SUBCONTRACTORS’ HEALTH AND SAFETY COMPLIANCE ON A WATER BOARD’S PROJECTS

L Moshanyana and J Smallwood

Nelson Mandela University, Port Elizabeth, South Africa, Imoshaya@randwater.co.za
john.smallwood@mandela.ac.za

Abstract. Compared to other industrial sectors, the construction industry is responsible for a disproportionate number of fatalities and injuries. Subcontracting constitutes a significant portion of all construction projects, and it is noted for its adverse H&S influence in the industry. Health and safety (H&S) risks related to subcontracting pose a significant business risk to principal contractors (PCs) who employ subcontractors (SCs). Some PCs report that their sites have been shut down because of poor H&S compliance by the SCs. This situation has a negative impact on time schedules, and the overall profitability of projects.

The study seeks to examine why construction SCs undertaking projects for a Water Board located in Johannesburg do not comply with H&S regulations. Quantitative methods were employed for the study. Literature was reviewed, followed by a questionnaire survey to obtain primary data. A total of 174 construction managers, supervisors, and H&S officers in the employ of PCs and SCs participated in the survey to gather data relative to SCs’ degree of compliance with H&S legislation, H&S regulations, and the Water Board’s H&S specifications.

The literature suggests that there is general H&S non-compliance on construction projects by SCs. The salient findings include: SCs on the Water Board’s projects do not comply with H&S legislation and regulations, and H&S specifications; SCs’ management is not trained in terms of H&S; PCs do not issue work stoppage orders relative to SCs’ unsafe acts / behaviour; SCs further subcontract; the contractual relationships between PCs and SCs are not clear due to unauthorised subcontracting, and H&S enforcement by PCs and the Department of Employment and Labour (DEL) is inadequate.

Recommendations include: PCs must ensure that H&S practices are implemented; PCs and the DEL must enforce H&S requirements, and a framework must be evolved for ensuring SCs’ H&S compliance in construction.

Keywords: compliance, health and safety, practices, principal contractor, subcontractor.

1. Introduction

The construction sector is notorious for being responsible for numerous occupational deaths, injuries, and illnesses in many countries [1]. Mbachu highlights that subcontracting constitutes a significant portion of all construction projects in the building industry [2]. Earlier research estimates that 80% of construction work undertaken by United Kingdom (UK) PCs is subcontracted [3]. Furthermore, subcontracting is prevalent in the South African construction industry, with up to 70% of the value of building and 30% of the value of civil construction projects subcontracted [4]. This shows the importance of subcontractors (SCs) in the construction industry.

Outsourcing has become an important tool by which large organisations seek to increase competitiveness, reduce costs, bypass regulatory controls, and secure more flexible employment arrangements [5]. However, despite its economic benefits, subcontracting has adverse H&S
consequences in construction and other industries, which is a situation that has long persisted. Some of the problems associated with subcontracting have been identified as communication problems, competence issues, especially in the case of multi-layer subcontracting, the interest of SCs in making their profit with less commitment to H&S, and the unfamiliarity of subcontractors with the H&S practices of PCs. It is anticipated that, given the increasing specialisation in the construction industry, the adverse impact of subcontracting could worsen with its increase [6].

On the other hand, according to the Preferential Procurement Policy Framework Act 2000 (PPPFA), Preferential Regulations, 2017 Clause 9(1) ‘subcontracting as a condition of the tender’ requires that if it is feasible to subcontract for a contract above R30 million, an organ of state must apply to subcontract to advance designated groups. Based on the information above, the practice of subcontracting suggests its inevitability. The emphasis is clearly on the need for concentrated efforts to address the adverse H&S effects of subcontracting to avoid not only losses, but also the liability that the PC maybe exposed to by SCs non-compliance.

Given the adverse H&S effects of subcontracting in the South African construction industry; the requirements of H&S legislation, and the PPPFA, a study was conducted amongst construction managers, supervisors, and H&S officers in the employ of PCs and SCs involved in the projects of a Water Board, the objectives being to determine the frequency at which:

- PC organisations undertake seven H&S practices;
- SC organisations undertake eight H&S practices;
- PC organisations undertake six contractual practices;
- PC organisations undertake five evaluation practices, and
- SC organisations undertake two actions relative to employment practices.

