

# THE PERFORMANCE OF CONSTRUCTION HEALTH AND SAFETY OFFICERS

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## ABSTRACT

Full-time or part-time construction health and safety officers (CHSOs) are a requirement in terms of the South African Construction Regulations. Previous research findings and anecdotal evidence indicate that CHSOs are lacking in various competencies, are excluded from contributing to the management of health and safety (H&S) and sites, could be more effective, and require development. The objectives of the study were to determine the performance of CHSOs, barriers to the contribution of CHSOs to construction and construction H&S, and the potential of interventions to contribute to an improvement in CHSOs' contribution to and impact on construction and construction H&S. A descriptive survey method was adopted for gathering and processing data obtained through self-administered questionnaires. The sample stratum included a convenience sample of delegates attending a two-day construction H&S summit. The findings indicate that the contribution of CHSOs to H&S could be improved. Various factors constitute a barrier to CHSOs contributing to H&S. These include exclusion from decision-making, non-consultation by site management, lack of authority, and exclusion from managing sites, which constitutes marginalisation. This is underscored by the low ratings of CHSOs in their understanding and appreciation of various aspects, composite knowledge areas and skills, and the extent to which interventions could contribute to an improvement in the contribution of CHSOs to H&S and construction. Conclusions include that the function of CHSOs is important, and that the "CHSO" requirement in terms of the Construction Regulations is justified, that inadequate 'construction' knowledge and experience contributes to the exclusion of CHSOs from managing sites, and the actual barrier of CHSOs contributing to H&S, and that formal qualifications would empower CHSOs to contribute optimally to H&S and construction.

**Keywords:** construction, health and safety (H&S), health and safety officers, performance

## 1. INTRODUCTION

The *Construction health & safety in South Africa: Status & recommendations* industry report highlighted the significant number of accidents, fatalities, and other injuries that are prevalent in the South African construction industry (Construction Industry Development Board (cidb), 2009). The report attributed this to a lack of compliance with H&S legislative

requirements, and it stated that there is a lack of sufficiently skilled, experienced and knowledgeable persons to manage H&S on construction sites.

The South African Construction Regulations make provision for the appointment of either full-time or part-time CHSOs (Republic of South Africa, 2014). However, the cidb industry report *Construction health & safety in South Africa: Status & recommendations* highlighted the need for professional registration of construction H&S practitioners, due to, among other things, the finding that there was a lack of competencies and no formal registration process. The South African Council for the Project and Construction Management Professions (SACPCMP) was then mandated by the Council for the Built Environment (CBE) in terms of Act No. 48 (Republic of South Africa, 2000) to register construction H&S professionals. This, in turn, led to the identification of three such categories of registration, namely professional construction health and safety agent (PrCHSA), construction health and safety manager (CHSM), and CHSO. Registration rules were then gazetted for these three categories, for commencement on 1 June 2013 in the case of PrCHSA, and on 1 August 2013 in the case of CHSM and CHSO.

Given the findings in the cidb report *Construction health & safety in South Africa: Status & recommendations*, other ad-hoc research findings, anecdotal evidence, and exploratory research findings, a further study was conducted to determine, inter alia,

- The performance and contribution of CHSOs,
- The barriers to the contribution of CHSOs to construction and construction H&S, and
- The potential of interventions to contribute to an improvement in CHSOs' contribution to and impact on construction and construction H&S.

## **2. A REVIEW OF THE LITERATURE**

### **2.1 Legislation and regulations**

The amended Construction Regulations (Republic of South Africa, 2014) schedule several requirements with respect to CHSOs. Regulation 8, "Management and supervision of construction work", states that a contractor must, after consulting with the client and having considered various aspects, appoint a full-time or part-time CHSO in writing. However, the CHSO must be registered with a statutory body approved by the Chief Inspector, and must have the necessary competencies and resources to assist the contractor.

### **2.2 Knowledge and skills areas**

The SACPCMP requires a report upon application to register as a CHSO that addresses the following nine knowledge areas: procurement management; cost management; hazard identification management; risk management; accident or incident investigation management; legislation and regulations; health, hygiene and environmental management; communication management; and emergency preparedness management (SACPCMP, 2013a).

