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for tomorrow

**FEEDBACK REPORT ON A STUDY
'OPTIMISING THE ELEMENTS OF A CONSTRUCTION
HEALTH AND SAFETY (H&S) PROGRAMME AND AUDIT SYSTEM'**

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DEDICATION

The report is dedicated to the improvement of H&S in the South African construction industry.

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ORIGIN OF THE REPORT

The Master Builders South Africa (MBSA) are reviewing the elements of their national H&S Audit System, and Neil Enslin, OHS Specialist, Kwazulu-Natal Master Builders Association (KZNMBA), approached the writer to assist with respect to the review in terms of research to identify where the focus of such an H&S Audit System should be.

SCOPE OF THE REPORT

This report has been compiled to provide feedback to the MBSA based upon a study conducted to identify where the focus of such an H&S Audit System should be.

EXECUTIVE SUMMARY

Cost, quality, and time are marginally more important than H&S to the respondents' organisations.

Hazard identification and risk assessment, and risk management are critical and emphasis should be placed on these aspects during auditing.

Auditing should focus on the physical process, but also give the administration process the requisite attention.

Worker participation, H&S education, H&S training, construction H&S management competencies, supervision, management, and construction management competencies are important, and are all predictors of H&S performance, which manifests itself in the physical state of H&S. Therefore, auditing should focus on such predictors.

50 / 52 (96.2%) of aspects / interventions / stakeholders contributed to respondents' organisations achieving an H&S competition award to a major as opposed to a minor extent and therefore a multi-content 'cocktail' is required to optimise H&S performance. However, H&S practitioners, hazard identification and risk assessment, and interventions that contribute to a 'healthy' H&S culture, and which result in a 'healthy' H&S climate, are critical. Included in the aforementioned are management commitment, supervision, and worker participation. Therefore, auditing should focus on such predictors.

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1. OBJECTIVES OF THE STUDY

The objectives of the study were to determine the:

- Perceived importance of project parameters;
- Perceived importance of eleven aspects of an H&S programme as posed to respondents;
- Perceived extent to which aspects / interventions / stakeholders contributed to respondents' organisations achieving an H&S competition award, and
- Perceptions relative to H&S issues and the management of the construction process and activities in general.

2. RESEARCH METHOD AND SAMPLE STRATUM

The 2013 and 2014 Kwazulu-Natal Master Builders Association (KZNMBA) competition award winners were initially surveyed, then the Master Builders Association Western Cape (MBAWC) competition award winners, and then the 2013 East Cape Master Builders Association (ECMBA) competition award winners, using a self-administered questionnaire delivered per e-mail. A total of eleven (11) responses were included in the analysis of the data – seven (7) KZNMBA, two (2) MBAWC, and two (2) ECMBA.

3. RESEARCH FINDINGS

3.1 Analysis

The analysis of the data consisted of the calculation of descriptive statistics to depict the frequency distribution and central tendency of responses to fixed response questions to determine the degree of importance, extent of contribution, and degree of concurrence.

Close ended questions with five-point Likert scales, which also included an 'unsure' response option were used. Therefore, to rank fixed response items according to the central tendency of responses, mean scores (MSs) were calculated as follows:

$$MS = \frac{1n_1 + 2n_2 + 3n_3 + 4n_4 + 5n_5}{n_1 + n_2 + n_3 + n_4 + n_5}$$

The variables are referenced in Table 1.

Table 1: Definition of five-point Likert scale points and related variables.

| Likert scale point | | Variable |
|---------------------|-------------------|----------------|
| Not important | Strongly disagree | n ₁ |
| Less than important | Disagree | n ₂ |
| Important | Neutral | n ₃ |
| More than important | Agree | n ₄ |
| Very important | Strongly agree | n ₅ |

A close ended question with a six-point Likert scale, which also included an 'unsure' response option was used. Therefore, to rank fixed response items according to the central tendency of responses, MSs were calculated as follows:

$$MS = \frac{0n_0 + 1n_1 + 2n_2 + 3n_3 + 4n_4 + 5n_5}{n_0 + n_1 + n_2 + n_3 + n_4 + n_5}$$

The variables are referenced in Table 2.

