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Construction Health and Safety (H&S) Practitioners' Developmental Needs

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Abstract. A South African industry H&S status report reported a deficiency in terms of effective management and supervision of H&S on construction sites, and referred to the lack of sufficiently skilled, experienced, and knowledgeable persons to manage H&S on construction sites. The study reported on constitutes a further phase in terms of assessment of the status quo of construction H&S practitioners' performance and developmental needs. A self-administered survey was conducted among members of the Association of Construction Health and Safety Management (ACHASM), and ACHASM continuing professional development (CPD) events' delegates. The salient findings include: respondents' source of H&S knowledge is predominantly informal, and CPD would contribute to an improvement in respondents' knowledge and skills relative to nine SACPCMP knowledge areas, five SACPCMP scope of services' areas, eight composite knowledge areas, and seven composite skills areas. Conclusions include: there is potential for construction H&S practitioners to enhance their knowledge and skills; CPD is necessary and should be provided relative to all the knowledge and skills areas, and undergraduate and honours level construction H&S qualifications are necessary to remedy the situation.

Keywords: Construction, Development, Health and Safety, Practitioners.

1 Introduction

The Construction Industry Development Board (cidb) [1] industry report 'Construction Health & Safety Status & Recommendations' attributes the lack of compliance with H&S legislative requirements to, inter alia, a deficiency of effective management and supervision of H&S on construction sites , and refers to the lack of sufficiently skilled, experienced, and knowledgeable persons to manage H&S on construction sites.

The Council for the Built Environment (CBE) mandated the South African Council for the Project and Construction Management Professions (SACPCMP) in terms of Act No.48 [2] to register construction H&S professionals following the cidb's report which highlighted the need for professional registration of construction H&S practitioners due to, inter alia, the finding that there was a lack of competencies, and no formal registration process. This in turn led to the identification of three such categories of registration, namely Professional Construction Health and Safety Agent (Pr CHSA), Construction Health and Safety Manager (CHSM), and Construction Health and Safety

Officer (CHSO). Registration rules were then gazetted for these three categories for commencement 1 June 2013 in the case of Pr CHSA, and 1 August 2013 in the case of CHSM and CHSO.

The Construction Regulations make provision for the appointment of CHSAs, and also require the appointment of either part-time or full-time CHSOs [3].

Given the findings in the cidb report, and subsequent research findings, a study was conducted to determine, inter alia, the extent to which CPD would contribute to an enhancement of ACHASM members', and ACHASM CPD events' delegates' knowledge and skills relative to various knowledge and skills areas.

2 Review of the Literature

The SACPCMP requires a report upon application to register as a CHSA, CHSMs, and CHSOs 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[4].

The CHSA Scope of Services in turn states that CHSAs, CHSMs, and CHSOs are expected to be experienced and knowledgeable relative to the following areas: construction project H&S management systems; construction H&S management; construction H&S performance measurement and monitoring, and construction H&S continual improvement [5; 6; 7].

A study conducted among members of the Association of Construction Project Managers (ACPM) by Smallwood [8] investigated, inter alia, the performance of CHSAs. A further related study was conducted among delegates attending a two-day construction H&S summit in Durban, South Africa by Smallwood and Deacon [9] to investigate, inter alia, the performance of CHSOs. Table 1 indicates that in terms of composite knowledge areas, members of the ACPM rated CHSAs above average relative to only 3 / 8 (37.5%) areas. The summit delegates also rated CHSOs above average relative to only 3 / 8 (37.5%) areas. Table 2 indicates that in terms of composite skills areas, members of the ACPM rated CHSAs above average relative to only 3 / 7 (42.9%) areas. The summit delegates rated CHSOs above average relative to 5 / 7 (71.4%) areas.

Table 1. Rating of CHSAs and CHSOs in terms of composite knowledge areas.

