Nelson Mandela Metropolitan University

for tomorrow

FEEDBACK REPORT ON A STUDY 'FEM SPECIAL AWARD RECIPIENTS'

WRITER : **PROFESSOR JJ SMALLWOOD,**
DEPARTMENT OF CONSTRUCTION MANAGEMENT
NELSON MANDELA METROPOLITAN UNIVERSITY (NMMU)
john.smallwood@nmmu.ac.za

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DEDICATION

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

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ORIGIN OF THE REPORT

Previous alike research was conducted in 2001 and presented at the Association of Researchers in Construction Management (ARCOM) Conference, Newcastle, United Kingdom, 2 - 4 September 2002. Furthermore, the author was requested to present a paper at the FEM Health and Safety Summit 75th Anniversary, 17 - 19 July 2011, and therefore it was deemed appropriate to conduct a follow-up study and report thereon at the Summit.

SCOPE OF THE REPORT

This report has been compiled to provide feedback to both respondents and non-respondents to the survey, detailed feedback to delegates of the FEM Health and Safety Summit 75th Anniversary at which summit a paper, based upon the findings was presented, and does not include the findings of a survey of the related literature.

EXECUTIVE SUMMARY

The mean percentage rebate received over a period of three years, namely 33.4%, confirms that financial benefits accrue from enhanced H&S performance.

Although project H&S and public H&S were ranked first in terms of the degree of importance of project parameters, the other nine project parameters achieved high mean scores.

48 / 52 (92.4%) Aspects / interventions / stakeholders contributed to respondents' organisations receiving a rebate from FEM between some extent to a major extent. H&S rules, induction, and awareness predominated, followed by management commitment to and accountability for H&S.

Comments from management and comments from CAH&S Agents / H&S Consultants predominate in terms of the basis for the perceived / confirmed contribution (impact).

Respondents' organisations generally do not measure H&S performance.

Reduced accidents, compensation insurance rebates, enhanced productivity, and enhanced quality, were identified by between the minority and half of the respondents in terms of the manifestation of the contribution of the aspects / interventions / stakeholders to respondents' organisations' H&S performance.

Improvement process (TQM), constructability reviews relative to H&S, and H&S plans predominate in terms of the potential of aspects / interventions to contribute to an improvement in respondents' organisations' H&S performance.

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1. OBJECTIVES OF THE STUDY

The objectives of the study were to determine the:

- the extent to which various aspects / interventions / stakeholders contributed to the receiving of a rebate,
- the benefits of the positive impact of the aspects / interventions / stakeholders on H&S performance, and
- the extent to which various aspects / interventions could contribute to an improvement in H&S performance.

2. METHODOLOGY AND SAMPLE STRATUM

The study was descriptive in nature and the quantitative questionnaire consisted of 8 questions, 7 being closed end and 1 being open end, the latter allowing for the recording of general comments. The 7 closed end questions included 123 sub-questions.

The 65 recipients of FEM special awards in 2010 constituted the sample strata. 22 Recipients responded, which equates to a response rate of 33.9%.

3. 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, inter alia, the importance of project parameters to respondents' organizations, the extent to which aspects / interventions / stakeholders contributed to respondents' organisations having received FEM special awards, and the extent to which aspects / interventions could contribute to an improvement in H&S performance.

To rank fixed response items according to the central tendency of responses, mean scores (MSs) were calculated as follows.

Five point scale:

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

The variables are referenced in Table 1.

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

Scale point	Variable
Unsure	n_o
Not important	n_1
Less than important	n_2
Important	n_3
More than important	n_4
Very important	n_5

Six point scale:

$$MS = \frac{0n_1 + 1n_2 + 2n_3 + 3n_4 + 4n_5 + 5n_6}{n_o + n_1 + n_2 + n_3 + n_4 + n_5 + n_6}$$

The variables are referenced in Table 2.