Table 2: Definition of six-point Likert scale points and related variables.

| Likert scale point | Variable |
|--------------------|----------------|
| Did not | n ₀ |
| Minor extent | n ₁ |
| Near minor extent | n ₂ |
| Some extent | n ₃ |
| Near major extent | n ₄ |
| Major extent | n ₅ |

3.2 Findings

Table 3 indicates the respondents' level of education / qualification(s). Grade 12 (54.5%) predominated followed by N Dip. (36.4%).

Table 3: Respondents' level of education / qualification(s).

| Qualification (NQF level) | Response (%) |
|---------------------------|--------------|
| Grade 12 | 54.5 |
| N Dip. | 36.4 |
| Other | 9.1 |
| BTech | 0.0 |
| BSc | 0.0 |
| BSc (Hon) | 0.0 |

Table 4 indicates that SHE Manager (36.4%) predominates in terms of respondents' occupations, followed jointly by SHE Officer (18.2%) and Manager / Director (18.2%) (Table 4).

Table 4: Respondents' occupations.

| Occupation | Response (%) |
|----------------------------|--------------|
| SHE Manager | 36.4 |
| SHE Officer | 18.2 |
| Manager / Director | 18.2 |
| Quality Assurance Manager | 9.1 |
| Contracts Manager | 9.1 |
| Architectural Technologist | 9.1 |

Table 5 indicates that '> 5 ≤ 10' years (54.5%) predominates in terms of the length of time respondents have worked for their current employer, followed by '> 1 ≤ 5' years (27.3%).

Table 5: Length of time respondents have worked for their current employer.

| Period (Years) | Response (%) |
|----------------|--------------|
| > 5 ≤ 10 | 54.5 |
| > 1 ≤ 5 | 27.3 |
| > 10 ≤ 20 | 9.1 |
| > 20 | 9.1 |
| ≤ 1 | 0.0 |

Table 6 indicates that '> 5 ≤ 10' years (36.4%) and '> 10 ≤ 20' years (36.4%) predominate in terms of the length of time respondents have worked in construction, followed by '> 20' years (27.3%).

Table 6: Length of time respondents have worked in construction.

| Period (years) | Response (%) |
|----------------|--------------|
| > 5 ≤ 10 | 36.4 |
| > 10 ≤ 20 | 36.4 |
| > 20 | 27.3 |
| ≤ 1 | 0.0 |
| > 1 ≤ 5 | 0.0 |

Table 7 indicates the importance of six project parameters to respondents' organisations on a scale of 1 (not important) to 5 (very important), and a MS ranging between 1.00 and 5.00. It is notable that all the MSs are above the midpoint score of 3.00, which indicates that in general the respondents perceive the parameters as important to their organisations. However, given that all the MSs > 4.20 ≤ 5.00, the respondents can be deemed to perceive them to be between more than important to very important / very important.

Furthermore, it is notable that cost, quality, and schedule (time) are ranked joint first, and that the subject of the study, H&S, is ranked fourth.

Table7: Degree of importance of project parameters to respondents' organisations.

| Parameter | Response (%) | | | | | | Mean Score | Rank |
|-------------------|--------------|--------------|-----|-----|------|-------|------------|------|
| | Unsure | Not.....Very | | | | | | |
| | | 1 | 2 | 3 | 4 | 5 | | |
| Cost | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 5.00 | 1= |
| Quality | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 5.00 | 1= |
| Schedule (Time) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 5.00 | 1= |
| Health and safety | 0.0 | 0.0 | 0.0 | 0.0 | 9.1 | 90.9 | 4.91 | 4 |
| Productivity | 0.0 | 0.0 | 0.0 | 9.1 | 0.0 | 90.9 | 4.82 | 5 |
| Environment | 0.0 | 0.0 | 0.0 | 9.1 | 18.2 | 72.7 | 4.64 | 6 |

