

BEST PRACTICE WORKERS' COMPENSATION INSURANCE PERFORMANCE: THE RELATED ISSUES

J J Smallwood¹

Associate Professor, Department of Construction Management, University of Port Elizabeth, PO Box 1600, Port Elizabeth, South Africa, 6000

Legislation and / or standard conditions of contract require contractors and related stakeholders to obtain workers' compensation (WC) insurance, which is included in the cost of construction, product or service as a labour overhead. However, based upon the amount of claims relative to assessments, contractors and related stakeholders can either incur a loading, or receive a rebate on their premiums. Given that the receipt of rebate awards is a manifestation of 'best practice', the recipients of such awards constitute an ideal sample frame to investigate H&S performance related issues. A study was conducted among a mutual WC insurer's rebate award recipients for a recent year, to investigate among other: the importance of traditional and non – traditional project parameters; the contribution by various aspects / interventions / stakeholders to the receipt of rebate awards, and their potential contribution to an improvement in H&S performance, and the manifestation of enhanced H&S performance. Notable and significant findings include: cost, productivity, quality and schedule are more important than H&S; safe work procedures (SWPs), awareness, management commitment, first line supervision, legislation and worker participation predominate among the contribution by forty-five aspects / interventions / stakeholders to the receipt of rebate awards, and non – H&S benefits are more prevalent than H&S benefits in terms of the manifestation of improvement in H&S performance.

Keywords: health and safety, performance, rebate, workers compensation insurance.

INTRODUCTION

Workers' compensation (WC) insurance is included in the cost of construction as a labour overhead. Premiums are based upon the sector and sub-sector applicable to the individual organisation, and the performance of the organisation in terms of their claims ratio. The claims ratio is calculated by expressing assessments as a percentage of claims, which is done annually on a triennial basis. Although WC insurance is included as an overhead, depending upon an organisation's claims ratio, they may either receive a merit rebate, or a loading of their assessment rate. An organisation is entitled to a rebate of between 50% and 2.5% if their claims ratio is between 24% and 62%. However, an organisation can have their assessment rate loaded by between 15% and 50% if their claims ratio is between 75% and 103%. Consequently, depending upon the amount of direct labour employed, there is a substantial incentive to minimise injuries through reduced accidents. Further, the claims ratio constitutes a measure of the effectiveness of a H&S programme, and also a benchmark.

Given that the receipt of rebate awards is a manifestation of 'best practice', the recipients of such awards constitute an ideal sample frame to investigate H&S

¹ coajjs@upe.ac.za

performance related issues. Consequently, Federated Employers Mutual Assurance Company Limited (FEM) clients which received rebate award certificates in 2000 as a result of their favourable claims ratios were surveyed to determine the:

importance of traditional and non – traditional project parameters;

contribution by various aspects / interventions / stakeholders to the receipt of rebate awards;

potential contribution by various aspects / interventions / stakeholders to an improvement in H&S performance, and

holistic manifestations of enhanced H&S performance.

LITERATURE SURVEY

Aspects which affect H&S

The salient aspects, which should be a hallmark of, or included in any H&S programme are presented below.

According to Levitt and Samelson (1993), management commitment at all levels, especially top, is a prerequisite. If top management does not focus on H&S, it is unlikely that operational management will allocate time and effort thereto. However, accountability, realized through evaluation of H&S performance is necessary to engender management and worker focus on H&S (The Business Roundtable 1995).

The Occupational Health and Safety Act (OH&S Act) and incumbent regulations (Republic of South Africa 1993) require contractors to provide supervision to ensure the H&S of workers. Contractors are also required to appoint an H&S Representative when there are twenty or more workers in a work place.

The Business Roundtable (1995) maintains values are important, as without values one is unlikely to be concerned with the well being of workers. Senge (1990) stresses the importance of vision and the ability to see beyond current reality namely, injuries. These, along with goals, should be reflected in the policy (Smallwood 1995). Hofman (1987) maintains the biggest failing of management is not having a policy and Fettig (1991) maintains that signing on the 'bottom' line has no equal! Goals motivate, however, to realise optimum H&S, a goal of 'zero accidents' is required, as opposed to targeting on achieving, or improving on average industry injury rates (The Business Roundtable 1995).