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

Scale point	Variable
Unsure	n_o
Did / Would not	n_1
Minor extent	n_2
Near minor extent	n_3
Some extent	n_4
Near minor extent	n_5
Major extent	n_6

3.2 Findings

Table 1 indicates the type of work undertaken / service provided by respondents' organisations. General contracting (civil engineering) predominates (54.5%), followed by general contracting (building) (31.8%), and subcontracting (22.7%).

Table 1: Type of work undertaken / Service provided by respondents' organisations.

Type of work / Service	Yes (%)
General contracting (civil engineering)	54.5
General contracting (building)	31.8
Subcontracting	22.7
Materials supply	9.1
Materials manufacturing	4.5
Plant hire	0.0
Plant yard	0.0

Table 2 presents the mean, minimum, and maximum number of people employed by respondents' organisations. Clearly a range of organisations have received special awards and responded to the survey.

Table 2: Number of people employed by respondents' organisations.

Management level	Min	Max	Mean
Management	3	145	19.2
Supervisory	3	600	59.0
Production	5	2 000	317.5

Table 3 indicates the percentage of respondents that responded to the request to provide the percentage rebates their organisations received for 2008, 2009, and 2010. It is notable that the highest response was relative to 2008, namely 50%. The mean percentage rebates varied between 31.2% and 37.1%, the mean being 33.4%.

Table 3: Response to request for percentage rebates and percentage rebates received by respondents' organisations.

Year	Yes (%)	Rebate (%)		
		Min	Max	Mean
2010	31.8	11.0	50.0	31.2
2009	40.9	15.0	50.0	31.8
2008	50.0	14.7	69.0	37.1
Mean	30.7	13.6	56.3	33.4

Table 4 indicates the degree of importance of parameters to respondents' organisations based upon a MS with a minimum value of 1.00, and a maximum value of 5.00, based upon percentage responses to a range 'not' to 'very'. Given that all the MSs are > 3.00, the respondents can be deemed to perceive the parameters to be important, as opposed to not important. However, it is notable that all the MSs > 4.20 ≤ 5.00, which indicates that the parameters can be deemed to be more than important to very important / very important. It is also notable that project H&S and public H&S are ranked first and second respectively. Project quality, which complements H&S, is ranked third.

Table 4: Importance of project parameters to respondents' organisations.

Parameter	Response %						MS	Rank
	Unsure	Not.....Very						
		1	2	3	4	5		
Project health and safety	4.8	0.0	0.0	0.0	9.5	85.7	4.90	1
Public health and safety	4.8	0.0	0.0	0.0	14.3	81.0	4.85	2
Project quality	0.0	0.0	0.0	0.0	15.0	85.0	4.85	3
Client satisfaction	0.0	0.0	0.0	0.0	15.8	84.2	4.84	4
Productivity	0.0	0.0	4.8	0.0	4.8	90.5	4.81	5
Project schedule	0.0	0.0	0.0	0.0	25.0	75.0	4.75	6
Project cost	4.8	0.0	0.0	4.8	19.0	71.4	4.70	7
Contractor satisfaction	5.0	0.0	0.0	5.0	25.0	65.0	4.63	8
Worker satisfaction	0.0	0.0	0.0	5.0	30.0	65.0	4.60	9
Designer satisfaction	5.0	0.0	0.0	20.0	10.0	65.0	4.47	10
Environment (natural)	0.0	0.0	5.0	15.0	10.0	70.0	4.45	11

Table 5 indicates the extent to which aspects / interventions / stakeholders contributed to respondents' organisations receiving a rebate from FEM on a scale of did not and between 1 (minor) to 5 (major), and a MS ranging between 0.00 and 5.00. Given that all the MSs are > 2.50, all the aspects / interventions / stakeholders can be deemed to have contributed to respondents' organisations receiving a rebate from FEM. No respondents selected 'did not' and hence the column is not included.