The CHSO Scope of Services, in turn, states that CHSOs are expected to be experienced and knowledgeable in the following areas: construction project-specific H&S management systems; construction H&S management; H&S performance measurement and monitoring; and continual improvement (SACPCMP, 2013b).

However, a study conducted by Smallwood and Haupt (2008) prior to the drafting of the registration rules for CHSOs investigated the importance of 79 knowledge areas and 50 skills to CHSOs. These were then consolidated into eight and seven composite knowledge areas and skills areas, respectively. Except for financial management, all the composite knowledge areas have mean scores (MSes) of  $> 3.00$ , which indicates that these knowledge areas are more than important, as opposed to having limited importance. However, it is notable that two of the eight (25%) composite knowledge areas, namely OH&S and project administration, have MSes of  $> 4.20 \leq 5.00$ , which indicates that they are between “more than important” and “very important”. Then, five of the eight (62.5%) composite knowledge areas (i.e. design, management/management of parameters, law, planning, and construction technology/technology) have MSes of  $> 3.40 \leq 4.20$ , which indicates that they are between “important” and “more than important”. The MS for financial management is  $> 2.60 \leq 3.40$ , which indicates that this knowledge area is between “less than important” and “important”. The implications of these findings are that CHSOs should be well rounded and well versed in knowledge, which is underscored by the fact that they fulfil a staff function, which means that they are required to be knowledgeable in the areas and provide advice and support. Furthermore, given the fact that a tertiary qualification does not exist for CHSOs, such well-rounded and well-versed CHSOs are not likely to exist. All the composite skills areas have MSes of  $> 3.00$ , which indicates that they are more than important, as opposed to of limited importance, although marginally so in the case of “negotiating”. It is notable that four of the seven (57.1%) composite skills areas (i.e. leadership, general management, negotiating, and interpersonal/developmental) have MSes of  $> 4.20 \leq 5.00$ , which indicates that these skills areas are between “more than important” and “very important”. Then, two of the seven (28.6%) composite skills areas (i.e. planning and technical) have MSes of  $> 3.40 \leq 4.20$ , which indicates that these skills areas are between “important” and “more than important”. The MS for the “financial” skills area is  $> 2.60 \leq 3.40$ , which indicates that this skills area is between “less than important” and “important”. The implications of these findings are that CHSOs should be well skilled in leadership, management, and technical matters, such as planning and construction technology, even though they fulfil a staff function. This is underscored by the fact that CHSOs must interface with a range of built environment practitioners, especially construction managers.

A previous exploratory study conducted by Smallwood (2011) investigated a range of issues pertaining to CHSOs. CHSOs were deemed to have between a “near limited” and an “average” understanding and appreciation of construction H&S, construction activities, construction management, and the construction process. Except for H&S and project administration, CHSOs were rated “poor” as opposed to “good” in the eight composite knowledge areas as discussed above. Similarly, except for interpersonal/developmental skills, CHSOs were rated “poor” as opposed to “good” in the seven composite skills areas as discussed above.

### **2.3 The contribution of CHSOs to H&S**

The previous exploratory study conducted by Smallwood (2011) determined that CHSOs had contributed to and impacted on H&S. However, the contribution and impact was deemed to be between a moderate extent and a near major extent. However, the findings

indicate that the contribution of CHSOs to H&S could be improved to between a near major extent and a major extent.

The top four factors that constituted a barrier to CHSOs contributing to H&S related to exclusion of CHSOs from managing the site, including exclusion from decision-making, lack of authority, and non-consultation by site management. However, inadequate knowledge of the construction process and activities, construction management, construction H&S, and related experience also constituted a barrier and were deemed to contribute to the exclusion of CHSOs from managing sites, and the actual barrier of CHSOs contributing to H&S. This conclusion is underscored by the rating of CHSOs in their understanding and appreciation of various aspects, composite knowledge areas and skills, and the extent to which interventions could contribute to an improvement in the contribution of CHSOs to H&S and construction.