Smallwood (1997a) maintains worker participation is essential, as workers are familiar with their workplaces, spend all their time therein, and are the ones who get injured due to the lack of H&S.

Planning H&S when bidding or negotiating is critical as this is the stage when the decision to allocate resources is taken (Hinze 1997). The H&S organisation for a project should be included in the project H&S plan and forms an integral part of a programme. Attention should be paid to key sub-systems such as structure, culture, commitment, authority, responsibility, leadership and motivation (Rowlinson 1997).

Hazard identification is a key element of an H&S programme (Rozel 1992) and should be an integral part of a project H&S plan (Hinze 1997). The OH&S Act (Republic of South Africa 1993) requires that employers conduct risk assessments, and where certain risks exist, that baseline medical screening and medical surveillance

be conducted. Anderson (1987) in turn contends pre-placement screening offers risk managers an effective tool for controlling the chance of workplace injuries. Rowlinson (1997) advocates the use of method statements they detail how each activity will be executed. Safe work procedures (SWPs) in turn empower people to do a job consistently and in a healthy and safe manner every time (Hood 1994).

However, written rules are necessary to communicate the basic requirements and establish safe work practices (The Associated General Contractors of America 1990).

Disciplinary procedures in turn are essential to engender commitment, indicate that H&S is part of the job, and not negotiable, and to ensure compliance to the rules (Rowlinson 1997).

Induction sets the tone for H&S, and should be conducted for all workers every time a project or new activity starts, not only for new workers as: no two projects are alike and a particular activity may be hazardous, or even new to experienced workers (Levitt and Samelson 1993). H&S training is vital, as doing a job safely is as important as doing the job (La Bar 1991). H&S training also empowers workers to participate in H&S (Smallwood 1997a). Toolbox talks, which can address a range of specific activities, are an ideal and effective means of on-the-job training as the job progresses (Levitt and Samelson 1993). H&S education in turn, empowers management, which is a pre-requisite for management commitment (1995).

H&S committees are a legal requirement (Republic of South Africa 1993) and provide a H&S forum for all those involved in a project, facilitate co-ordination of H&S, and ultimately enfranchise workers (Rowlinson, 1997).

Promotion develops and maintains an awareness of key H&S issues and engenders an optimum H&S culture (Rowlinson 1997). Promotion related interventions include: display of policy, posters, and current accident statistics; issue of credit card size copies of the policy; talks; video viewing; recognition in the form of monthly awards, and toolbox talks. Other interventions include an H&S suggestion scheme, H&S message / theme for the month or week, and an H&S newsletter (Smallwood 1995). Feedback ensures that management and workers are kept informed regarding their performance, that they remain motivated relative to the goals, and reinforces healthy and safe behaviours (Rowlinson 1997).

H&S competitions serve as a motivator, complement management by objectives, and effectively raise the level of awareness. Research conducted in South Africa determined there to be a statistically significant relationship between participation in H&S competitions and H&S performance (Smallwood 1995). H&S star grading programmes fulfill a similar function. Recognition of healthy and safe work is important as it motivates workers as a result of increasing liking for the job and decreasing feelings of pressure (Levitt and Samelson 1993). A study conducted by Liska (Levitt and Samelson 1993) found that firms using incentive systems, together with other H&S practices, had better H&S records than those that did not.

According to Rowlinson (1997) auditing is necessary as all control systems deteriorate over time and become obsolete. Auditing requires the selection of any number of aspects pertaining to activities and the examination thereof. Rozel (1992) maintains inspections are a key element of an H&S programme, and Minetos (1989) that they are the key to eliminate hazards. However, records are essential, not only to comply with legislation, but to remind and prompt. Investigations in turn, should be conducted after all incidents, even those not resulting in injury as the outcome of incidents is largely fortuitous (Rowlinson 1997).

OTHER INFLUENCES

Various authors, inter alia Hinze (1997), and Levitt and Samelson (1993) emphasise the importance of a multi-stakeholder effort relative to H&S, which includes contributions by clients, project managers, designers, insurers, and unions.

