A Conceptual Model for Pricing Health & Safety on Construction Projects

Edzua Jirel Akawi[1], Innocent Musonda[2] and Nazeem Ansary[3]

Abstract

The competitive nature of the construction industry (CI) has marginalised health and safety (H&S) on construction projects. Most clients in the CI, if not all, award projects based on price and in most cases to the "cheapest bidder" and not the "safer bidder". Consequently, such practices have compelled contractors to lower their bid price to increase their chances of being awarded projects, whereas in contrast, H&S is marginalised. The study, which was a case study of nine projects of which six were civil engineering projects and three building construction projects, was purposed to conceptualise a model for pricing H&S on construction projects. The findings showed that contractors do price for H&S using an itemised breakdown even though such items are not included as a trade in the Bill of Quantities (BOQs). With regards to expenditure, the actual costs of H&S ranged between 2.9% and 3.98% for projects with a value below R500 million and between 4.08% and 4.90% for projects with a value above R500 million. Health and safety costs were found to be directly proportional to the projects value and indirectly influenced by the client. Previous studies recommended that H&S should be priced as an itemised trade in the BOQs, but such recommendations are yet to be implemented. The lack of a conceptual model for pricing H&S on construction makes accurate and adequate monitoring of H&S costs unlikely. Thus, a standardised pricing model will assist contractors to price adequately for H&S, and clients, to ensure that provision for H&S measures on construction projects is adequate as required by the Construction Regulations (CR) 2014.

Keywords: Conceptual model, Construction projects, Cost drivers, Health and Safety (H&S), Pricing.

1. INTRODUCTION

Poor H&S performance is one of the major problems faced by the CI in South Africa and many other countries worldwide. The number of accidents recorded and the costs implications are still high. In the United Kingdom, the Health and Safety Executive (HSE) reported that in 2013/14, injuries and new cases of ill-health in workers largely from working conditions cost society an estimated £14.3 billion; £9.4 billion from illness and £4.9 billion from injuries (HSE, 2015:19). In South Africa, a report by the Construction Industry Development Board (CIDB, 2009:8) recorded that the total cost of accidents direct and indirect

[1] Master Scholar & researcher, Faculty of Engineering & Built Environment, University of Johannesburg, South Africa, P.O. Box 524, Auckland Park 2006, akawijirel@gmail.com

[2] Senior Lecturer (PhD), Faculty of Engineering & Built Environment, University of Johannesburg, South Africa, P.O. Box 524, Auckland Park 2006, imusonda@uj.ac.za

[3] Head of Department, Department of Construction Management & Quantity Surveying, University of Johannesburg, South Africa, P.O. Box 524, Auckland Park 2006, nansary@uj.ac.za

amount to R3.5 billion per year which equated to two (2) percent of the project expenditure. The International Labour Organization (ILO) reported that 337 million occupational accidents occur worldwide on a yearly basis and as a result, 2 million and 310 thousand people deceased and 160 million people get injured. The financial loss caused by occupational accident is estimated at 1.2 trillion USD. Occupational accidents cause important financial losses in the workplace (Yilmaz & Çelebi, 2015:1). According to Rikardsson (2005), these costs can be reduced if accidents can be prevented.

2. LITERATURE REVIEW

2.1. PRICING FOR H&S ON CONSTRUCTION PROJECTS

As Motchar & Arditi (2001:140) stated, the CI is characterised by extreme competitiveness, with high risks and generally low profit margins when compared to other areas of the economy. The competitive nature of the CI hinders H&S performance (Cole, 2003:7). Sumner & Farrell (2003:194) remark that such competition has often forced contractors to look for cost savings during the construction phase and such practice leads to H&S being compromised.

As Sumner & Farrell (2003:1993) put it, inadequate and poor H&S do not only affect other project parameters, namely: cost, quality and schedule negatively, but the sustainability of the environment as well. According to Smallwood (1999:1), the CI is perceived by many to be price driven. Projects are awarded on the lowest tendered price and not enough consideration is given to other factors such as contractors' H&S management proposals, ability to achieve the required quality standards or complete the contract within the required timescale. Elsewhere, López-Alonzo et *al.* (2013:152) argue that making adequate provisions for H&S on construction projects could yield benefits to both companies and societies as a whole.