### 3. RESEARCH

#### 3.1 Research method

The descriptive survey method was adopted to gather the data obtained through a self-administered questionnaire circulated to delegates attending a two-day construction H&S summit in Durban, South Africa. The questionnaire consisted of 24 questions, 23 of which were closed-ended, and one of which was open-ended. Nine of the 23 closed-ended questions were five- or six-point Likert scale-type questions. Thirty-six questionnaires were included in the analysis of the data. A measure of central tendency in the form of a mean score (MS) was computed to enable ranking and comparisons. The weightings relative to the five-point scale were as per the scale, i.e. 1 on the scale had a weighting of 1, 2 on the scale had a weighting of 2, etc., resulting in such questions having MSes of between 1.00 and 5.00. Certain questions required a sixth point or seven point, due to inclusion of either a “have not”, an “unsure”, a “does not” or a “will not” option, which was weighted 0, resulting in such questions having MSes of between 0.00 and 5.00.

#### 3.2 Research findings

Table 1 presents the findings with regard to the qualifications that respondents opine CHSOs possess. The percentages represent the approximate percentage of CHSOs that are perceived to have a certain qualification.

**Table 1: The qualifications of CHSOs**

Response (%)						
Unsure	Grade 12	N Dip.	BTech	BSc	BSc (Hons)	Other
11.0	50.0	38.9	11.0	2.0	0.0	41.7

The respondents that identified the “other” category recorded the qualifications of HIRA, IRCON, and SAMTRAC. The findings highlight the low level of formal qualifications that CHSOs possess, and it can therefore be assumed that CHSOs are unlikely to possess the requisite knowledge and skills.

Fifty-two percent of CHSOs are employed on a permanent basis, and 48% are employed on a contract basis. Fifty percent of CHSOs are deployed on projects on a “part-time” basis,

and 41.3% are deployed on a “full-time” basis. Of the respondents, 57.1% indicated that other functions fulfil the role of CHSO, and 42.9% responded that other functions do not fulfil the role of CHSO. This finding relates to the basis on which CHSOs are employed.

Of the respondents, 85.7% indicated that CHSOs fulfil other functions, and 14.3% responded that CHSOs do not fulfil other functions. Infrastructure projects predominated in terms of the type of projects respondents provided H&S consultancy services for in 2015 (see Table 2).

**Table 2: Type of construction projects respondents provided H&S consultancy services for in 2015**

Type	Response (%)
Commercial	14.6
Industrial	13.1
Infrastructure	53.5
Residential	6.3
Other	11.6

Table 3 indicates that CHSOs report predominantly to site managers or site agents, or both. The “other” category included a variety of multiple management combinations. Clearly, there is a degree of dual and multiple reporting.

**Table 3: Functions to whom CHSOs report**

Response (%)					
Site manager	Site agent	General foreman	Site manager and site agent	Other	Unsure
30.6	33.3	0.0	11.1	22.4	2.8

Table 4 indicates the extent to which CHSOs have contributed to and impacted on H&S, on a scale of “have not” to minor (1) to major (5), where MSes range from 0.00 to 5.00. Given that the MSes for both questions are  $> 2.50$ , CHSOs can be deemed to have contributed to and impacted on H&S. However, given that the MSes are  $> 2.50 \leq 3.33$ , the contribution and impact can be deemed to be between a near minor extent and a moderate extent. However, both MSes are near the upper end of the range.

**Table 4: The extent to which CHSOs have contributed to and impacted on H&S**

Aspect	Response (%)							MS
	Unsure	Have not	Minor .....Major					
			1	2	3	4	5	
Contributed?	0.0	0.0	5.6	2.8	61.1	19.4	11.1	3.28
Impacted on?	0.0	0.0	5.7	14.3	34.3	34.3	11.4	3.31

Table 5 indicates the extent to which factors constitute a barrier to CHSOs contributing to H&S, on a scale of “does not” to minor (1) to major (5), where MSes range from 0.00 to 5.00. Given that all the MSes are > 2.50, all the factors generally can be deemed to constitute a barrier to CHSOs contributing to H&S. However, a review of the MSes with regard to their range enables a more scientific review. The fact that the MSes are  $3.33 \leq 4.17$  indicates that the factors can be deemed to constitute a barrier to CHSOs contributing to H&S, to between a moderate extent and a near major extent. The factors ranked first to twelfth are included in this range. It is notable that the top four factors included in this range relate to exclusion of CHSOs from managing the site, namely exclusion from decision-making, non-consultation by site management, lack of authority, and exclusion from managing the site. Four of the factors ranked fifth to twelfth relate to inadequate experience, and four relate to inadequate knowledge. Status level has an MS of  $2.50 \leq 3.33$ , which indicates that the contribution and impact can be deemed to be between a near minor extent and a moderate extent.