Quality management systems (QMSs) complement quality as they entail a structured approach to all activities, characterised by, inter alia, documented procedures and checklists, which complement H&S (Smallwood 1997b).

Total quality management (TQM) is an improvement strategy, which links the processes of H&S, productivity and quality, thus facilitating the synergy between them (Levitt and Samelson 1993).

Partnering facilitates multi-stakeholder contributions and complements H&S through the development of mutual goals, and optimum project relations and conditions, which in turn engender H&S (Levitt and Samelson 1993).

RESEARCH

Sample frame and methodology

The sample frame consisted of FEM clients, which received rebate awards in 2000, as a result of their favourable claims ratios.

A questionnaire was mailed to seventy-nine recipients of FEM rebate awards. Four were 'returned to sender' due to the closure of PO Boxes, one response was received too late to include in the analysis of the data, and a further response was incomplete. Twenty-two responses were included in the analysis of the data, which represents a 29.3% $[22 / (79 - 4)]$ net response rate.

FINDINGS

Introduction

Given that respondents were required to respond in terms of the extent to which aspects / interventions / stakeholders contributed and could contribute to H&S, and the importance of various parameters, it was necessary to compute an importance index (II) with a minimum value of 0, and a maximum value of 4 or 5, to determine the degree of contribution, and to rank various parameters. The II is calculated using the formulae:

$$\frac{5n_1 + 4n_2 + 3n_3 + 2n_4 + 1n_5 + 0n_6}{(n_1 + n_2 + n_3 + n_4 + n_5 + n_6)} \quad \text{or} \quad \frac{4n_1 + 3n_2 + 2n_3 + 1n_4 + 0n_5}{(n_1 + n_2 + n_3 + n_4 + n_5)}$$

<p>where</p> <p>n_1 = Major contribution</p> <p>n_2 = Near major contribution</p> <p>n_3 = Contribution</p> <p>n_4 = Less of a contribution</p> <p>n_5 = Minor contribution</p> <p>n_6 = No contribution</p>	<p>where</p> <p>n_1 - Very important</p> <p>n_2 - More than important</p> <p>n_3 - Important</p> <p>n_4 - Less than important</p> <p>n_5 - Not important</p>
--	---

Findings

The greater percentage of respondents (59.1%) undertook general building contracting, followed jointly by general civil engineering contracting and subcontracting (22.7%), and materials supply (18.2%). An equal percentage of respondents (4.6%) represented each of materials manufacturing, plant hire and plant yards.

Table 1 indicates that in terms of employment levels, respondents represented all categories of employers.

Table 1: Number of employees employed by respondents

Category	Least	Most	Mean
Management	1	14	3.9
Supervisory	1	100	9.2
Production	11	450	65.0

The mean percentage rebates received by respondents indicates that on average they had achieved claims ratios not exceeding 32%, 34%, and 36% for the years 1998, 1999, and 2000 (Table 2).

Table 2: Mean percentage rebate received by respondents

Year	Percentage
1998	40.5
1999	38.2
2000	34.6

Table 3 indicates the importance attached to traditional and non-traditional project parameters by respondents' organisations in terms of percentages relative to importance on a scale of 1 to 5, and a ranking based upon an II with a minimum value of 0, and a maximum value of 4.0.

Given that ten of the eleven parameters have II values above the midpoint value of 2.0, the parameters can be deemed as important to respondents - with the exception of environment (natural). However, given that the II values of these ten parameters are $> 3.2 \leq 4.0$, they can be deemed to be very important / more than important to very important to respondents. From a construction management perspective, it is notable that the traditional project parameters of project cost, project quality, and project schedule achieved rankings of 1st, 4th, and 6th, respectively. It is significant that project H&S and public H&S achieved rankings of 8th and 10th. Given the focus of the study, namely H&S, it is notable that 63.6 % of respondents responded that project H&S is very important.