Table 8 indicates the importance of eleven aspects of an H&S programme in terms of achieving optimum H&S in respondents' organisations on a scale of 1 (not important) to 5 (very important), and a MS ranging between 1.00 and 5.00. It is notable that all the MSs are above the midpoint score of 3.00, which indicates that in general the respondents perceive the aspects as important in terms of achieving optimum H&S in their organisations. However, given that all the MSs > 4.20 ≤ 5.00, the respondents can be deemed to perceive them to be between more than important to very important / very important. It is notable that hazard identification and risk assessment, and risk management are ranked joint first with a MS of 5.00, followed closely by administration and legal requirements. The latter in turn is followed closely by a cluster of five aspects ranked joint fourth with a MS of 4.82. It is notable that administration and legal requirements is ranked marginally ahead of physical aspects (MS = 4.82), as the prevailing contention in industry is that the physical aspects are more important. Then, whereas worker participation, one of the 'two pillars of an H&S programme', is ranked joint fourth with a MS of 4.82, the other pillar, management is ranked tenth with a MS of 4.64. Supervision is ranked marginally ahead of management with a MS of 4.73. This reflects the reality on site, namely that supervisors supervise the physical construction activities. H&S education, H&S training, and construction H&S management competencies were also ranked joint fourth (MS = 4.82), whereas construction management competencies is ranked eleventh with a MS of 4.45. In essence, all the aspects achieved high MSs.

Table 8: Degree of importance of aspects of an H&S programme in terms of achieving optimum H&S in respondents' organisations.

| Aspect | Response (%) | | | | | | MS | Rank |
|---|--------------|--------------|-----|-----|------|-------|------|------|
| | Unsure | Not.....Very | | | | | | |
| | | 1 | 2 | 3 | 4 | 5 | | |
| Hazard identification and risk assessment | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 5.00 | 1= |
| Risk management | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 5.00 | 1= |
| Administration and legal requirements | 0.0 | 0.0 | 0.0 | 0.0 | 9.1 | 90.9 | 4.91 | 3 |
| Physical aspects | 0.0 | 0.0 | 0.0 | 0.0 | 18.2 | 81.8 | 4.82 | 4= |
| Worker participation | 0.0 | 0.0 | 0.0 | 0.0 | 18.2 | 81.8 | 4.82 | 4= |
| H&S education | 0.0 | 0.0 | 0.0 | 0.0 | 18.2 | 81.8 | 4.82 | 4= |
| H&S training | 0.0 | 0.0 | 0.0 | 0.0 | 18.2 | 81.8 | 4.82 | 4= |
| Construction H&S management competencies | 0.0 | 0.0 | 0.0 | 0.0 | 18.2 | 81.8 | 4.82 | 4= |
| Supervision | 0.0 | 0.0 | 0.0 | 0.0 | 27.3 | 72.7 | 4.73 | 9 |
| Management | 0.0 | 0.0 | 0.0 | 0.0 | 36.4 | 63.6 | 4.64 | 10 |
| Construction management competencies | 0.0 | 0.0 | 0.0 | 0.0 | 54.5 | 45.5 | 4.45 | 11 |

Table 9 indicates the extent to which aspects / interventions / stakeholders contributed to respondents' organisations achieving an H&S competition award on a scale of did not and between 1 (minor) to 5 (major), and a MS ranging between 0.00 and 5.00. It is significant that 50 / 52 (96.2%) of the MSs are above the midpoint score of 2.50, which indicates that the aspects / interventions / stakeholders can be deemed to have contributed to respondents' organisations achieving an H&S competition award.

It is notable that 36 / 52 (69.2%) of the MSs are > 4.17 ≤ 5.00, which indicates the aspects / interventions / stakeholders contributed to respondents' organisations achieving an H&S competition award between a near major extent to a major extent / major extent. Six interventions / stakeholders are ranked joint first with a MS of 4.82: H&S Coordinator / Manager; H&S Officer; hazard identification and risk assessment; H&S induction; H&S training, and toolbox talks. These are followed by joint seventh ranked H&S management system (H&SMS) and H&S education (MS = 4.73) and joint ninth ranked focus on H&S and H&S awareness (MS = 4.64). The aforementioned constitute the top ten. Other notable aspects / interventions / stakeholders within this upper range (> 4.17 ≤ 5.00) are H&S culture, H&S Representatives, safe work procedures (SWPs), H&S measurement, allocation of financial resources to H&S, H&S plans, first line supervision, site management, H&S goal setting, management commitment to H&S, integration of H&S into all activities / tasks, management involvement in H&S, Quality Management System (QMS), management accountability for H&S, and worker participation.