In South Africa, The CR (2014) addresses in detail the role of clients with regard to H&S. The client is required to, *inter alia*; prepare a suitable, sufficiently documented and site specific H&S specifications; include H&S specifications in the tender documents (CR, 2014:11; regulation (f)) and ensure that contractors submitting tenders have made adequate provision for the cost of H&S (Regulation (g); CR, 2014:11). Based on the above, the scotching question we ask is: how can the client ensure that the contractor has made adequate allowance for H&S measure on the construction project if a standard pricing tool to measure such output is non-existent?

In South Africa, it is common practice to include H&S costs as a line item in the Preliminaries and General (P&Gs) section of BOQ and not as an itemised trade showing a breakdown of H&S costs even though studies by the CIDB (2009), Smallwood & Emuze (2014) and Sumner & Farrell (2009) recommended that H&S costs should be itemised in the BOQ; be laid out using a structured approach and be priced in a special section in the BOQ respectively. It is to note that these recommendations are yet to be implemented in the CI.

The motivation for the study is embedded in the fact that conceptualizing a model for pricing H&S on construction projects will not only assist contractors to make adequate provision for H&S on construction projects or client to ensure that the contractor has made adequate allowance for H&S on said projects but

to manage and report on the H&S costs on the said projects. The lack of such pricing model makes the accurate, adequate budgeting and controlling of H&S costs unlikely.

2.2. DRIVERS OF H&S COSTS ON CONSTRUCTION PROJECTS

As Bokor (2010) defines it, *cost drivers* are factors which have a cause-effect relationship with costs. These are any factors which cause a change in the costs of work performed in an organisation or in a process. A contextual application of the above definition to the current study, *"H&S cost drivers"* can be defined as *"factors or elements"* that have an impact on the costs of H&S on a given project computed as a sum of all items quantified and costed in accordance to the H&S requirements of the project as outlined in the H&S specifications. These factors or elements can be affected by various inputs *inter alia*: quantity factor (i.e.: number of personnel or equipments required), applicable rates (i.e.: fee scales, labour rates), project duration, etc. As presented in *Table 1*, 18 elements, referred in the study as "*cost drivers*" were identified from literature.

Table 1: H&S Cost drivers identified from literature

Item No.	Cost Drivers	Literature
1	PPEs	HSA (2010)
2	H&S Personnel	CR (2014); Smallwood & Emuze (2014)
3	Safety Equipments (SEs)	Smallwood (1999);Sawasha et *al.* (1999)
4	H&S induction & training	Hinze & Gambatese (2003)
5	H&S Inspections	CR (2014)
6	H&S Audits	CR (2014); Alli (2008)
7	H&S Incentives	Musonda & Pretorius (2015)
8	H&S Meetings	Bizzell (2008:29);CR (2014)
9	Accident investigations and reporting	Kartam et *al.* (2000:177)
10	H&S Medicals	CR (2014:18); HSA (2010)
11	H&S Signage	Sadus & Griffiths (2004)
12	H&S Campaigns	CIDB (2009)
13	First Aid	Wells & Hawkins (2009)
14	H&S Promotions	Hymel et *al*. (2011)
15	H&S Branding	Musonda & Haupt (2011)
16	Security features	Farinyole et *al.* (2013)
17	Emergency Preparedness	Wells & Hawkins (2009)
18	Insurance costs	Babu & Kanchana (2014); COID Act (1993)

3. THE STUDY

The study was a case study of nine projects of which six were civil engineering projects and three building projects which were conducted in two different organizations. A literature review was conducted to identify the various cost elements herein referred to as *cost drivers*. The empirical data were collected through both interviews (Kothari, 2004) and documents analysis (Bowen, 2009). Interviews were purposed to conduct an in-depth investigation on the importance attributed to H&S at both projects and organizations level, evaluate clients' compliance with regards to regulations 5(f) & (g) of the CR 2014 specifically and assess how H&S is priced on construction projects. The five participants that were interviewed, out of which four were H&S Managers and an H&S executive were employed in the 5 large construction companies in South Africa respectively. Their work experience ranged between 10 and 25 years. Documents analysis was conducted to identify the H&S elements priced for on construction projects as well as establish the actual

costs of H&S on said projects. Interviews were conducted in 5 different organizations purposely selected based on 2 criteria, namely: H&S records and expertise. It was believed that companies that have good H&S records and have been in the CI for long (i.e.: 5 years and above), will provide the sought information. The choice of projects used in the case study was based on value and type. Considering the fact projects are different in nature and have different requirements, such factors have an impact on H&S costs. With regards to value, the study was limited to a minimum threshold of R30 million. This is justified by the fact that such projects will have good H&S specifications as compared to those of a lesser value.