Composite knowledge area	CHSAs		CHSOs	
	MS	Rank	MS	Rank
Project administration	3.14	3	2.78	5
Financial management	2.43	7	2.35	7
Design	2.29	8	2.13	8
Law	3.14	2	3.09	3
Construction technology / Technology	2.93	4	2.77	6

Health & Safety	3.71	1	3.96	1
Planning	2.71	5	3.17	2
Management / Management of parameters	2.64	6	3.00	4

Table 2. Rating of CHSAs and CHSOs in terms of composite skills areas.

Composite skills area	CHSAs		CHSOs	
	MS	Rank	MS	Rank
Interpersonal / Developmental	3.36	1	3.26	5
General management	3.21	2	3.26	4
Financial	2.29	7	2.78	6
Leadership	2.93	4	3.43	2
Negotiating	2.92	5	3.43	1
Planning	2.64	6	3.32	3
Technical	3.07	3	2.76	7
Interpersonal / Developmental	3.36	1	3.26	5

3 Results

3.1 Research method and sample strata

The survey entailed the administration of an eighteen-question questionnaire, which included seventeed closed questions and one open question. The first nine of the closed questions were demographic in nature, and a further seven were five-point Likert Scale type questions.

87 No. Responses were included in the analysis of the data: 21 ACHASM members responded to an electronic questionnaire survey. 32 Delegates responded to a questionnaire survey administered at an ACHASM one-day Symposium, and 34 delegates responded to a questionnaire survey administered at an ACHASM two-day Summit.

The analysis of the data entailed the computation of frequencies and a measure of central tendency in the form of a mean score (MS) to enable ranking and comparisons.

3.2 Results

In terms of occupations, 32.1% of respondents were CHSMs, 16.0% were CHSOs, 13.6% were Safety, Health, Environment, and Quality (SHEQ) consultants, 8.6% were Site H&S Advisors and 29.3% constituted ‘other’. Only 1.2% were Candidate CHSAs, and 4.9% Pr CHSAs.

In terms of qualifications, 24.7% of respondents possessed a NDip, 17.3% a BTech, 11.1% M / MSc, 4.9% B / BSc, 2.5% B / BSc (Hon), 1.2% PhD, and 38.3% other.

93 Table 3 indicates that experience (81.6%) predominates in terms of respondents' source of
94 H&S knowledge, followed by workshops (62.1%), CPD seminars (58.6%), and tertiary education
95 (55.2%). The percentage responses relative to the other six sources are less than 50.0%. The
96 percentage relative to tertiary education is notable.

97 **Table 3.** Respondents' qualifications.

Source	%
Experience	81.6
Workshops	62.1
CPD seminars	58.6
Tertiary education	55.2
Magazine articles	28.7
Post graduate qualifications	26.4
Conference papers	25.3
Practice notes	21.8
Journal papers	16.1
Other	13.8

98 Respondents have worked 13.30 years on average in construction, 9.90 years as a
99 construction H&S practitioner, and 7.99 years for their current employer.
100 Table 5 indicates the extent to which CPD would contribute to an improvement in
101 respondents' knowledge and skills relative to nine SACPCMP knowledge areas on a
102 scale of 1 (minor) to 5 (major), and a MS ranging between 1.00 and 5.00. Given that all
103 the MSs are > 3.00, it can be deemed that CPD would contribute to an improvement in
104 such knowledge and skills to a major as opposed to a minor extent. There is a difference
105 of 0.49 between first ranked legislation and regulations and ninth ranked
106 communication management.
107 However, MS ranges provide more insight. It is notable that no MSs are $> 4.20 \leq$
108 5.00 – CPD would contribute to an improvement in such knowledge and skills between
109 a near major to major / major extent.
110 All nine MSs are $> 3.40 \leq 4.20$, which indicates CPD would contribute to an
111 improvement in such knowledge and skills between some extent to a near major / near
112 major extent – legislation and regulations (4.02) are ranked first, which is 0.01 higher
113 than second ranked risk management, which is followed by hazard identification
114 management (3.90), and health, hygiene and environmental management (3.90).
115 Table 6 indicates the extent to which CPD would contribute to an improvement in
116 respondents' knowledge and skills relative to five SACPCMP scope of services' areas
117 on a scale of 1 (minor) to 5 (major), and a MS ranging between 1.00 and 5.00. Given
118 that all the MSs are > 3.00, it can be deemed that CPD would contribute to an
119 improvement in such knowledge and skills to a major as opposed to a minor extent.