The aspects / interventions / stakeholders ranked thirty-seventh (37th) to forty-sixth (46th) have MSs > 3.33 ≤ 4.17, which indicates they can be deemed to have contributed to respondents' organisations achieving an H&S competition award between some extent to a near major extent / near major extent. Notable aspects / interventions / stakeholders within this range include H&S specification, client, medical surveillance, project manager, client appointed H&S Agent, and partnering.

4 / 52 (7.7%) MSs fall within the range $> 2.50 \leq 3.33$, which indicates the aspects / interventions / stakeholders can be deemed to have contributed to respondents' organisations achieving an H&S competition award between a near minor extent to some extent /some extent. Improvement process e.g. Total Quality Management (TQM) is one of the four.

The MS of designers falls within the range $> 1.70 \leq 2.50$, which indicates it can be deemed to have contributed to respondents' organisations achieving an H&S competition award between a minor to near minor / near minor extent.

Table 9: Extent to which aspects / interventions / stakeholders contributed to respondents' organisations achieving an H&S competition award.

| Aspect / Intervention / Stakeholder | Response (%) | | | | | | | MS | Rank | |
|---|--------------|---------|-------------|------|------|------|------|------|------|-------|
| | Unsure | Did not | Minor | | | | | | | Major |
| | | | 1 | 2 | 3 | 4 | 5 | | | |
| H&S Coordinator / Manager | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 18.2 | 81.8 | 4.82 | 1= | |
| H&S Officer | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 18.2 | 81.8 | 4.82 | 1= | |
| Hazard identification and risk assessment | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 18.2 | 81.8 | 4.82 | 1= | |
| H&S induction | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 18.2 | 81.8 | 4.82 | 1= | |
| H&S training | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 18.2 | 81.8 | 4.82 | 1= | |
| Toolbox talks | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 18.2 | 81.8 | 4.82 | 1= | |
| H&S management system (H&SMS) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 27.3 | 72.7 | 4.73 | 7= | |
| H&S education | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 27.3 | 72.7 | 4.73 | 7= | |
| Focus on H&S | 0.0 | 0.0 | 0.0 | 0.0 | 9.1 | 18.2 | 72.7 | 4.64 | 9= | |
| H&S awareness | 0.0 | 0.0 | 0.0 | 0.0 | 9.1 | 18.2 | 72.7 | 4.64 | 9= | |
| H&S culture (refer to * below the table) | 0.0 | 0.0 | 0.0 | 0.0 | 9.1 | 27.3 | 63.6 | 4.55 | 11= | |
| H&S Representatives | 0.0 | 0.0 | 0.0 | 0.0 | 9.1 | 27.3 | 63.6 | 4.55 | 11= | |
| Safe work procedures (SWPs) | 0.0 | 0.0 | 0.0 | 0.0 | 9.1 | 27.3 | 63.6 | 4.55 | 11= | |
| Feedback on H&S performance | 0.0 | 0.0 | 0.0 | 0.0 | 9.1 | 27.3 | 63.6 | 4.55 | 11= | |
| Construction Regulations | 0.0 | 0.0 | 0.0 | 0.0 | 9.1 | 27.3 | 63.6 | 4.55 | 11= | |
| Participation in H&S competitions | 0.0 | 0.0 | 0.0 | 0.0 | 9.1 | 27.3 | 63.6 | 4.55 | 11= | |
