensure that contractors comply with the H&S plans;
- Non-facilitation of financial provision for H&S, and
- Inadequate addressing of H&S matters during contract negotiation/tendering process.

Although inadequate provision of H&S information to the design team and poor project brief provided to the design team have the lowest MSs in Table 1, these critical client leadership roles should not be overlooked in this context.

4.3 Focus-group responses and discussion

In addition to the questionnaire responses, the questions for the focus-group discussions allowed the participants to share as much or as little as they wished with respect to their practices and behaviour that can realise H&S improvement in South African construction.

4.3.1 Clients' H&S leadership roles and behaviour

The following question related to clients' H&S leadership attributes that can realise improvement in the area of construction H&S performance was posed to participants:

> *"Despite the interventions that have been mentioned in the course of this discussion, do you think that leadership abilities/ attributes can improve construction H&S performance?"*

One of the participants commented that visible leadership is critical to the promotion of H&S culture in construction. The participant succinctly stated the following: "*We should be a role model when we visit site by wearing our safety hats*" and "*Talk to workers as human*

beings". These comments indicate that there is a need for leaders at all levels of management to demonstrate visible leadership when visiting construction sites, since workers tend to emulate their good or bad behaviours. As one of the Directors put it, workers hear what we say, but what they do reflects on what we do. Therefore, leaders at all levels should demonstrate attributes or qualities that inspire, and reflect trust and respect to workers when visiting sites.

In addition, the participants were asked to provide their perceptions regarding poor H&S leadership and client organisations' lack of commitment to workers' H&S. Responses included inadequate financial budgeting for H&S; lack of pre-qualification of contractors on H&S; inadequate monitoring to ensure that contractors comply with project H&S plans, and inability to ensure that contractors have made adequate financial provision for H&S in their tenders. Furthermore, references were made to bribery, corruption, and political interference that exist in clients' organisations as being poor behaviour and a lack of commitment, thus contributing to workers' unsafe behaviour on sites.

However, bribery, corruption, and political interference, particularly among public-sector clients, have become endemic in society. These practices are not only limited to public clients, but also apply to private clients. Such social ills are prevalent in developing nations and are becoming increasingly more dominant in South Africa. The resultant effects of this poor leadership and behaviour among clients often lead to circumventing procurement guidelines and polices. As a consequence, contracts are awarded to contractors with poor H&S records, resulting in site fatalities, injuries, and diseases.

4.3.2 Clients' H&S leadership in the appointment of the design team

Two questions addressed the important issue related to the appointment of the design team that implies that designers have the responsibility to improve construction site H&S performance through their design decisions, particularly during the project-planning and design stages.

> *"Based on your experience, do you think designers' H&S critical decisions impact on workers' H&S behaviour on site?"*

Participants' comments included:

- "H&S information is not incorporated into designs".
- "Hazard identification and risk assessment are not carried out on the intended project".

The above comments by the participants indicate the extent to which designers' roles can contribute to at-risk work practices or unsafe behaviour. Designing H&S into construction entails that designers should give due consideration to workers' H&S during the project-planning and design stages. Designers should uphold designing H&S into construction, by ensuring that H&S information is provided in the drawings, by conducting hazard identification and risk assessment, and not specifying any hazardous materials.

> *"What are the criteria adopted or used in your organisation in the appointment of consultants such as architects, engineers, and quantity surveyors at the project conception and design stages?"*

In response to this, one of the participants commented: "*We have a selected list of consultants that we use for each project*" and "*We ensure that they are registered members of their professional institutes*". Although these statements were made by public-sector clients, the cidb (2011: ii) reports on the investigation into the barriers to quality in construction, which include the traditional barriers within the design, procurement, and construction processes, namely corruption, political interference, and institutional barriers in the appointment of consultants, that were not capable of undertaking the necessary work, could be attributed, to a large extent, to poor leadership in the procurement process in South African construction. The above examples point out the extent of poor leadership and unethical behaviours among clients relative to the construction project-procurement processes. Of specific interest in the report are indications that corruption is increasing in South Africa.