2. Review of the literature

2.1. Introduction

The literature review attempts to highlight the possible causes of SC non-compliance with H&S legislation and regulations on the Water Board’s projects, and the H&S practices implemented by SCs nationwide.

2.2. Management Practices

Management practices are the backbone of any successful business [7]. According to Agumba et al. [8], H&S management practices constitute a vehicle to improve H&S performance outcomes. H&S practices have been developed and adopted by various countries in managing the adverse H&S effects of subcontracting. However, the extent of the adoption of such measures would need weighing against factors, such as the cost and time implications, the human resources required for their operation, and the characteristics of the projects for which the measures are intended [6]. The study conducted by the Construction Industry Development Board (cidb) reports that many SCs, mainly smaller and trade SCs’ H&S management practices are poor [4].

2.3. H&S legislation

The Construction Design and Management (CDM) 2007 Regulations have been noted as providing mitigation against the issues responsible for the adverse H&S effects of subcontracting [6]. The authors examined specific provisions and features of the CDM 2007 critically (i.e., competence assessment; training and induction; coordination and co-operation, and clear delineation of duties for PCs), which might address causative factors of the adverse H&S effects of subcontracting. Agumba et al. [9] report that poor H&S performance in the South African construction industry drove H&S stakeholders to take H&S seriously, as legislation alone was inadequate to address the problems of managing workplace H&S. PCs have the responsibility to go beyond compliance with regulatory requirements to proactively develop and implement measures that will prevent adverse H&S outcomes derived from subcontracting [6].
Manu et al. [6] extrapolate that in the spirit of striving for H&S excellence, the identification of other measures or practices, which may complement the mitigation offered by the CDM 2007 provisions, is thus warranted. Furthermore, the identification of such measures or practices provides useful organisational learning opportunities to PCs who often sublet work packages.

Likewise, Horbury and Hope [10] suggest a generic framework for employers to manage PCs or SCs. Manu et al. [6], however, claim that the framework recommends measures and practices that are similar to the regulatory requirements of the CDM 2007. These include the need for training SC workers, work method statements, and consultation with SCs.

2.4. Six interconnected elements of Pérezgonzález’s model

According to Manu et al. [6], as a means of addressing the issues presented by SCs, PCs implemented H&S measures as part of their overall H&S management systems.

The authors use the following six interconnected elements of Pérezgonzález’s model [11], widely used as the basis for identifying management practices:

- Policy: a general statement and overall guiding principle regarding the H&S of an organisation;
- Organisation: this includes the roles, responsibilities, and provision of resources to control H&S issues effectively;
- Planning and implementing: this includes goal setting, and operating the system;
- Measuring performance: this includes monitoring implementation to ensure that the set targets are achieved;
- Review performance: this includes procedures to ensure that the organisations learn from experiences at the measuring stage to improve performance, and
- Auditing: this covers monitoring of the overall system to ensure that it is achieving continuous improvement.

2.5. The performance improvement report

The performance improvement report encourages established enterprises to introduce best practice systems for H&S, quality management, and environmental management to improve their performance [6]. In terms of the cidb Best Practice Contractor Recognition System, the Board has identified the following as best practices for PC enterprises in Grades 5 to 9: a) certification by SANS ISO 9001 Quality Management System, SANS ISO 14001 Environmental Management Systems and SANS OHSAS 18001 H&S Management System, or b) certification by SANS 1393 Construction Management System [12]. Thus, there are H&S practices that aim to improve the status of H&S in terms of subcontracting. The study evaluates their effectiveness.

2.6. PC measures stemming from UK regulatory requirements

Practices based on legislation and regulations in the UK include the following:

- employing competent SCs;
- the risk assessment conducted by SCs and submitted for approval;
- PCs providing SCs with induction and training, and
- PCs arranging meetings with SCs to discuss H&S issues [6].