| Participation in H&S star gradings | 0.0 | 0.0 | 0.0 | 0.0 | 9.1 | 27.3 | 63.6 | 4.55 | 11= | |
| H&S measurement | 0.0 | 0.0 | 0.0 | 9.1 | 0.0 | 18.2 | 72.7 | 4.55 | 18 | |
| Allocation of financial resources to H&S | 0.0 | 0.0 | 0.0 | 0.0 | 9.1 | 36.4 | 54.5 | 4.45 | 19= | |
| H&S inspections | 0.0 | 0.0 | 0.0 | 0.0 | 9.1 | 36.4 | 54.5 | 4.45 | 19= | |
| H&S rules | 0.0 | 0.0 | 0.0 | 0.0 | 18.2 | 18.2 | 63.6 | 4.45 | 21= | |
| H&S notice board | 0.0 | 0.0 | 0.0 | 0.0 | 18.2 | 18.2 | 63.6 | 4.45 | 21= | |
| H&S legislation (OH&S Act & COID Act) | 0.0 | 0.0 | 0.0 | 0.0 | 18.2 | 18.2 | 63.6 | 4.45 | 21= | |
| H&S plans | 0.0 | 0.0 | 0.0 | 9.1 | 0.0 | 27.3 | 63.6 | 4.45 | 24 | |
| First line supervision | 0.0 | 0.0 | 0.0 | 9.1 | 9.1 | 9.1 | 72.7 | 4.45 | 25 | |
| H&S policy | 0.0 | 0.0 | 0.0 | 0.0 | 18.2 | 27.3 | 54.5 | 4.36 | 26 | |
| Site management | 0.0 | 0.0 | 0.0 | 9.1 | 0.0 | 36.4 | 54.5 | 4.36 | 27 | |
| H&S goal setting | 0.0 | 0.0 | 0.0 | 9.1 | 9.1 | 18.2 | 63.6 | 4.36 | 28 | |
| Management commitment to H&S | 0.0 | 0.0 | 0.0 | 0.0 | 27.3 | 18.2 | 54.5 | 4.27 | 29= | |
| H&S meetings | 0.0 | 0.0 | 0.0 | 0.0 | 27.3 | 18.2 | 54.5 | 4.27 | 29= | |
| Integration of H&S into all activities / tasks | 9.1 | 0.0 | 0.0 | 9.1 | 0.0 | 0.0 | 81.8 | 4.27 | 31 | |
| Management involvement in H&S | 0.0 | 0.0 | 0.0 | 0.0 | 36.4 | 0.0 | 63.6 | 4.27 | 32= | |
| Quality management system (QMS) | 0.0 | 0.0 | 0.0 | 9.1 | 9.1 | 27.3 | 54.5 | 4.27 | 32= | |
| Recognition of H&S performance | 9.1 | 0.0 | 0.0 | 0.0 | 9.1 | 18.2 | 63.6 | 4.18 | 34 | |
| Management accountability for H&S | 0.0 | 0.0 | 0.0 | 0.0 | 27.3 | 27.3 | 45.5 | 4.18 | 35 | |
| Worker participation | 9.1 | 0.0 | 0.0 | 9.1 | 0.0 | 9.1 | 72.7 | 4.18 | 36 | |
| H&S specification | 0.0 | 0.0 | 0.0 | 18.2 | 9.1 | 18.2 | 54.5 | 4.09 | 37 | |
| Client | 0.0 | 0.0 | 0.0 | 18.2 | 9.1 | 27.3 | 45.5 | 4.00 | 38 | |
| Incident investigation | 0.0 | 9.1 | 0.0 | 0.0 | 18.2 | 18.2 | 54.5 | 4.00 | 39 | |
| H&S disciplinary procedure | 9.1 | 0.0 | 0.0 | 9.1 | 18.2 | 0.0 | 63.6 | 3.91 | 40 | |
| Medical surveillance | 9.1 | 0.0 | 0.0 | 0.0 | 27.3 | 27.3 | 36.4 | 3.73 | 41 | |
| Project manager | 0.0 | 0.0 | 0.0 | 18.2 | 36.4 | 9.1 | 36.4 | 3.64 | 42 | |
| H&S message / theme for the month or week | 9.1 | 0.0 | 9.1 | 0.0 | 18.2 | 18.2 | 45.5 | 3.64 | 43 | |
| Client appointed H&S Agent | 0.0 | 9.1 | 0.0 | 9.1 | 27.3 | 18.2 | 36.4 | 3.55 | 44 | |
| H&S incentives | 9.1 | 9.1 | 0.0 | 0.0 | 18.2 | 18.2 | 45.5 | 3.55 | 45 | |
| Partnering (refer to ** below the table) | 0.0 | 12.5 | 0.0 | 12.5 | 12.5 | 25.0 | 37.5 | 3.50 | 46 | |
| Improvement process e.g. Total Quality Management (TQM) | 18.2 | 0.0 | 0.0 | 18.2 | 0.0 | 27.3 | 36.4 | 3.27 | 47 | |
| H&S Consultant | 0.0 | 18.2 | 0.0 | 18.2 | 27.3 | 9.1 | 27.3 | 2.91 | 48 | |
| H&S newsletter | 0.0 | 18.2 | 9.1 | 9.1 | 27.3 | 9.1 | 27.3 | 2.82 | 49 | |
| H&S suggestion box | 9.1 | 18.2 | 9.1 | 0.0 | 18.2 | 18.2 | 27.3 | 2.73 | 50 | |
| Designers | 0.0 | 27.3 | 18.2 | 18.2 | 18.2 | 0.0 | 18.2 | 2.00 | 51 | |
| Unions | 0.0 | 54.5 | 36.4 | 0.0 | 0.0 | 9.1 | 0.0 | 0.73 | 52 | |