It is notable that 24 / 52 (46.2%) of MSs are > 4.17 ≤ 5.00, which indicates the aspects / interventions / stakeholders can be deemed to have contributed to respondents' organisations receiving a rebate from FEM between a near major extent to a major extent / major extent. H&S rules, H&S induction, and H&S awareness predominate, followed closely by management commitment to H&S and management accountability for H&S. H&S rules are important as the following of procedures and rules is necessary to realize healthy and safe work places. H&S induction is a legal requirement; however it introduces workers and others to a work place and more specifically, the hazards. H&S awareness ensures that those involved on a project are conscious and mindful of the need for H&S. Management commitment to H&S is one of the two pillars of an H&S program, the other being worker participation, which is ranked seventeenth. However, it should be noted that management commitment to H&S is a pre-requisite for H&S rules, H&S induction, and H&S awareness. The MS and ranking of management accountability for H&S is notable as invariably management in construction is not held accountable for H&S – that is, measured in terms of their responsibility for H&S. Hazard identification and risk assessment (HIRA) ranked sixth, is a legal requirement and is a critical activity in terms of proactive and reactive H&S management. Seventh ranked H&S inspections in the case of H&S Representatives and other H&S functions are a legal requirement. However, due to the ever changing nature of construction and the necessity to determine if work is being executed according to plan, H&S inspections are also a critical activity. Furthermore, H&S inspections may result in the identification of hazards. Integration of H&S into all activities / tasks, ranked eighth, is the ideal, as then H&S is addressed when planning and executing work. Ninth ranked H&S Coordinator / Manager is an important function in an organisation as H&S legislation and information needs to be collated and disseminated. Furthermore, strategies, tactics, and operational interventions need to be evolved on an organisation wide basis. Tenth ranked toolbox talks are an ideal forum to address specific H&S subjects, but also to discuss general H&S issues such as incidents, H&S goals, and H&S performance. Safe work procedures (SWPs), ranked eleventh, are a legal requirement in terms of responding to the identification of hazards, and responding to their continued existence. Twelfth ranked H&S training has a substantial impact on H&S performance in that it empowers people to work in a healthy and safe manner, in addition to it being an indirect legal requirement. Thirteenth ranked H&S management system (H&SMS) is notable as H&SMSs are not common. H&SMSs provide a framework for H&S in an organisation. Site management, ranked fourteenth, fulfills a critical role in that it is responsible for managing the construction process and activities, and the related resources. H&S policy ranked fifteenth, should communicate the values, vision, goals, mission, purpose, and assumptions, and thus is the 'starting point' for H&S. It is also the first element of an H&SMS. Sixteenth ranked focus on H&S ensures that H&S is considered and addressed throughout the construction process and its activities. Worker participation, ranked seventeenth, along with management commitment, is one of the two 'pillars' of an H&S program. Worker participation ensures that the people that undertake the construction activities are empowered to contribute to H&S. Eighteenth ranked incident investigation is important as the outcome of incidents is fortuitous, and therefore all incidents should be investigated regardless of the outcome. Management involvement in H&S, ranked nineteenth, is related to management commitment, but refers to actual involvement such as presenting H&S induction and chairing H&S meetings. Twentieth ranked H&S Officer is notable as the appointment of full time or part time H&S Officers is a requirement in terms of the Construction Regulations. H&S Education, ranked twenty first, is a pre-requisite for management commitment and also ensures that management can manage H&S. H&S consultant, ranked twenty second, is notable, as it falls within the upper range, and therefore the stakeholder contributed. However, 'in house' aspects / stakeholders such as management commitment to H&S, management accountability for H&S, H&S Coordinator / Manager, and Site Manager achieved higher MSs and were ranked fourth, fifth, ninth, and fourteenth respectively. Twenty third ranked H&S culture is important as it should include the values, vision, goals, mission, purpose, and assumptions. H&S disciplinary procedure, ranked twenty fourth, is necessary as the OH&S Act requires that contractors ensure that H&S procedures are enforced and instructions are followed.