2.7. PC in-house measures

Some PCs have in-house H&S measures that address specific needs relating to their environments and areas addressed. These include the following:

- restricting layers(tiers) of SCs;
- using regular SCs;
- H&S reward scheme for SCs, and
- competency assessment being done before SCs commence work [6].

Agumba, Pretorius and Haupt suggest that continuous monitoring and reviewing of H&S management practices are required to improve poor H&S performance, and enhance overall legal compliance [9].
3. Research

3.1. Research method and sample stratum

The researcher selected a quantitative research method for the research study. A questionnaire was developed and distributed to contractors who were sampled using probability sampling. The researcher randomly selected one hundred and seventy-five (175) PCs, and two hundred and three (203) SCs for the whole exercise. Ninety-four (94) responses were received from PCs and eighty (80) from SCs, which equates to response rates of 53.7% and 39.4%, respectively, and an overall response rate of 46.0%. One hundred and seventy-four (174) responses were included in the data analysis. The target group selected to complete the surveys were construction managers, construction supervisors, and H&S officers or representatives. A computerised statistical programme ‘Microsoft Excel 2016’ was used to process and analyse the primary data collected through questionnaires. Closed-ended questions with five-point Likert scales, which included an ‘Unsure’ response option, were used. The analysis of the data entailed the computation of descriptive statistics in the form of frequencies, and a measure of central tendency in the form of a mean score (MS).

3.2. Research findings

65.9% of the PC respondents had worked for their current employer for > 1 year, 44.6% for > 5 years, and 24.4% for > 10 years. The mean length of time respondents had worked for their current employer was 6.4 years. Therefore, the respondents can be deemed to have had exposure to their organisations, which contributes to the reliability of the findings.

76.7% of the SC respondents had worked for their current employer > 1 year, 49.2% for > 5 years, and 22.9% > 10 years. The mean length of time respondents had worked for their current employer was 6.8 years. Therefore, the respondents can be deemed to have had exposure to their organisations, which contributes to the reliability of the findings.

88.3% of the PC respondents had worked in construction > 1 year, 74.5% for > 5 years and 44.7% > 10 years. The mean length of time respondents had worked in construction was 14.1 years. This implies that the respondents can be deemed experienced. This contributes to the reliability of the findings.

75% of the SC respondents had worked in construction > 1 year, 43.7% for > 5 years, and 27.5% > 10 years. The mean length of time the respondents had worked in construction was 9.5 years. This implies that the respondents can be deemed experienced, which contributes to the reliability of the findings.

50% of the PC respondents were ≤ 40 years of age, and 50% were > 40 years. Per definition relative to workers, people > 40 years of age are ‘older workers’. The mean age was 38.8 years. 18% of the PCs respondents were female, and 76% were male. In terms of qualifications, 38.2% of the PC respondents had qualifications higher than a National Diploma. Therefore, the respondents can be deemed experienced and educated, which contributes to the reliability of the findings.

51.3% of the SC respondents were ≤ 40 years of age, and 48.7% were > 40 years i.e. ‘older workers’. The mean age was 37.8 years. 17.7% of the SCs respondents were female, and 82.5% were male. In terms of qualifications, 27.2% of SC respondents had qualifications higher than a National Diploma. Therefore, the respondents can be deemed as experienced, but not as well educated as the PC respondents, which to a degree, contributes to the reliability of the findings.

Table 1 indicates the frequency at which the PC respondents’ organisations undertake seven H&S practices in terms of percentage responses to a scale of never to always, and a MS ranging from 1.00 to 5.00.

It is notable that all the MSs are above the midpoint score of 3.00, indicating that in general, the PC organisations can be deemed to undertake the H&S practices frequently, as opposed to infrequently. However, given that the MSs are all > 4.20 ≤ 5.00, the PC organisations can be deemed to undertake the H&S practices between often to always / always. It is notable that ‘All SC employees receive H&S induction training before commencing employment by the PC’ was ranked first, followed by ‘SCs
submit plans for all projects’, and ‘There is a budget for H&S at organisational level’ is ranked last. It is notable that although the latter was ranked last, the MS is 4.51.