* H&S culture: values, vision, goals, mission, purpose and assumptions

** Partnering: an informal project process involving the client, designers, general contractor, specialist subcontractors, and worker representatives, directed at developing mutual goals and strategies to improve, among other, H&S.

Table 10 indicates the extent to which respondents concur with eighteen (18) statements relative to the construction industry in general. It is notable that 17 / 18 (94.4%) MSs > 3.00 ≤ 5.00, which indicates agreement as opposed to disagreement.

However, 11 / 18 (61.1%) statements have MSs > 4.20 ≤ 5.00, which indicates that the concurrence is between agree to strongly agree / strongly agree: risk management is an integral part of construction management; there should be more focus on: worker participation in H&S, management involvement in H&S, supervision's role in H&S, and management accountability for H&S; H&S management is an integral part of construction management and H&S is an integral part of risk management; H&S management is interrelated with quality management and environmental management, and the emphasis in terms of H&S should be on: active hazard identification and risk assessment, and the physical aspects.

6 / 18 (33.3%) Statements attracted concurrence between neutral to agree / agree (> 3.40 ≤ 4.20): administration provides the basis for addressing the physical aspects of H&S; too much administration: is required relative to H&S; results in 'ticking boxes' and 'cutting and pasting', and is required relative to H&S to the detriment of the physical aspects of H&S; the H&S Officer function creates the impression that H&S is someone else's function, and H&S Officers are not included in the overall management of projects.

1 / 18 (5.6%) Statement attracted concurrence between disagree to neutral / neutral (> 2.60 ≤ 3.40), namely H&S Officers have the organisational authority to integrate H&S into the construction process.

Table 10: Respondents' degree of concurrence with statements relative to H&S and the construction industry in general.

| Statement | Response (%) | | | | | | MS |
|---|--------------|-------------------|----------|---------|-------|----------------|------|
| | Unsure | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | |
| Risk management is an integral part of construction management | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 5.00 |
| There should be more focus on worker participation in H&S | 0.0 | 0.0 | 0.0 | 0.0 | 10.0 | 90.0 | 4.90 |
| H&S management is an integral part of construction management | 0.0 | 0.0 | 0.0 | 0.0 | 10.0 | 90.0 | 4.90 |
| H&S is an integral part of risk management | 0.0 | 0.0 | 0.0 | 0.0 | 11.1 | 88.9 | 4.89 |
| There should be more focus on management involvement in H&S | 0.0 | 0.0 | 0.0 | 0.0 | 20.0 | 80.0 | 4.80 |
| There should be more focus on supervision's role in H&S | 0.0 | 0.0 | 0.0 | 0.0 | 20.0 | 80.0 | 4.80 |
| There should be more focus on management accountability for H&S | 0.0 | 0.0 | 0.0 | 10.0 | 10.0 | 80.0 | 4.70 |
| H&S management and quality management are interrelated | 0.0 | 0.0 | 0.0 | 0.0 | 50.0 | 50.0 | 4.50 |
| H&S management and environmental management are interrelated | 0.0 | 0.0 | 0.0 | 0.0 | 50.0 | 50.0 | 4.50 |
| The emphasis in terms of H&S should be on active hazard identification and risk assessment | 0.0 | 0.0 | 0.0 | 10.0 | 40.0 | 50.0 | 4.40 |
| The emphasis in terms of H&S should be on the physical aspects | 0.0 | 0.0 | 0.0 | 20.0 | 20.0 | 60.0 | 4.40 |
| Administration provides the basis for addressing the physical aspects of H&S | 0.0 | 0.0 | 0.0 | 20.0 | 40.0 | 40.0 | 4.20 |
| Too much administration results in 'ticking boxes' and 'cutting and pasting' | 0.0 | 10.0 | 20.0 | 0.0 | 10.0 | 60.0 | 3.90 |
| The H&S Officer function creates the impression that H&S is someone else's function | 0.0 | 10.0 | 20.0 | 0.0 | 10.0 | 60.0 | 3.90 |
| Too much administration is required relative to H&S to the detriment of the physical aspects of H&S | 0.0 | 11.1 | 11.1 | 0.0 | 44.4 | 33.3 | 3.78 |
| H&S Officers are not included in the overall management of projects | 0.0 | 10.0 | 20.0 | 10.0 | 20.0 | 40.0 | 3.60 |
| Too much administration is required relative to H&S | 0.0 | 11.1 | 11.1 | 11.1 | 44.4 | 22.2 | 3.56 |
| H&S Officers have the organisational authority to integrate H&S into the construction process | 0.0 | 10.0 | 20.0 | 30.0 | 40.0 | 0.0 | 3.00 |