A further 24 / 52 (46.2%) of MSs are > 3.33 ≤ 4.17, which indicates the aspects / interventions / stakeholders can be deemed to have contributed to respondents' organisations receiving a rebate from FEM between some extent to a near major extent / near major extent. H&S plans is ranked twenty fifth, and although it falls marginally outside the upper range, its ranking is notable in that the H&S plan is a key requirement of the Construction Regulations and also is historically a 'better practice' H&S intervention. The twenty sixth ranking of H&S legislation (OH&S Act & COID Act) and twenty ninth ranking of Construction Regulations are notable as many researchers contend that legislation is a guide and that H&S is simply part of doing business. H&S meetings, ranked twenty seventh, are notable, as they are an ideal forum for delegating H&S actions, controlling and coordinating H&S. However, a limitation of H&S meetings is their frequency, even if they are monthly. The twenty eighth ranking of client is notable as in terms of the Construction Regulations, clients have a range of H&S responsibilities. Clearly the respondents' clients have been contributing to their organisations' H&S endeavours and performance. H&S goal setting, ranked thirtieth (MS = 4.06), is an integral part of H&S culture, which is ranked twenty-third (MS = 4.24). H&S goals is also an integral part of H&S planning, and should include performance goals such as percentage of workers that have completed a one-day H&S course and outcome goals such as zero incidents. Thirty first ranked allocation of financial resources to H&S is a pre-requisite for H&S performance, as H&S must be resourced, and not just in

terms of finance, but also in terms of human resources and their time, management time included. This aspect depends to a large extent on management making the assumption that investing resources in H&S will result in a return on investment (ROI) – assumptions are part of H&S culture ranked twenty third. The MS of thirty-second ranked medical surveillance is notable, as contractors generally do not conduct medical surveillance. Furthermore, it is notable that a 'health' intervention has contributed to the respondents' H&S performance. First line supervision, ranked thirty-third, is a critical aspect, as such supervision organizes the work place and supervises the physical construction process. Thirty-fourth ranked H&S specification is a requirement in terms of the Construction Regulations. Client originated, it should be project specific and schedule the H&S requirements. It was intended to communicate residual risk and H&S information. Therefore, the contribution is notable as previous research has determined that H&S specifications are not project specific and are a regurgitation of the Construction Regulations. Recognition of H&S performance, ranked thirty-fifth, is important as recognition is critical in terms of managing organisational behaviour and reinforcing positive behaviour. Thirty-sixth ranked H&S measurement is important as it provides an indication of performance. Unfortunately respondents were not requested to indicate whether they undertook performance and / or outcome measurement. An example of the former being the percentage of workers that have received a one-day H&S training course and the latter, the Disabling Injury Incidence Rate (DIIR). Quality management system (QMS) ranked thirty-seventh, provides an overarching framework within which the construction process and its activities are undertaken and given that such a system is assurance oriented, requires identification of competencies and criteria, which need to be aligned with, and consequently complement H&S. Thirty-eighth ranked H&S message / theme for the month or week entails focus on a generic or H&S issue such as scaffolding. Feedback on H&S performance, ranked thirty-ninth, contributes to maintaining awareness relative to H&S, motivating enhanced performance, reinforcing improved performance and logically follows H&S measurement. Fortieth ranked improvement process e.g. total quality management (TQM), focuses on the processes of H&S, productivity, and quality, and therefore should impact directly on H&S performance. Fourty-first ranked H&S Representatives should contribute to H&S performance as they are elected by the workers, are responsible for specific work areas on a project, and are intimately involved with the management of H&S on a project through, inter alia, serving on H&S committees. Partnering, ranked fourty-second, is an informal process subscribed to by the client, project manager, designers, consulting QS, general contractor, specialist contractors, which is focused on evolving common goals and strategies to achieve them, H&S included. Fourty-third ranked project manager is notable as project managers should focus on H&S during design, procurement, and construction. Participation in H&S competitions, ranked fourty-fourth, has been identified by research as contributing to enhancing H&S performance. Fourty-fifth ranked H&S notice board informs regarding H&S issues such as appointments, and raises and maintains H&S awareness through communicating feedback regarding H&S performance in the form of H&S statistics. Participation in H&S star gradings, ranked fourty-sixth, as participation in H&S competitions, has also been identified by research as contributing to enhancing H&S performance. The merits of H&S incentives, ranked fourty-seventh, have been debated in literature as it is contended that they discourage injury reporting. However, research findings indicate that they do also contribute to enhancing H&S performance. Fourty-eighth ranked client appointed H&S Agent, should contribute to improving H&S performance. However, the low ranking is notable.