4.3.3 Clients' H&S leadership in the provision of H&S information

As far as the importance of H&S information relative to construction sites is concerned, the participants were asked to give their opinion on the following question:

> *"Based on your experience, do you think preliminary site investigations have an impact on workers' H&S behaviour on sites?"*

A director in the private sector responded as follows: "*In all our projects we endeavour to carry out detailed site investigations*" and "*We also ensure designers incorporate site information into designs*". Private clients such as members of SAPOA can be deemed to carry out detailed preliminary site investigations, as they are profit oriented. The case is contrary to public-sector clients, where the leaders and some

politicians circumvent all stages of the construction project delivery chain, due to corruption and political patronage (Fourie, 2009: 48).

4.3.4 Clients' H&S leadership in the provision of adequate financial resources

To address the importance of financial provision for H&S during the project-planning and tendering stages, the following question was asked:

> *"What effect does inadequate financial provision for H&S at the tendering stage have on the ability of contractors to ensure adequate on-site H&S interventions?"*

In discussing the above question, the participants commented as follows:

- *"H&S is not considered as important as quality."*
- *"Contractors price H&S items very low in order to win the tender."*
- *"Some private clients do not use the services of quantity surveyors."*

The perception that H&S is not considered as important as the other project parameters (cost, quality, and time) indicates why clients do not budget or allocate adequate financial resources for H&S in their projects. Contractors tendering competitively often ignore H&S items or price them very low in the BoQs. The consequence is lack of funds for H&S interventions on sites. The most complex aspect of this problem is that clients and contractors do not make use of quantity surveyors, who are experts in terms of construction costs.

4.3.5 Clients' H&S leadership in pre-qualification of contractors

The question regarding the pre-qualification of contractors is notable, as all the participating clients unanimously agreed that prequalification of contractors contributes to workers' H&S behaviours, when asked to answer the question:

> *"In your opinion, do you agree that lack of pre-qualification of contractors on H&S can contribute to workers' unsafe behaviours?"*

4.3.6 Clients' H&S leadership in procurement policies and guidelines and the awarding of contracts to contractors

Participants were asked to comment on the extent to which they adhere to contracts' procurement policies and guidelines in their organisations. Specifically, participants from the public-sector clients

commented: "*We follow due process in the selection of contractors in our department*" and "*We ensure that contractors we select have made adequate provision for H&S in their tenders*". However, as noted by Fourie (2009: 45), evidence indicates that the appointed officers hardly adhere to these policies and procedures. The cidb (2011: 22) report notes that there have been instances where contracts were awarded in violation of procurement policy such as overturning the recommendations of a tender evaluation committee, due to political interference. A survey conducted by the cidb in 2009 showed the extent to which contracts were not awarded in accordance with clients' procurement policy to be: 22% for provincial entities, 16% for national corporations, 7% for national departments, and 7% for local authorities. Comparing the criteria for tender evaluation in both the NHBRC and the PPPF Act 2001, there was no reference to H&S, but at the international level, H&S is included as one of the pre-qualification criteria for tender evaluation and contract award.

In response to the information in the cidb report, a second question addressed opinions regarding the awarding of contracts to contractors:

> *"Is it possible that poor leadership and lack of commitment to H&S by clients qcontribute to the award of contracts to such contractors?"*

Participants unanimously answered

> *"Yes", "Corruption is too much", "Contracts are awarded only to top politicians", and "The top management are not transparent"*.

These comments indicate that clients' H&S leadership is poor, particularly the public-sector clients, as exemplified by the fact that contractors without adequate H&S records are awarded contracts. A contractor without adequate H&S records increases not only accident and injury rates on sites, but also fatalities, and the cost of medical care for the government. It could be argued that poor leadership and lack of transparency among the top leaders are possible reasons for the award of contracts to contractors with poor H&S records in the South African construction industry.