120 **Table 5.** Extent to which CPD would contribute to an enhancement of respondents' knowledge
121 and skills relative to nine SACPCMP knowledge areas.

SACPCMP knowledge area	Response (%)						MS	Rank
	Un-sure	Minor ……Major 1	2	3	4	5		
Legislation and Regulations	0.0	1.2	7.3	18.3	34.1	39.0	4.02	1
Risk Management	1.2	0.0	11.0	18.3	28.0	41.5	4.01	2
Hazard Identification Management	1.3	2.5	12.5	16.3	28.8	38.8	3.90	3
Health, Hygiene and Environmental Management	1.3	2.6	9.0	19.2	33.3	34.6	3.90	4
Cost Management	3.8	6.3	5.0	20.0	43.8	21.3	3.71	5
Emergency Preparedness Management	1.3	5.0	12.5	21.3	31.3	28.8	3.67	6
Procurement Management	4.9	3.7	11.0	26.8	30.5	23.2	3.62	7
Accident or Incident Investigation Management	1.2	2.4	17.1	22.0	32.9	24.4	3.60	8
Communication Management	2.5	7.6	12.7	24.1	26.6	26.6	3.53	9

122 It is notable that no MSs are $> 4.20 \leq 5.00$ – CPD would contribute to an
123 improvement in such knowledge and skills between a near major to major / major
124 extent. All five MSs are $> 3.40 \leq 4.20$, which indicates CPD would contribute to an
125 improvement in such knowledge and skills between some extent to a near major / near
126 major extent. It is also notable that there is only a difference in MS of 0.10 between
127 first ranked construction H&S continual improvement, and fifth ranked construction
128 H&S performance measurement and monitoring.

129 **Table 6.** Extent to which CPD would contribute to an enhancement of respondents' knowledge
130 and skills relative to five SACPCMP scope of services' areas.

Scope of services' area	Response (%)						MS	Rank
	Un-sure	Minor ……Major 1	2	3	4	5		
Construction H&S continual improvement	0.0	3.7	4.9	21.0	38.3	32.1	3.90	1
Construction project H&S management systems	3.7	3.7	6.1	17.1	40.2	29.3	3.89	2
Construction H&S management	2.4	1.2	12.2	20.7	30.5	32.9	3.84	3
Construction H&S	1.3	3.8	8.8	18.8	36.3	31.3	3.84	4
Construction H&S performance measurement and monitoring	1.2	3.7	8.5	20.7	36.6	29.3	3.80	5

Table 7 indicates the extent to which CPD would contribute to an enhancement of respondents' knowledge relative to eight composite knowledge areas on a scale of 1 (minor) to 5 (major), and a MS ranging between 1.00 and 5.00. Given that all the MSs are > 3.00, it can be deemed that CPD would contribute to an enhancement of such knowledge to a major as opposed to a minor extent. It is notable that there is a difference of 0.30 between first ranked OH&S and eighth ranked Construction technology / Technology.

All eight MSs are > 3.40 ≤ 4.20, which indicates CPD would contribute to an enhancement in such knowledge between some extent to a near major / near major extent. OH&S ranked first, is followed by law, management / management of parameters, design, financial management, planning, project administration, and construction technology / technology.

Table 7. Extent to which CPD would contribute to an enhancement of respondents' knowledge relative to eight composite knowledge areas.