The remaining four (7.6%) MSs fall within the range > 2.50 ≤ 3.33, which indicates the aspects / interventions / stakeholders can be deemed to have contributed to respondents' organisations receiving a rebate from FEM between a near minor extent to some extent /some extent. H&S newsletter, ranked fourty-ninth, is notable as clearly respondents distributed such newsletters. The fiftieth ranking achieved by designer is notable due to its low ranking, and underscores research findings that indicate designers do not make a major contribution to construction H&S. However, the MS indicates that they did contribute to respondents' organisations' H&S performance. Although H&S suggestion box is ranked fifty-first, it did contribute to respondents' organisations' H&S performance. H&S suggestion boxes formalize worker participation. Unions, although ranked fifty-second and last, did contribute, albeit marginally so.

Comments from management and comments from CAH&S Agents / H&S Consultants predominate in terms of the basis for the perceived / confirmed contribution (impact), followed by work environment / climate (Table 6). Comments from management, underscores the extent to which management commitment to H&S, and management accountability for H&S contributed to respondents' organisations receiving a rebate from FEM. The percentage response relative to comments from workers and measurement are notable. Worker participation was ranked seventeenth (MS = 4.30) in terms of the extent to which it contributed to respondents' organisations receiving a rebate from FEM. Measurement indicates that performance is being measured to a degree and that an improvement was quantified. However, H&S measurement was ranked thirty-sixth (MS = 3.94).

Table 5: Extent to which aspects / interventions / stakeholders contributed to respondents' organisations receiving a rebate from FEM.