**Table 1.** The frequency at which the PC organisations undertake seven H&S practices.

| H&S practice                                                      | Response (%) | MS  | Rank |
|------------------------------------------------------------------|--------------|-----|------|
| All SC employees receive H&S induction before commencing employment by us | Unsure 1.9 | 0.0 | 0.0 | 5.8 | 92.3 | 4.94 | 1 |
| SCs submit H&S plans for all projects                            | 3.8 0.0     | 0.0 | 3.8 | 3.8 | 88.5 | 4.88 | 2 |
| H&S performance is discussed with the SC employees by us          | 3.8 0.0     | 1.9 | 0.0 | 11.5 | 82.7 | 4.82 | 3 |
| Our H&S policy is discussed with all SC employees                | 1.9 0.0     | 3.8 | 1.9 | 9.6 | 82.0 | 4.75 | 4 |
| H&S is priced in the tender documentation during procurement by us| 5.8 0.0     | 3.8 | 3.8 | 9.6 | 76.9 | 4.69 | 5 |
| There is a budget for H&S at project level                       | 7.7 0.0     | 0.0 | 5.8 | 21.2 | 65.4 | 4.65 | 6 |
| There is a budget for H&S at the organisation level              | 5.8 0.0     | 3.8 | 7.7 | 19.2 | 63.5 | 4.51 | 7 |

Table 2 indicates the frequency at which the SC respondents’ organisations undertake seven H&S practices in terms of percentage responses to a scale of never to always, and a MS ranging from 1.00 to 5.00.

It is notable that all the MSs are above the midpoint score of 3.00, indicating that in general, the SC organisations can be deemed to undertake the H&S practices frequently, as opposed to infrequently. However, given that the MSs are all > 4.20 ≤ 5.00, the SC organisations can be deemed to undertake the H&S practices between often to always / always. Furthermore, it is notable that ‘All SC’s employees receive H&S induction training before commencing employment’ was ranked first, followed by ‘Daily H&S task instructions are communicated to all employees before they start with work’, and ‘The H&S policy is discussed with all employees’ was ranked last. It is notable that although the latter is ranked last, the MS is 4.58.

**Table 2.** The frequency at which the SC organisations undertake eight H&S practices.

| Factor H&S practice                                        | Response (%) | MS  | Rank |
|-----------------------------------------------------------|--------------|-----|------|
| All employees receive H&S induction before commencing employment | Unsure 1.9  | 0.0 | 0.0 | 0.0 | 99.1 | 5.00 | 1 |
| Daily H&S task instructions are communicated to all employees before they start with work | 0.0 0.0     | 0.0 | 3.8 | 96.2 | 4.96 | 2 |
| An H&S plan is prepared for all projects                    | 0.0 0.0     | 1.9 | 1.9 | 7.7 | 90.4 | 4.88 | 3 |
| H&S is priced in the tender documentation during procurement | 30.8 0.0    | 0.0 | 7.7 | 1.9 | 59.6 | 4.75 | 4 |
| There is a budget for H&S at project level                  | 28.8 0.0    | 0.0 | 5.8 | 11.5 | 53.8 | 4.68 | 5 |
| There is a budget for H&S at organisation level             | 26.9 0.0    | 0.0 | 7.7 | 9.6 | 55.8 | 4.66 | 6 |
| H&S performance is discussed with the employees              | 3.9 0.0     | 0.0 | 13.7 | 5.9 | 76.5 | 4.65 | 7 |
| The H&S policy is discussed with all employees              | 0.0 0.0     | 0.0 | 11.5 | 19.2 | 69.2 | 4.58 | 8 |
Table 3 indicates the frequency at which the PC respondents’ organisations undertake six contractual practices in terms of percentage responses to a scale of never to always and a MS ranging from 1.00 to 5.00.