**Table 5: The extent to which factors constitute a barrier to CHSOs contributing to H&S**

Factors	Response (%)							MS	Rank
	Un- sure	Does not	Minor .....Major						
			1	2	3	4	5		
Exclusion from decision-making	0.0	0.0	0.0	8.3	8.3	41.7	41.7	4.17	1
Non-consultation by site management	0.0	0.0	2.9	2.9	14.3	45.7	34.3	4.06	2
Lack of authority	0.0	0.0	0.0	2.8	27.8	30.6	38.9	4.06	3
Exclusion from managing the site	0.0	0.0	0.0	11.1	22.2	33.3	33.3	3.89	4
Inadequate construction process experience	0.0	2.9	0.0	5.7	14.3	51.4	25.7	3.89	5
Inadequate construction management knowledge	0.0	0.0	0.0	8.6	28.6	40.0	22.9	3.77	6
Inadequate construction activities experience	0.0	0.0	2.8	11.1	22.2	36.1	27.8	3.75	7
Inadequate construction management experience	0.0	0.0	0.0	8.6	31.4	37.1	22.9	3.74	8
Inadequate knowledge of the construction process	0.0	5.6	0.0	11.1	13.9	38.9	30.6	3.72	9
Inadequate knowledge of construction activities	0.0	0.0	2.9	8.6	25.7	42.9	20.0	3.69	10
Inadequate construction H&S experience	0.0	0.0	2.9	20.0	20.0	31.4	25.7	3.57	11
Inadequate construction H&S knowledge	0.0	0.0	5.6	13.9	27.8	30.6	22.2	3.50	12



	sure	1	2	3	4	5		
OH&S	0.0	0.0	16.7	22.2	50.0	11.1	3.56	1
Law	0.0	19.4	25.0	30.6	22.2	2.8	2.64	2
Project administration	0.0	25.0	33.3	27.8	11.1	2.8	2.33	3
Construction technology/technology	0.0	17.1	45.7	25.7	11.4	0.0	2.31	4
Planning	2.8	13.9	52.8	22.2	2.8	5.6	2.31	5
Management/management of parameters	2.8	22.2	36.1	30.6	5.6	2.8	2.29	6
Financial management	2.8	36.1	50.0	5.6	5.6	0.0	1.80	7
Design	2.8	50.0	33.3	5.6	8.3	0.0	1.71	8

Table 8 indicates the rating of CHSOs in eight composite skills areas, on a scale of 1 (very poor) to 5 (excellent), where MSes range from 1.00 to 5.00. All the MSes are  $\leq 3.00$ , and CHSOs' skills can thus generally be deemed to be poor as opposed to good. However, the range of the MSes provides further insight. MSes of  $> 2.60 \leq 3.40$  (namely that for interpersonal/developmental) indicate that the rating can be deemed to be between poor and average. MSes of  $> 1.80 \leq 2.60$  (namely those for general management, negotiating, leadership, planning, technical, and financial) indicate that the rating can be deemed to be between very poor and poor. Interpersonal/developmental skills are important, as oral communication is the most important operational management skill. Developmental skills are important for improving site staff's H&S knowledge and skills. General management skills in the form of planning, organising, leading, controlling, and coordinating are necessary to realise a healthy and safe workplace. Leadership skills are necessary to ensure that CHSOs are "followed", and that they can have commitment from site staff. Negotiating skills are important in that often site staff must be convinced to consider and address H&S in relation to all activities and actions. Financial skills are necessary as CHSOs work with budgets and allowables related to activities. Planning is critical for H&S, as the requisite resources, in the form of personal protective equipment (PPE), materials, plants, and equipment, must be available when related activities commence, and technical skills, such as plan reading, are necessary for conducting hazard identification and risk assessment.