Table 3: Degree of importance of various project parameters to respondents

Project parameter	Degree of importance (%)					II	Rank
	Very				Not		
	1	2	3	4	5		
Project cost	86.4	9.1	0.0	4.6	0.0	3.77	1=
Client satisfaction	90.9	4.6	0.0	0.0	4.6	3.77	1=
Labour productivity	86.4	9.1	0.0	4.6	0.0	3.77	1=
Project quality	90.9	0.0	4.6	0.0	4.6	3.73	4
Contractor satisfaction	81.0	9.5	9.5	0.0	0.0	3.71	5
Project schedule	72.7	22.7	4.6	0.0	0.0	3.68	6
Designer satisfaction	66.7	23.8	9.5	0.0	0.0	3.57	7
Project health and safety	63.6	27.3	9.1	0.0	0.0	3.55	8
Worker satisfaction	66.7	14.3	9.5	9.5	0.0	3.38	9
Public health and safety	63.6	13.6	18.2	4.6	0.0	3.36	10
Environment (natural)	36.4	18.2	36.4	4.6	4.6	2.77	11

Table 4 indicates the contribution by forty five aspects / interventions / stakeholders to the receipt of FEM rebates by respondents' organizations in terms of percentages relative to contribution on a scale of 1 to 5, or not at all, and a ranking based upon an

II with a minimum value of 0, and a maximum value of 5.0. Given that the midpoint value of the II range is 2.5, then approximately half (twenty two) of the aspects / interventions/ stakeholders can be deemed to have contributed. Given that the II value of safe work procedures (SWPs), namely 4.27, falls within the range $> 4.17 \leq 5.0$, it can be deemed to be the only aspect / intervention / stakeholder, which made a major / near major-to-major contribution. Given the critical role that SWPs are acknowledged to play in H&S by literature, inter alia, the 1st place ranking achieved by SWPs is significant.

It is notable that the II values for the aspects/interventions/stakeholders, which achieved rankings between 2nd and 10th, are in the range $> 3.34 \leq 4.13$, which indicates they made a near major contribution / a contribution-to-near major contribution: awareness; management commitment; first line supervision; legislation; worker participation; accountability of management for H&S; project manager; integration of H&S into all activities / tasks, and incident investigation. H&S rules, which achieved a ranking of 11th, fell marginally outside the range, with an II value of 3.33. Given that management commitment and worker participation are acknowledged to be the two pillars of any H&S programme, the rankings of 3rd and 6th respectively, are notable. Given that first line supervision is a sub – level of site management, and that it directs and supervises the ‘physical’ construction process, the ranking of 4th is notable. However, management commitment to H&S is related to first line supervision, as it is essential that first line supervisors always address H&S when directing and supervising the construction process. Although legislation constitutes a minimum requirement, given that it effectively constitutes a template, the ranking of 5th is notable. Numerous authors advocate accountability of management for H&S.

The II values of the aspects / interventions / stakeholders, which achieved rankings between 11th and 22nd, namely in the range $> 2.51 \leq 3.33$, indicate that they made a contribution / less of a contribution-to-a contribution: H&S rules; H&S policy; quality management system (QMS); project H&S plans; client; H&S culture; H&S management system; focus; H&S training; H&S disciplinary procedure; H&S education, and H&S inspections. Toolbox talks, which achieved a ranking of 23rd, fell marginally outside the range.

The II values of the aspects / interventions / stakeholders, which achieved rankings between 23rd and 37th, namely in the range $> 1.68 \leq 2.51$, indicates that they made less of a contribution / a minor contribution to less of a contribution: toolbox talks; recognition of H&S performance; designer; goal setting; allocation of financial resources to H&S; improvement process eg. TQM; H&S meetings; H&S induction; feedback on H&S; medical surveillance; H&S coordinator; measurement; H&S Representatives; partnering, and H&S notice board. H&S consultant, which achieved a ranking of 38th, fell marginally outside the range.

The remaining aspects / interventions / stakeholders, which achieved rankings between 38th and 45th, namely in the range $\geq 0.0 \leq 1.68$, made no contribution to a minor contribution.