It is notable that all the MSs are above the midpoint score of 3.00, indicating that in general, the PC organisations can be deemed to undertake the employment practices frequently, as opposed to infrequently. However, given that the MSs are all $> 4.20 \leq 5.00$, the PC organisations can be deemed to undertake employment practices between often to always / always. Furthermore, it is notable that ‘We verify if SC letters of good standing are valid’ is ranked 1st, followed by ‘We assess SCs H&S competencies before awarding contracts’ 2nd. Although ‘The SCs are appointed at the appropriate cidb grade level’ is ranked last, it is notable that the MS is 4.48.

Table 3. The frequency at which the PC organisations undertake six contractual practices.

| Contractual practice | Response (%) | MS | Rank |
|----------------------|--------------|----|------|
| We verify if SCs’ letters of good standing are valid | 0.0 | 0.0 | 1.9 | 0.0 | 7.7 | 90.4 | 4.87 | 1 |
| We assess SCs’ H&S competencies before awarding contracts | 1.9 | 0.0 | 0.0 | 7.7 | 3.8 | 86.5 | 4.80 | 2 |
| We undertake an H&S due diligence check on SCs before awarding a contract | 5.9 | 3.9 | 3.9 | 3.9 | 3.9 | 82.4 | 4.75 | 3 |
| There is a contract between the SCs and us | 3.8 | 0.0 | 3.8 | 5.8 | 11.5 | 75.0 | 4.64 | 4 |
| We appoint SCs registered with the cidb | 11.5 | 0.0 | 0.0 | 13.5 | 15.4 | 59.6 | 4.52 | 5 |
| The SCs are appointed at the appropriate cidb grade level | 11.5 | 1.9 | 3.8 | 9.6 | 7.7 | 65.4 | 4.48 | 6 |

Table 4 indicates the frequency at which the PC respondents’ organisations undertake five evaluation practices in terms of percentage responses to a scale of never to always, and a MS ranging from 1.00 to 5.00.

It is notable that all the MSs are above the midpoint score of 3.00, indicating that in general, the PC organisations can be deemed to undertake the evaluation practices frequently, as opposed to infrequently. However, given that the MSs are all $> 4.20 \leq 5.00$, the PC respondents can be deemed to undertake the practices between often to always / always. Furthermore, it is notable that ‘We assess SCs’ H&S competencies before awarding contracts’ is ranked 1st, followed by ‘There is a contract between the SCs and ourselves’ 2nd, and ‘We appoint SCs registered with the cidb’ is ranked last. It is notable that although the latter is ranked last, the MS is 4.27.

Table 4. The frequency at which the PC organisations undertake five evaluation practices.

| Practice | Response (%) | MS | Rank |
|----------|--------------|----|------|
| We assess SCs’ H&S competencies before awarding contracts | 0.0 | 0.0 | 0.0 | 2.0 | 3.9 | 94.1 | 4.92 | 1 |
| There is a contract between the SCs and us | 0.0 | 0.0 | 0.0 | 1.9 | 5.8 | 92.3 | 4.90 | 2 |
| We verify if SCs’ letters of good standing are valid | 15.4 | 1.9 | 3.8 | 1.9 | 5.8 | 71.2 | 4.66 | 3 |
| The SCs are appointed at the appropriate cidb grade level | 19.2 | 0.0 | 7.7 | 5.8 | 1.9 | 65.4 | 4.55 | 4 |
| We appoint SCs registered with the cidb | 13.5 | 0.0 | 7.7 | 13.5 | 13.5 | 51.9 | 4.27 | 5 |
Table 5 indicates the frequency at which the SC respondents’ organisations experience or undertake two practices in terms of percentage responses to a scale of never to always, and a MS ranging from 1.00 to 5.00.

It is notable that both the MSs are above the midpoint score of 3.00, which indicates that in general, the SC organisations can be deemed to experience or undertake the practices frequently, as opposed to infrequently. However, 1 / 2 (50.0%) of the MSs is > 4.20 ≤ 5.00, indicating the SC organisations can be deemed to experience the practice between often to always / always. Given that the MS for ‘We sub-contract’ is > 3.40 ≤ 4.20, the practice can be deemed to occur sometimes to often / often.