Aspect / Intervention / Stakeholder	Response %						MS	Rank
	Unsure	Minor ..... Major						
		1	2	3	4	5		
H&S rules	9.5	0.0	0.0	14.3	14.3	61.9	4.53	1
H&S induction	4.5	0.0	0.0	9.1	27.3	59.1	4.52	2
H&S awareness	4.5	0.0	4.5	4.5	22.7	63.6	4.52	3
Management commitment to H&S	4.5	0.0	0.0	13.6	22.7	59.1	4.48	4
Management accountability for H&S	4.5	0.0	4.5	4.5	27.3	59.1	4.48	5
Hazard identification and risk assessment	4.5	0.0	0.0	4.5	45.5	45.5	4.43	6
H&S inspections	4.5	0.0	0.0	13.6	27.3	54.5	4.43	7
Integration of H&S into all activities / tasks	9.5	0.0	0.0	9.5	33.3	47.6	4.42	8
H&S Coordinator / Manager	5.6	0.0	0.0	16.7	22.2	55.6	4.41	9
Toolbox talks	9.1	0.0	0.0	18.2	18.2	54.5	4.40	10
Safe work procedures (SWPs)	4.5	0.0	0.0	9.1	40.9	45.5	4.38	11
H&S training	4.5	0.0	0.0	13.6	31.8	50.0	4.38	12
H&S management system (H&SMS)	5.0	0.0	5.0	15.0	15.0	60.0	4.37	13
Site management	4.8	0.0	0.0	4.8	52.4	38.1	4.35	14
H&S policy	4.5	0.0	4.5	13.6	22.7	54.5	4.33	15
Focus on H&S	4.8	0.0	0.0	9.5	47.6	38.1	4.30	16
Worker participation	4.8	0.0	0.0	14.3	38.1	42.9	4.30	17
Incident investigation	9.1	0.0	4.5	9.1	31.8	45.5	4.30	18
Management involvement in H&S	4.5	0.0	4.5	9.1	36.4	45.5	4.29	19
H&S Officer	4.5	0.0	0.0	22.7	22.7	50.0	4.29	20
H&S education	9.1	0.0	0.0	13.6	40.9	36.4	4.25	21
H&S Consultant	20.0	0.0	0.0	20.0	20.0	40.0	4.25	22
H&S culture	4.5	0.0	0.0	22.7	27.3	45.5	4.24	23
H&S disciplinary procedure	19.0	0.0	4.8	14.3	23.8	38.1	4.18	24
H&S plans	4.8	0.0	0.0	28.6	23.8	42.9	4.15	25
H&S legislation (OH&S Act & COID Act)	4.8	0.0	4.8	14.3	38.1	38.1	4.15	26
H&S meetings	4.5	0.0	0.0	22.7	36.4	36.4	4.14	27
Client	11.1	5.6	0.0	5.6	44.4	33.3	4.13	28
Construction Regulations	9.1	0.0	9.1	4.5	45.5	31.8	4.10	29
H&S goal setting	15.8	0.0	5.3	15.8	31.6	31.6	4.06	30
Allocation of financial resources to H&S	9.1	0.0	4.5	22.7	27.3	36.4	4.05	31
Medical surveillance	20.0	0.0	5.0	20.0	25.0	30.0	4.00	32
First line supervision	4.5	0.0	0.0	36.4	27.3	31.8	3.95	33
H&S specification	9.5	0.0	0.0	33.3	28.6	28.6	3.95	34
Recognition of H&S performance	14.3	0.0	4.8	23.8	28.6	28.6	3.94	35
H&S measurement	10.0	0.0	15.0	15.0	20.0	40.0	3.94	36
Quality management system (QMS)	15.0	0.0	5.0	25.0	25.0	30.0	3.94	37
H&S message / theme for the month or week	11.8	0.0	5.9	23.5	29.4	29.4	3.93	38
Feedback on H&S performance	4.5	4.5	0.0	27.3	31.8	31.8	3.90	39
Improvement process e.g. Total quality management (TQM)	21.1	0.0	5.3	26.3	21.1	26.3	3.87	40
H&S Representatives	4.8	0.0	4.8	33.3	28.6	28.6	3.85	41
Partnering	9.1	9.1	0.0	18.2	36.4	27.3	3.80	42
Project manager	5.3	0.0	15.8	21.1	26.3	31.6	3.78	43
Participation in H&S competitions	7.1	7.1	14.3	14.3	21.4	35.7	3.69	44
H&S notice board	6.3	0.0	6.3	43.8	25.0	18.8	3.60	45
Participation in H&S star gradings	16.7	8.3	8.3	16.7	25.0	25.0	3.60	46
H&S incentives	18.8	0.0	12.5	25.0	31.3	12.5	3.54	47
Client appointed H&S Agent	5.6	5.6	5.6	38.9	22.2	22.2	3.53	48
H&S newsletter	15.4	7.7	23.1	23.1	15.4	15.4	3.09	49
Designer	11.1	22.2	11.1	22.2	11.1	22.2	3.00	50
H&S suggestion box	14.3	14.3	14.3	28.6	14.3	14.3	3.00	51
Unions	15.4	30.8	7.7	30.8	0.0	15.4	2.55	52

Table 6: Basis for the perceived / confirmed contribution (impact).

Basis	Yes (%)
Comments from management	54.5
Comments from CAH&S Agents / H&S Consultants	45.5
Work environment / climate	36.4
Comments from workers	31.8
Measurement	31.8
Personal observations	27.3
Phenomena	4.5

Where respondents identified measurement, they were requested to identify the measure. The Disabling injury incidence rate (DIIR) predominates, albeit by slightly more than a third of those that identified measurement, which was 31.8% of the respondents (Table 7). This was followed by the direct cost of accidents and the claims ratio. Clearly respondents' organisations do not measure H&S performance. However, a possible reason for the 0% response relative to fatality rate / 100 000 is that their organisations did not record any fatalities.

Table 7: Measurement / Calculation undertaken by respondents' organisations.