Table 4: Extent of contribution by various aspects / interventions / stakeholders to the receipt of rebates by respondents

Aspect / Intervention / Stakeholder	Contribution (%)					No	Un-sure	II	Rank
	Major		Minor						
	1	2	3	4	5				
Safe work procedures (SWPs)	68.2	9.1	13.6	4.6	0.0	0.0	4.6	4.27	1
Awareness	65.0	5.0	10.0	10.0	5.0	5.0	0.0	4.00	2
Management commitment	54.6	18.2	13.6	4.6	0.0	9.0	0.0	3.95	3
First line supervision	57.1	4.8	19.1	4.8	9.5	4.8	0.0	3.81	4
Legislation	38.1	23.8	19.1	9.5	4.8	4.8	0.0	3.67	5
Worker participation	45.5	18.2	9.1	4.6	22.7	0.0	0.0	3.59	6
Accountability of management for H&S	45.5	13.6	13.6	4.6	13.6	4.6	4.6	3.45	7=
Project manager	36.4	18.2	18.2	13.6	9.1	4.6	0.0	3.45	7=
Integration of H&S into all activities / tasks	38.1	14.3	23.8	4.8	9.5	9.5	0.0	3.38	9=
Incident investigation	47.6	9.5	9.5	9.5	14.3	9.5	0.0	3.38	9=
H&S rules	38.1	19.1	14.3	4.8	14.3	4.8	4.8	3.33	11
H&S policy	36.4	18.2	13.6	4.6	18.2	4.6	4.6	3.23	12
Quality Management System (QMS)	31.8	18.2	13.6	13.6	4.6	13.6	4.6	3.05	13
Project H&S plans	23.8	14.3	28.6	4.8	19.1	9.5	0.0	2.90	14=
Client	19.1	19.1	23.8	19.1	9.5	9.5	0.0	2.90	14=
H&S culture	42.9	4.8	4.8	9.5	19.1	9.5	9.5	2.86	16=
H&S management system	27.3	13.6	27.3	0.0	13.6	13.6	4.6	2.86	16=
Focus	23.8	23.8	14.3	4.8	19.1	9.5	4.8	2.86	16=
H&S training	28.6	4.8	28.6	9.5	14.3	14.3	0.0	2.81	19
H&S disciplinary procedure	33.3	4.8	19.1	9.5	14.3	19.1	0.0	2.76	20
H&S education	28.6	9.5	19.1	4.8	23.8	14.3	0.0	2.71	21
H&S inspections	33.3	4.8	9.5	14.3	19.1	14.3	4.8	2.62	22
Toolbox talks	33.3	0.0	19.1	4.8	14.3	23.8	4.8	2.48	23
Recognition of H&S performance	19.1	14.3	9.5	23.8	9.5	23.8	0.0	2.38	24
Designer	19.1	9.5	14.3	14.3	28.6	14.3	0.0	2.33	25
Goal setting	9.1	13.6	31.8	9.1	13.6	22.7	0.0	2.27	26
Allocation of financial resources to H&S	9.5	0.0	47.6	4.8	23.8	14.3	0.0	2.24	27
Improvement process eg. TQM	23.8	4.8	14.3	14.3	9.5	14.3	19.1	2.19	28
H&S meetings	14.3	14.3	19.1	4.8	19.1	28.6	0.0	2.14	29
H&S induction	14.3	9.5	19.1	9.5	23.8	19.1	4.8	2.10	30
Feedback on H&S performance	14.3	4.8	19.1	19.1	19.1	23.8	0.0	2.05	31
Medical surveillance	14.3	4.8	19.1	19.0	9.5	28.6	4.8	1.95	32
H&S coordinator	9.5	9.5	28.6	0.0	19.1	23.8	9.5	1.90	33=
Measurement	14.3	9.5	19.1	0.0	23.8	23.8	9.5	1.90	33=
H&S representatives	9.5	4.8	28.6	4.8	23.8	23.8	4.8	1.86	35=
Partnering	14.3	4.8	14.3	9.5	33.3	19.1	4.8	1.86	35=
H&S notice board	14.3	9.5	14.3	9.5	14.3	38.1	0.0	1.86	35=
H&S consultant	9.5	4.8	23.8	0.0	28.6	28.6	4.8	1.67	38
H&S suggestion box	9.5	0.0	23.8	14.3	14.3	38.1	0.0	1.62	39=
Participation in H&S star gradings	4.8	9.5	19.1	14.3	14.3	33.3	4.8	1.62	39=
H&S incentives	9.5	4.8	14.3	0.0	42.8	23.9	4.8	1.52	41=
Participation in H&S competitions	9.5	4.8	9.5	19.1	19.0	38.1	0.0	1.52	41=
H&S message / theme for the month or week	4.8	4.8	4.8	19.1	33.3	28.6	4.8	1.29	43=
H&S newsletter	4.8	0.0	14.3	23.8	14.3	42.9	0.0	1.29	43=
Unions	9.5	0.0	9.5	4.8	33.3	38.1	4.8	1.19	45