The low ratings in the composite skills areas underscore the low ratings in the composite knowledge areas and CHSOs' understanding and appreciation of various aspects, and the extent to which factors constitute a barrier to CHSOs contributing to H&S.

**Table 8: The rating of CHSOs in composite skills areas**

Composite skills area	Response (%)						MS	Rank
	Un-sure	Very poor.....Excellent						
	1	2	3	4	5			
Interpersonal/developmental	5.6	11.1	19.4	50.0	8.3	5.6	2.76	1
General management	2.8	13.9	38.9	30.6	11.1	2.8	2.49	2
Negotiating	2.8	11.1	38.9	38.9	8.3	0.0	2.46	3
Leadership	2.8	16.7	36.1	33.3	8.3	2.8	2.43	4
Planning	5.6	13.9	44.4	27.8	5.6	2.8	2.35	5
Technical	0.0	28.6	39.3	25.0	7.1	0.0	2.11	6
Financial	5.6	25.0	47.2	16.7	5.6	0.0	2.03	7

Respondents were required to indicate the extent to which the contribution of CHSOs to H&S could be improved, on a scale of 1 (minor) to 5 (major), where MSes range from 1.00



to 5.00 (see Table 9). Given that the MS of 4.11 for education/training related to construction activities is  $> 3.40 \leq 4.20$ , the extent can be deemed to be between moderate and near major. However, it is notable that the MS is near the upper end of the range.

Table 9 indicates the extent to which interventions could contribute to an improvement in the contribution of CHSOs to H&S, on a scale of “will not” to minor (1) to major (5), where MSes range from 0.00 to 5.00. Given that all the MSes are  $> 2.50$ , all the interventions can be deemed to have the potential to contribute to an improvement in the contribution of CHSOs to H&S, to a major extent as opposed to a minor extent. However, four of the eleven (36.4%) MSes (namely those for increased consultation by site management, inclusion in planning activities, education/training related to construction H&S, and education/training related to the construction process) are  $> 4.17 \leq 5.00$ , which indicates that the interventions can be deemed to have the potential to contribute between a near major extent and a major extent to an improvement in the contribution of CHSOs to H&S. Seven of the eleven (63.6%) MSes are  $> 3.33 \leq 4.17$ , which indicates that the interventions can be deemed to have the potential to contribute between a moderate extent to a near major extent to an improvement in the contribution of CHSOs to H&S. It should be noted that the MSes for these interventions (namely formal CHSO qualification, education/training related to construction activities, inclusion in managing the site, education/training related to construction management, inclusion in decision-making, increased authority, and optimal position in the site hierarchy) fall within the upper half of the range. Many of the barriers to CHSOs contributing to H&S (see Table 5) confirm the belief that education/training related to construction H&S, the construction process, construction activities and construction management is a prerequisite for inclusion in managing the site, increased consultation by site management, which was ranked first, inclusion in decision-making and planning activities, increased authority, and optimal position in the site hierarchy.

**Table 9: The extent to which interventions could contribute to an improvement in the contribution of CHSOs to H&S**

Intervention	Response (%)							MS	Rank
	Un- sure	Will not	Minor .....Major						
			1	2	3	4	5		
Increased consultation by site management	0.0	0.0	0.0	0.0	13.9	38.9	47.2	4.33	1
Inclusion in planning activities	0.0	0.0	0.0	2.8	8.3	47.2	38.9	4.26	2
Education/training related to construction H&S	0.0	0.0	0.0	2.8	16.7	33.3	47.2	4.25	3
Education/training related to the construction process	0.0	0.0	0.0	11.1	5.6	33.3	50.0	4.22	4
Formal CHSO qualification	2.9	2.9	0.0	2.9	14.3	45.7	37.1	4.17	5
Education/training related to construction activities	0.0	0.0	0.0	11.1	8.3	38.9	41.7	4.11	6
Inclusion in managing the site	0.0	0.0	0.0	2.8	25.0	30.6	38.9	4.09	7
Education/training related to construction management	0.0	0.0	0.0	11.1	16.7	30.6	41.7	4.03	8
Inclusion in decision-making	0.0	0.0	2.8	5.6	22.2	36.1	33.3	3.92	9
Increased authority	0.0	0.0	0.0	2.8	36.1	33.3	27.8	3.86	10
Optimal position in the site hierarchy	0.0	0.0	0.0	2.8	38.9	41.7	16.7	3.72	11