Composite knowledge area	Response (%)						MS	Rank
	Un-sure	Minor ……Major 1	2	3	4	5		
OH&S	1.2	3.7	12.2	13.4	40.2	29.3	3.80	1
Law	2.4	6.1	7.3	24.4	31.7	28.0	3.70	2
Management / Management of parameters	11.0	3.7	12.2	20.7	31.7	20.7	3.60	3
Design	8.6	7.4	7.4	23.5	32.1	21.0	3.57	4
Financial management	8.5	6.1	6.1	26.8	36.6	15.9	3.55	5
Planning	3.8	6.3	10.1	29.1	25.3	25.3	3.55	6
Project administration	3.7	6.2	9.9	25.9	35.8	18.5	3.53	7
Construction technology / Technology	7.3	9.8	4.9	28.0	29.3	20.7	3.50	8

Table 8 indicates the extent to which CPD would contribute to an enhancement of respondents' skills relative to seven composite skills areas on a scale of 1 (minor) to 5 (major), and a MS ranging between 1.00 and 5.00. Given that all the MSs are > 3.00, it can be deemed that CPD would contribute to an enhancement of such skills to a major as opposed to a minor extent. It is notable that there is a difference of 0.33 between first ranked technical and seventh financial construction technology / technology.

5 / 7 (71.4%) MSs are > 3.40 ≤ 4.20, which indicates CPD would contribute to an enhancement of the skills between some extent to a near major / near major extent. Technical ranked first, is followed by leadership, interpersonal / developmental, planning, and negotiating. General management, and financial (28.6%) have MSs > 2.60 ≤ 3.40, which indicates CPD would contribute to an enhancement of the skills between a hear minor to some extent / some extent.

Table 8. Extent to which CPD would contribute to an enhancement of respondents' knowledge relative to seven composite skills areas.

Composite skills area	Response (%)	MS	Rank

	Un-sure	Minor ……Major 1	2	3	4	5		
Technical	3.6	7.2	3.6	21.7	42.2	21.7	3.70	1
Leadership	2.4	3.6	15.7	24.1	26.5	27.7	3.60	2
Interpersonal / Developmental	4.9	4.9	14.6	22.0	29.3	24.4	3.56	3
Planning	1.2	6.0	10.7	26.2	36.9	19.0	3.53	4
Negotiating	2.4	2.4	19.0	22.6	33.3	20.2	3.51	5
General management	3.6	4.8	14.5	33.7	26.5	16.9	3.38	6
Financial	4.8	4.8	14.5	28.9	34.9	12.0	3.37	7

4 Discussion

Respondents' source of H&S knowledge is predominantly informal, which aligns with findings of previous studies.

The literature indicates that in terms of composite knowledge areas, both CHSAs, and CHSOs are rated above average relative to only 3 / 8 (37.5%) areas. In terms of composite skills areas, CHSAs are rated above average relative to only 3 / 7 (42.9%) areas, and CHSOs above average relative to 5 / 7 (71.4%) areas. No prior studies have been conducted relative to CHSMs.

CPD would contribute to an improvement in respondents' knowledge and skills relative to nine SACPCMP knowledge areas and five SACPCMP scope of services' areas to a major, as opposed to a minor extent. CPD would also contribute to an enhancement of respondents' knowledge relative to eight composite knowledge areas and seven composite skills areas to a major, as opposed to a minor extent, which findings correlate with the findings of literature in that ratings relative thereto indicate potential for improvement.

5 Conclusions

There is potential for construction H&S practitioners to enhance their knowledge and skills. The extent of the potential is likely to be attributable to the extent of tertiary education, and that the predominating source of H&S knowledge is informal.

CPD is necessary and should be provided by the SACPCMP and ACHASM relative to all the knowledge and skills areas, and especially the non-H&S knowledge and skills areas. Furthermore, contractors should provide in house courses relative to all the knowledge and skills areas, especially the non-H&S knowledge and skills areas such as planning and construction technology. Other necessary interventions include the development of practice notes and guidelines by the SACPCMP and ACHASM.

Finally, undergraduate and honours level construction H&S qualifications are necessary to remedy the situation in a sustainable manner. It should be noted that the re-curriculation of South African tertiary education has resulted in the development of such courses.

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