Table 5 indicates the reasons for the perceived / confirmed contribution (impact) of the aspects / interventions / stakeholders presented in Table 4. It is notable that qualitative reasons in the form of personal observations and work environment / climate (40.9%) achieved a ranking of joint 1st, followed jointly by comments from management and measurement (36.4%). Comments from workers were acknowledged by 27.3% of respondents.

Table 5: Reasons for the perceived / confirmed contribution (impact) of the aspects / interventions / stakeholders.

Reason	Yes response (%)	Rank
Personal observations	40.9	1=
Work environment/climate	40.9	1=
Comments from management	36.4	3=
Measurement	36.4	3=
Comments from workers	27.3	5
Phenomena	9.1	6

62.5% of the 36.4% respondents, which cited measurement, identified claims ratio and indirect cost of accidents, whereas only 12.5% identified the traditionally calculated disabling injury incidence rate (DIIR).

Enhanced productivity (50%) predominates among manifestation of improvement resulting from the contribution by various aspects / interventions / stakeholders to the receipt of rebate awards, followed by reduced cost of accidents (45.5%), reduced accidents (40.9%), and enhanced housekeeping (36.9%). Given the sample frame, namely FEM rebate award recipients, the percentage responses relative to compensation insurance rebates, and reduced compensation insurance claims, 27.3% and 22.7% respectively, are notable.

Table 6 indicates the potential contribution by thirteen aspects / interventions to an improvement in FEM rebate award recipients' H&S performance in terms of percentages relative to contribution on a scale of 1 to 5, or not at all, and a ranking based upon an II with a minimum value of 0, and a maximum value of 5.0. Given that the midpoint value of the II range is 2.5, then nine of the aspects / interventions can be deemed to have the potential to contribute.

It is notable that the II values for the 1st and 2nd ranked aspects/interventions, project manager contributions and optimum project duration, are in the range $>3.34 \leq 4.13$, which indicates they have the potential to make a contribution / near major contribution. The II values of the aspects / interventions, which achieved rankings between 3rd and 9th, namely in the range $> 2.51 \leq 3.33$, indicate that they have the potential to make less of a contribution / contribution: pre-qualification of contractors on H&S; contract documentation (standardized); Quality Management System (QMS); client contribution; designer contributions; procurement systems (appropriate), and integration of design and construction.

Project specific H&S plans, which achieved a ranking of 10th, fell just outside the range with an II value of 2.48. The II values of the aspects / interventions, which achieved rankings between 10th and 13th, namely in the range $> 1.68 \leq 2.51$, indicate that they have the potential to make a minor contribution / less of a contribution: project specific H&S plans; partnering; constructability reviews relative to H&S, and improvement process eg. TQM.

Table 6: Extent to which various aspects / interventions could contribute to an improvement in H&S performance

Aspect/Interventions	Potential contribution (%)					No	Un- sure	II	Rank
	Major		Minor						
	1	2	3	4	5				
Project manager contributions	42.9	14.3	33.3	4.8	0.0	0.0	4.8	3.81	1
Optimum project duration	30.0	20.0	35.0	5.0	5.0	5.0	0.0	3.50	2
Pre-qualification of contractors on H&S	33.3	28.6	9.5	0.0	14.3	9.5	4.8	3.24	3
Contract documentation (standardised)	28.6	14.3	28.6	4.8	19.1	4.8	0.0	3.14	4
Quality Management System (QMS)	38.1	9.5	19.1	0.0	14.3	4.8	14.3	3.00	5
Client contributions	22.7	18.2	18.2	22.7	9.1	4.6	4.6	2.95	6
Designer contributions	9.1	22.7	40.9	9.1	4.6	9.1	4.6	2.82	7
Procurement systems (appropriate)	23.8	9.5	23.8	4.8	23.8	4.8	9.5	2.62	8
Integration of design and construction	23.8	9.5	28.6	4.8	4.8	9.5	19.1	2.57	9
Project specific H&S plans	19.1	9.5	33.3	0.0	14.3	9.5	14.3	2.48	10
Partnering	23.8	9.5	9.5	14.3	19.1	14.3	9.5	2.33	11
Constructability reviews relative to H&S	20.0	10.0	20.0	10.0	10.0	10.0	20.0	2.30	12
Improvement process eg. TQM	15.7	0.0	26.3	5.3	10.5	10.5	31.6	1.79	13