Respondents were requested to provide comments in general regarding optimising the elements of an H&S programme and audit system. Five comments were received, one lengthy:

- "Should reduce paperwork and go electronic with certain checklists and audits."
- "(The H&S Officer function creates the impression that H&S is someone else's function) is the most important."
- "The auditor needs to be able to test the effectiveness of educational and training awareness programmes such as review minutes and content of safety meetings and tool box talks."
- "More time / points to be allocated to auditing of physical aspects e.g. interview workers, inconspicuously observe processes / tasks for longer periods."
- "Too much focus put on admin and not enough on the coal face where the accidents happen; not enough attention to those performing tasks that could result in injury; need to manage people better and get the safety culture into them through complete but or enforcement; have to target solutions for the guys on the ground; need to bridge the gap between safety officers, foremen and employees working at the coal face; foremen over-rule safety officers and as such it is difficult to get a positive influential message directly to the employees."

4. CONCLUSIONS AND RECOMMENDATIONS

Given that cost, quality, and time are marginally more important than H&S to the respondents' organisations, it can be concluded that the paradigm of the traditional three project parameters taking precedence, still prevails.

Although all eleven aspects of an H&S programme as posed to the respondents are important in terms of achieving optimum H&S in respondents' organisations, the high ranking of hazard identification and risk assessment, and risk management, leads to the conclusion that these are critical, and that emphasis should be placed on these aspects during auditing. Then, although administration and legal requirements are marginally more important than the physical aspects, there is a high level of agreement with 'The emphasis in terms of H&S should be on the physical aspects'. The relatively high agreement with 'Too much administration results in ticking boxes and cutting and pasting', 'Too much administration is required relative to H&S to the detriment of the physical aspects of H&S', and 'Too much administration is required relative to H&S' is tempered by the agreement with 'Administration provides the basis for addressing the physical aspects of H&S'. Therefore it can be concluded that auditing should focus on the physical process, but also give the administration process the requisite attention. However, the importance of worker participation, H&S education, H&S training, construction H&S management competencies, supervision, management, and construction management competencies introduces a further dimension. Firstly, H&S education and H&S training influence the others, and in turn management commitment influences the degree of H&S education and H&S training. Secondly, they are all predictors of H&S performance, which manifests itself in the physical state of H&S. Therefore, it can be concluded that auditing should focus on such predictors. This conclusion is reinforced by the level of agreement with 'H&S management is an integral part of construction management', 'There should be more focus on management involvement in H&S', 'There should be more focus on supervision's role in H&S', and 'There should be more focus on management accountability for H&S'.

The finding that 50 / 52 (96.2%) of aspects / interventions / stakeholders contributed to respondents' organisations achieving an H&S competition award to a major as opposed to a minor extent, leads to the conclusion that a multi-content 'cocktail' is required to optimise H&S performance. However, H&S practitioners, hazard identification and risk assessment, and interventions that contribute to a 'healthy' H&S culture, and which result in a 'healthy' H&S climate, are critical. Included in the aforementioned are management commitment, supervision, and worker participation. Therefore, it can be concluded that auditing should focus on such predictors.