Table 5. The frequency at which the SC organisations experience or undertake two practices relative to concluding contracts.

| Practice                                      | Unsure | Never | Rarely | Some times | Often | Always | MS  | Rank |
|-----------------------------------------------|--------|-------|--------|------------|-------|--------|-----|------|
| PCs assess our H&S competencies before concluding contracts | 2.1    | 0.0   | 2.1    | 23.4       | 4.3   | 68.1   | 4.41| 1    |
| We sub-contract                               | 2.1    | 0.0   | 4.2    | 39.6       | 10.4  | 43.8   | 3.96| 2    |

4. Conclusions

The reliability of the results considered the mean length of time that PC and SC respondents had worked for their current employers, their mean experience in construction, and level of education. Based on the MSs obtained, both PC and SC respondents are deemed to have had exposure to their organisations, including being experienced. However, although 38.2% of the PC respondents had qualifications higher than a National Diploma, only 27.2% of SC respondents had the same.

Given that PC respondents’ organisations undertake seven H&S practices, namely ‘All SC employees receive H&S induction before commencing employment by us’, ‘SCs submit H&S plans for all projects’, ‘H&S performance is discussed with the SC employees by us’, ‘Our H&S policy is discussed with all SC employees’, ‘H&S is priced in the tender documentation during procurement by us’, and ‘There is a budget for H&S at project level’ frequently, as opposed to infrequently, it can be concluded that the PCs manage their SCs’ H&S effectively.

Given that SC respondents’ organisations undertake seven H&S practices, namely ‘All employees receive H&S induction before commencing employment’, ‘Daily H&S task instructions are communicated to all employees before they start with work’, ‘An H&S plan is prepared for all projects’, ‘H&S is priced in the tender documentation during procurement’, ‘There is a budget for H&S at organisation level’, ‘There is a budget for H&S at project level’, ‘H&S performance is discussed with the employees’, and ‘The H&S policy is discussed with all employees’ frequently, as opposed to infrequently, it can be concluded that PCs influence SCs’ H&S management commitment and practices, and that SCs are committed to H&S.

Given that PC respondents’ organisations undertake six H&S contractual practices, namely ‘We verify if SCs’ letters of good standing are valid’, ‘We assess SCs’ H&S competencies before awarding contracts’, ‘We undertake an H&S due diligence check on SCs before awarding a contract’, ‘The SCs are appointed at the appropriate cidb grade level’, ‘We appoint SCs registered with the cidb’, and ‘There is a contract between the SCs and us’ frequently, as opposed to infrequently, it can be concluded that PCs integrate H&S into their procurement systems, and that H&S is a criterion for awarding contracts to SCs.

Given that PC respondents’ organisations undertake five H&S evaluation practices namely ‘We assess SCs’ H&S competencies before awarding contracts’, ‘There is a contract between the SCs and us’, ‘We verify if SCs’ letters of good standing are valid’, ‘The SCs are appointed at the appropriate
cidb grade level’, and ‘We appoint SCs registered with the cidb’ frequently, as opposed to infrequently, it can be concluded that PCs integrate H&S into their procurement systems, and that H&S is a criterion for awarding contracts to SCs.

Given that SC respondents’ organisations experience / undertake two practices, namely ‘PCs assess our H&S competencies before concluding contracts’, and ‘We sub-subcontract’ frequently, as opposed to infrequently, it can be concluded that PCs integrate H&S into their procurement systems, that H&S is a criterion for awarding contracts to SCs, and multi-level subcontracting occurs.

5. Recommendations

Although the study revealed that poor H&S culture does not result in SCs not complying with H&S legislation and regulations, it is recommended that PCs continually implement H&S practices to improve H&S culture on projects. Furthermore, increased inspections by the DEL can assist with improving H&S compliance. PCs should implement only authorised subcontracting by adopting H&S contractual and evaluation practices when selecting SCs. It is recommended that further studies be conducted, so that a framework can be evolved to assist SCs with compliance with H&S legislation and regulations.

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