Measure	Yes (%)
DIIR	36.4
Direct cost of accidents	13.6
Claims ratio	13.6
Other	9.1
Indirect cost of accidents	4.5
Fatality rate / 100 000	0.0

Table 8 presents the manifestation of the contribution of the aspects / interventions / stakeholders to respondents' organisations' H&S performance. Reduced accidents, compensation insurance rebates, enhanced productivity, and enhanced quality, were identified by between the minority and half of the respondents. This finding indicates and underscores the findings of other research, namely that there are benefits other than H&S that accrue from enhanced or optimum H&S performance. The other manifestations, although identified by less than the minority of respondents, further indicate and underscore the catalytic effect of enhanced or optimum H&S performance, in terms of the cost, time, environment, image, and profitability benefits. The 'other' response was qualified by 'created an awareness'.

Table 8: Manifestation of the contribution of the aspects / interventions / stakeholders to respondents' organisations' H&S performance.

Manifestation of contribution	Yes (%)
Reduced accidents	50.0
Compensation insurance rebates	45.5
Enhanced productivity	40.9
Enhanced quality	36.4
Reduced compensation insurance claims	31.8
Improved programme (schedule) performance	31.8
Less complications	27.3
Reduced costs	22.7
Enhanced environment	22.7
Less rework	18.2
Enhanced image	18.2
Reduced cost of accidents	13.6
Enhanced profitability	9.1
Other	4.5

Table 9 indicates the extent to which thirteen aspects / interventions could contribute to an improvement in respondents' organisations' H&S performance on a scale of 1 (minor) to 5 (major), and a MS ranging between 1.00 and 5.00. It is notable that all the MSs are > 3.00, which indicates that all the aspects / interventions can be deemed to have major as opposed to minor potential to contribute to an improvement in respondents' organisations' H&S performance. However, four of the thirteen aspects / interventions have MSs > 4.20 ≤ 5.00, which indicates that they have between near major to major / major potential to contribute to an improvement in respondents' organisations' H&S performance: improvement process (TQM) and H&S plans are construction related; constructability reviews relative to H&S is design related, and prequalification of contractors on H&S is procurement related. Eight of the remaining nine aspects / interventions have MSs > 3.40 ≤ 4.20, which indicates that they have between some potential to near major / near major potential to contribute to an improvement in respondents' organisations' H&S performance: contract documentation (standardised); client contributions; project manager contributions; Quality Management System (QMS); integration of design and construction; optimum project

duration; partnering, and procurement systems (appropriate). The MS of designer contributions, ranked thirteenth, falls within the range > 2.60 ≤ 3.40, which indicates that it can be deemed to have major as opposed to minor potential to contribute to an improvement in respondents' organisations' H&S performance.

Table 9: Potential of aspects / interventions to contribute to an improvement in respondents' organisations' H&S performance.

Aspect / Interventions	Response %						MS	Rank
	Unsure	Minor ..... Major						
		1	2	3	4	5		
Improvement process e.g. TQM	35.0	0.0	0.0	5.0	20.0	40.0	4.54	1
Constructability reviews relative to H&S	5.0	0.0	0.0	10.0	35.0	50.0	4.42	2
H&S plans	0.0	0.0	0.0	13.6	36.4	50.0	4.36	3
Prequalification of contractors on H&S	0.0	0.0	5.3	15.8	31.6	47.4	4.21	4
Contract documentation (standardised)	0.0	5.3	0.0	15.8	31.6	47.4	4.16	5
Client contributions	9.1	0.0	4.5	18.2	31.8	36.4	4.10	6
Project manager contributions	4.5	0.0	9.1	13.6	31.8	40.9	4.10	7
Quality Management System (QMS)	14.3	4.8	0.0	23.8	19.0	38.1	4.00	8
Integration of design and construction	10.5	5.3	0.0	31.6	10.5	42.1	3.94	9
Optimum project duration	15.8	5.3	0.0	26.3	21.1	31.6	3.88	10
Partnering	15.8	0.0	5.3	31.6	21.1	26.3	3.81	11
Procurement systems (appropriate)	6.3	12.5	0.0	31.3	12.5	37.5	3.67	12
Designer contributions	13.6	9.1	18.2	18.2	22.7	18.2	3.26	13

Respondents were requested to record any comments in general regarding H&S in South African construction. The eight comments received have been recorded verbatim below. In summary, the OH&S Act and the Construction Regulations assist contractors in terms of H&S interventions and performance, traffic safety constitutes a challenge, emerging contractors and SMMEs constitute a challenge,

"Although as a company our services are not graded by the cidb, Gearhouse SA erects extremely complex outdoor stages / structures for events as well as supplying generator power, all of which need certification. We are at the forefront of erecting such stage / structure elements in South Africa."