4.3.7 Clients' monitoring and implementation of project H&S plans

To address the issue of clients as the owners and financiers of construction projects, who have a legal obligation to monitor and ensure that principal contractors have implemented the necessary arrangements with respect to construction H&S plans on site, respondents were asked to reply to the following question:

> *"In most construction projects that you were/are involved, have you encountered the use of an H&S plan?"*

The participants noted: *"In major projects, contractors have written H&S plans for the projects"*, but *"implementation of H&S plans is the problem"*. These comments indicate that monitoring of project H&S plan implementation by clients and their appointed agents is inadequate.

Monitoring provides information with regard to performance. Poor monitoring of project H&S plans by clients, designers, and project managers will definitely result in inadequate implementation by contractors on site. A project H&S plan is vital for construction-site H&S management, as it identifies environmental restrictions and existing on-site risks peculiar to a project.

4.4 Implications of the results

The test of means was used to determine whether there is a statistical significance between the respondents' responses and the hypothetical statements. The significance is the result obtained from testing a null hypothesis against an alternative hypothesis with the aim of determining the *p*-value (probability value) as the output result. The *p*-value is a numerical measure of the statistical significance of a hypothesis test. The researcher making the decision should choose significance level **α**. The common choices are α = 0.10, 0.05, and 0.01.

For the purpose of this article, in the choice of *p*-value, if the *p*-value of the data is less than or equal to **α**, the data is judged to provide statistical evidence in favour of the alternative hypothesis ($\mathbf{H_I}$), and the null hypothesis ($\mathbf{H_o}$) is rejected. On the other hand, if the *p*-value of the data is greater than the significance level **α**, it could be concluded that the data provides insufficient evidence to claim that $\mathbf{H_I}$ is true, and that the $\mathbf{H_o}$ is not rejected. These criteria were adopted in drawing conclusions from testing the research hypotheses in this article. As shown in Table 2, the statistical software (Statistica version 10.0) provided the test statistics (*t*-value) of 3.56 and *p*-value of 0.000253 for the hypothesis that has been tested in terms of means, and not proportions. The simple sample *t*-test tested whether the sample mean on each of the constructs is significantly greater than 3, which is the middle (mid-point) of the 5-point scale. The results from the software show that the mean of 3.24 is significantly greater than 3. Thus, the hypothesis testing was conducted without a comparison between *t*-value and critical value.

Table 2: Test of means against reference constant (value) for hypothesis

Mean	*SD*	*N*	*R*	*t-value*	*df*	*p-value*
3.24	0.80	143	3	3.56	142	0.000253

The following conditions were used for testing the postulated research hypotheses:

- The significance level **α** = 5% (0.05);
- The confidence level at 95%;
- The null hypothesis is $\mathbf{H_o}$: p = 3, and
- The alternative is $\mathbf{H_I}$: p ≤ 3.

The null hypothesis states: Poor H&S leadership and behaviour by clients does not lead to award of contracts to contractors with poor H&S records.

The alternative hypothesis states: Poor H&S leadership and behaviour by clients lead to the award of contracts to contractors with poor H&S records.

If *p*-value < 0.05, then H_o is rejected, but *p*-value = 0.000253, p < 0.05.

Since p < 0.05, the alternative hypothesis ($\mathbf{H_I}$), which states that poor H&S leadership and behaviour by clients lead to the awarding of contracts to contractors with poor H&S records, is supported.

In conclusion, the data provide statistically significant evidence that poor H&S leadership and behaviour by clients lead to the awarding of contracts to contractors with poor H&S records.