CONCLUSIONS

In terms of the extent of contribution to the receipt of rebate awards, certain aspects / interventions / stakeholders are substantially more important than others, namely: SWPs; awareness; management commitment; first line supervision; legislation; worker participation; accountability of management for H&S, and project management. However, the others do play a contributory role. Procurement, client and designer related contributions can, and do contribute to an improvement in H&S performance.

Given the sample frame, namely FEM rebate award recipients, relative to the importance of various project parameters, the 8th ranking achieved by project H&S is notable. This may indicate that systems in the form of the 1st ranked safe work procedures (SWPs) are the critical issue in terms of H&S.

It is also notable that the respondents consistently received a rebate for the three – year period addressed during the study. This implies that continual improvement is possible, and consequently, the goal of zero accidents.

Both H&S and non – H&S benefits accrue from H&S related interventions and contributions by various stakeholders. However, these are qualitative based, which amplifies the need for management commitment due to the lack of extensive quantitative data. By virtue of its 3rd ranking in terms of contribution to the receipt of rebate awards, the role of management commitment is acknowledged.

REFERENCES

- Anderson, CK (1987) Pre-Placement Screening: Survival of the Fittest. Risk Management, November, 44 – 46.
- Fettig, A (1991) Sign Up for Safety. Safety and Health, July, 26-27.
- Hinze, JW (1997) Construction Safety. New Jersey: Prentice-Hall, Inc.

- Hofman, MA (1987) Commitment Key to Safety: Expert. *Business Insurance*, October, 48.
- Hood, S (1994). Developing operations procedures: 9 Steps to success. *Accident Prevention*, May/June, 18-21.
- La Bar, G (1991) Worker Training: An Investment in Safety. *Occupational Hazards*, August, 23-26.
- Levitt, RR and Samelson, NM (1993) *Construction Safety Management*. 2ed. New York: John Wiley and Sons, Inc.
- Minetos, P (1989) Supervisors: Teach Then Well. *Safety and Health*, October, 64-66.
- Republic of South Africa (1993) *Occupational Health & Safety Act No. 85 of 1993*. 1993. Pretoria: State President's Office.
- Rowlinson, S (1997) *Hong Kong Construction – Site Safety Management*. Hong Kong: Sweet & Maxwell Asia.
- Rozel, WH (1992) Partnerships: Industry-driven, Government Supported OSH Programs. *Professional Safety*, March, 30-32.
- Senge, PM (1990) *The Fifth Discipline: The Art and Practice of the Learning Organisation*. New York: Double Day / Currency.
- Smallwood, JJ (1995) The influence of management on the occurrence of loss causative incidents in the South African construction industry. Unpublished MSc Dissertation, Department of Construction Management, University of Port Elizabeth.
- Smallwood, JJ (1997a) Worker participation in South African construction health and safety. In: Haupt, TC and Rwelamila, PD (Eds), *Health & Safety in Construction: Current and future challenges*, 1st South African Construction Health & Safety Conference, 7 - 10 October 1997, Pentech, 201 - 214.
- Smallwood, JJ (1997b) Constructing reinforced concrete frames without injury and fatality: The relationship between health and safety and quality. *The Civil Engineering and Building Contractor*, March, 40 – 43.
- The Associated General Contractors of America (AGC) (1990). *AGC Guide for a Basic Safety Program*. Washington, DC: AGC
- The Business Roundtable (1991) *Improving Construction Safety Performance*. New York: The Business Roundtable.