"We have a good H&S Act and Construction Regulations – if the draft act and regulations become law as is without drastic changes we will be over regulated."

"It is very dangerous on our roads due to non-construction related / foreign impacts, like vehicles, like wind, excessive cold weather."

"Small and emerging contractors have inadequate H&S resources on projects. Small and emerging contractors sustain more injuries."

"Over the years a lot of emphasis has been put on H&S."

"The Construction Regulations have assisted us in making sure we are fully aware of their requirements as contractors to reduce incident / accident costs."

"H&S is being implemented although there are many companies especially small who do not entertain H&S at all in their companies which then effects those that do."

"For H&S to be truly successful its needs to be addressed at tender stage: priced for item in a BoQ submitted with tenders to ensure all contractors tender equally on H&S."

4. CONCLUSIONS

Based upon the mean percentage rebate received over a period of three years, namely 33.4%, it can be concluded that tangible benefits, in the form of financial benefits, accrue from enhanced H&S performance.

All eleven project parameters are more than important to very important / very important to respondents' organisations. Therefore it can be concluded that they represent mature organisations, as they appreciate that all parameters are important and also the synergy between the parameters.

A range of aspects / interventions / stakeholders contributed to respondents' organisations receiving a rebate from FEM. Therefore, it can be concluded that optimum H&S requires a multi-stakeholder effort and multi-interventions. Furthermore,

based upon the aspects / interventions / stakeholders that can be deemed to have contributed between a near major extent to a major extent / major extent, the following categories can be concluded to be critical: communication (H&S rules; H&S induction; H&S awareness; toolbox talks; H&S policy; H&S culture); management (management commitment to H&S; management accountability for H&S; inspections; integration of H&S into all activities / tasks; H&S Coordinator / Manager; H&S management system (H&SMS); site management; H&S policy; focus on H&S; H&S Officer; H&S Consultant; H&S culture; H&S disciplinary procedure); risk management (H&S rules; H&S induction; H&S inspections; hazard identification and risk assessment; safe work procedures (SWPs); incident investigations; H&S Officer; H&S culture); education and training (H&S induction; toolbox talks; H&S training, and H&S education); worker participation;

Given that comments from management and comments from CAH&S Agents / H&S Consultants predominate in terms of the basis for the perceived / confirmed contribution (impact), it can be concluded that management is committed to and involved in H&S. Furthermore, the comments from CAH&S Agents underscore the rationale of client responsibility for H&S in terms of the Construction Regulations, and that third party review enhances H&S. The comments from H&S consultants indicate that management is committed in that they appoint such consultants and that second party review enhances H&S.

Respondents' organisations generally do not measure H&S performance, which is an indication that measurement is not an integral part of their H&S programmes and or H&SMSs.

Given the range of the manifestation of the contribution of aspects / interventions / stakeholders to respondents' organisations' H&S performance, it can be concluded that H&S is the catalyst for the synergy between the various project parameters.

The range of aspects / interventions which have the potential to contribute to an improvement in respondents' organisations' H&S performance, indicate that design, procurement, and construction aspects / interventions have the potential to contribute thereto.

5. RECOMMENDATIONS

The DoL, employer associations, FEM, H&S consultants, and unions should motivate addressing H&S on the basis of, inter alia, the financial and other benefits that accrue there from.

Contractors should view H&S and other project parameters as a value and afford all project parameters equal status.

In addition to addressing all H&S related aspects and interventions that contribute to H&S performance and promoting the contribution of all project stakeholders to H&S, contractors should: optimise management commitment to and involvement in H&S; focus on H&S education and training, risk management, and H&S communication; optimise worker participation, and address H&S during procurement.