5. Discussion

The results show that clients in both the public and the private sectors are well aware of the hazards and risks workers face on construction sites. Both public and private clients emphasised the importance of leadership and ethical behaviours in all stages of construction-project delivery so as to improve workers' H&S behaviours. However, the participating clients agreed that some senior managers and public office holders collude with some contractors to circumvent the construction-procurement guidelines, due to corruption, nepotism, and political interference to award contracts to contractors without adequate H&S records. The need for visible leadership, and commitment to workers' H&S among the clients, is apparent.

The participants also expressed the need for the assessment of competencies among consultants, construction management systems and contractors' previous performance relative to H&S as criteria for pre-qualifying contractors and awarding of contracts to contractors. They also recognised and acknowledged corruption, bribery, fraud, nepotism, political interference, and institutional barriers, particularly in the design of permanent works, appointment of quantity surveyors, and project managers. Of great concern is the observation that such political interference is growing rapidly in the public sector, frequently resulting in the appointment of consultants and contractors that do not have the necessary competencies to manage construction projects effectively. The results have been poor project performance, including H&S.

As owners and initiators of construction projects, clients have responsibilities to appoint competent professionals. This is achievable through visible leadership and commitment to workers' H&S. It is important to view workers' rights to a healthy and safe workplace as a moral claim, something employers are morally obliged to do, even if it is not required of them by law or corporate policy. Thus, employers' behaviours and commitment towards workers should be viewed as a moral responsibility to provide a healthy and safe work environment to save the nation from wanton destruction of precious lives and property.

It can be argued that the construction process needs clients as leaders to inspire trust, exercise power where necessary, and demonstrate honesty and integrity in their behaviours. Thus, effective H&S leadership among clients is highly desirable.

However, there are several limitations to this study. The study population was limited to only four provinces in South Africa. Secondly, the clients in the form of directors, senior managers, and managers who participated in this study may have been more likely to be more interested in workers' H&S than others. Another limitation is the issue of qualitative findings that do not allow extensive generalisation. Furthermore, the nature of the research topic and sensitiveness attached to H&S leadership and behaviours of the clients made it difficult for the participants to discuss inadequacies relative to H&S management in their respective organisations. The constructs applied in this study were drawn from the literature review. The study focused on the critical H&S leadership and behaviours of the clients, and excluded the contributions of workers to the causes of at-risk work practices or unsafe behaviours of workers. This is, to a certain degree, a limitation to the study. However, despite these limitations, the survey

provided important findings on clients' leadership approach towards construction H&S management:

- Poor leadership, lack of commitment to, involvement and participation in H&S exist among the top management among clients;
- Unethical behaviours are prevalent among top leaders;
- Project H&S plans are inadequate and inappropriate, thus militating against contractors complying with legislative requirements and achieving healthy and safe workplaces;
- H&S is not accorded status equal to that afforded to cost, quality, and time in respect of project success parameters, the consequence being, *inter alia*, inadequate financial provision for project H&S by clients in the BoQs, and contractors' inability to make adequate financial provision for H&S in their tenders, and
- The complex and dynamic nature of construction-site workplaces further shows that inadequate construction H&S workplace planning impacts on workers' unsafe behaviours or at-risk work practices.

6. Conclusions and recommendations

Based on the research results, it can be concluded that clients' poor H&S leadership and behaviour lead to the award of contracts to contractors with poor H&S records. The major consequence of poor clients' H&S leadership, lack of commitment and involvement in project H&S is a lack of funds for contractors' H&S interventions on sites. This results in an increase in site fatalities, injuries, ill health, poor H&S training, and inadequate provision of PPE to workers. Therefore, adequate financial provision for project H&S during the planning phases, pre-qualification of contractors on H&S, and adequate monitoring to ensure that contractors comply with the project H&S plans in the clients' organisations should be adequately implemented. In addition, causes of workers' unsafe behaviour and poor construction H&S relative to clients' poor H&S leadership and behaviour, such as the appointment of contractors with poor H&S records and inadequate financial allocation for project H&S, should be addressed. Clients should, as a matter of importance, provide H&S information to the design team during the project-planning phases.

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