#### **4. CONCLUSIONS**

Approximately 50% of CHSOs are employed on a permanent basis and a contract basis, approximately 50% are appointed on a part-time basis, and about 41% are appointed on a full-time basis. It can therefore be concluded that employment of CHSOs follows the pattern of general employment in construction. The basis of appointment indicates that the nature of the appointment relates to the nature, the value, and the complexity of projects. Approximately 57% of respondents stated that other functions fulfil the role of CHSO, and about 86% indicated that CHSOs fulfil other functions. Therefore, it can be concluded that contractors endeavour to save costs through multiple-function appointments. Approximately 31% of the respondents indicated that CHSOs report to the site manager, one third of them indicated that CHSOs report to the site agent, about 11% indicated that CHSOs report to both the site manager and the site agent, and about 22% indicated that CHSOs report to a variety of management combinations. The conclusion drawn from this is that there is a degree of single, dual and multiple reporting. At the very least, CHSOs interact with the general management and the production management of the site.

CHSOs can be deemed to have contributed to and impacted on H&S to between a near minor extent and a moderate extent. However, given that the MSes are close to the lower end of the next MS range, namely a moderate extent to a near major extent, it can be concluded that the function is important, and that the “CHSO” requirement in terms of the Construction Regulations is justified. However, the findings indicate that the contribution of CHSOs to H&S could be improved to between a moderate extent and a near major extent. Furthermore, CHSO’s contribution to and impact on H&S is likely to have been marginalised by their low level of qualifications, their inadequate knowledge and experience, the functions they report to, the basis of their employment, and other functions that they fulfil.

A range of factors constitute a barrier to CHSOs contributing to H&S. The top four, namely exclusion from decision-making, non-consultation by site management, lack of authority, and exclusion from managing the site, constitute marginalisation. However, four of the other factors are related to inadequate experience, and a further four are related to inadequate knowledge. Therefore, it can be concluded that inadequate ‘construction’ knowledge and experience contributes to the exclusion of CHSOs from managing sites, and the actual barrier to CHSOs contributing to H&S. This conclusion is underscored by the rating of CHSOs in their understanding and appreciation of various aspects, composite knowledge areas and skills, and the extent to which interventions could contribute to an improvement in the contribution of CHSOs to H&S and construction.

#### **5. RECOMMENDATIONS**

The findings of this study lead to the conclusion that formal qualifications would empower CHSOs to contribute optimally to H&S and construction. Minimum qualifications could include a National Diploma: Building, followed by a BTech: Construction Management (Health and Safety), as developed by the Cape Peninsula University of Technology.

However, given the current reality, continuing professional development (CPD) is necessary. This should be provided by the SACPCMP for all the knowledge and skills areas. In addition, employers should provide in-house courses for all the knowledge and skills areas, particularly planning and construction technology.

CHSOs should report to the site manager, and H&S discussions between contract managers and site managers should involve CHSOs.

CHSOs should be an integral part of site management in the following: contributing to project planning, by providing the H&S needs for activities, including hazard identification and risk assessment; attendance of project progress meetings; principal contractor-subcontractor meetings; principal contractor-financial management meetings; and detailed H&S reporting, including the provision of statistics, deviation and incident reports, the cost of accidents, and the cost of H&S.

## 6. ACKNOWLEDGEMENT

This article was language-edited by a freelance language editor, Anthony Sparg. He has edited several academic journal articles and master's theses in the field of construction management. He has an MA *cum laude* in African Languages (isiXhosa), an MA *cum laude* in Linguistics, and a Higher Diploma in Education.

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