Data obtained were analysed using descriptive statistics, namely: frequency count (Dawson 2002), percentage ratios (Kumar, 2011) and rankings (Saunders et *al*., 2009). Frequency count was used to identify the most and least frequent H&S cost drivers found on projects (*Figure 1*). Percentiles were used to quantify H&S costs to project expenditure ratios (*Table 3*). Rankings were used to classify various cost drivers based on their FS in descending order.

4. FINDINGS

4.1. FINDINGS FROM DOCUMENTS ANALYSIS

The project values ranged between R31 million and R687 million. In terms of duration, the shortest project period was 10 months and the longest 27 months (See *Table 2*).

Table 2: Project Information

Item No.	Project Names	Scope of work	Duration (months)	Labour (Peak)	Project Budget Expenditure
1	Project A	Civil (Pipeline)	18	260	R 400 000 000.00
2	Project B	Civils (Pipeline)	12	120	R 195 000 000.00
3	Project C	Civils (Roadworks)	12	31	R 31 500 000.00
4	Project D	Civils (Pipeline)	27	600	R 630 000 000.00
5	Project E	Civils (Pipeline)	21	280	R 500 000 000.00
6	Project F	Civils (Pipeline)	18	450	R 687 000 000.00
7	Project G	Building Works	10	375	R86 000 000.00
8	Project H	Building Works	13	250	R72 000 000.00
9	Project I	Building Works	24	850	R372 000 000.00

Table 2 presents information; namely: type of project, duration, labour content and project budget on the nine projects used for the study.

The documents analysis revealed that the actual expenses on H&S elements ranged from R900 thousand for a R30 million project and about R34 million for a 650 million project (*Table 2*). In terms of the actual expenses on H&S and the project values ratios, it was found that the actual costs ranged between 2.39% and 4.90% (*Table 3*). It was also observed that projects with a value of R500 million and above had a higher H&S expense to project value ratio. These projects had a ratio of 4% and above. Of interest, however a R31 million value for project C was that this particular project spent about 3% of its projects value on H&S provisions. On average on building projects, the percentage spent on H&S equated to 3.47% and 3.53% on civil engineering projects.

Table 3: H&S Expenditure ratios

Item No.	Project Names	Project Budget Expenditure	HS& expenditure	% ratio
1	Project A	R400 000 000.00	R9 553 995.79	2.39%
2	Project B	R195 000 000.00	R5 203 248.74	2.67%
3	Project C	R31 500 000.00	R957 454.78	3.04%
4	Project D	R630 000 000.00	R25 690 909.42	4.08%
5	Project E	R500 000 000.00	R20 688 493.19	4.14%
6	Project F	R687 000 000.00	R33 664 777.73	4.90%
7	Project G	R86 000 000.00	R2 680 986.22	3.12%
8	Project H	R72 000 000.00	R2 410 426.05	3.35%
9	Project I	R372 000 000.00	R14 791 563.62	3.98%

Table 3 presents H&S costs on the nine projects as well as percentage ratios of H&S costs to project expenditure as used in the study.

As shown in *Figure 1*, nine elements were found to be the most frequent on the nine projects with a frequency score (FS) of 9. These expense factors included: H&S personnel, PPEs, safety equipments, induction and training, incentives, medicals, signage, first aid and H&S promotions. Incidents and investigations were ranked second with a FR of 8. Security features was ranked third with a FS of 7. Health and safety audits were ranked fourth with a FS of 6. H&S inspection was ranked fifth with a FS of 5. In sixth position were expenses to do with H&S meeting and attained a FS of 4. Four (4) elements were ranked last with a FS of 3. These include; H&S campaigns, H&S branding, emergency preparedness and insurances. Of interest, these were the elements on which expenditure was allocated only for building construction projects, data of which was received from a building contractor. It was surprising that such items were not spent for on civil engineering projects, but perhaps the explanation could be that the head office as opposed to the project provided for these costs.

It is to note that it was surprising to find that H&S meetings were ranked low as compared to other expense elements. To the contrary, literature informed us that H&S meetings can be a useful tools to ensure close follow-ups on H&S targets and milestones set for projects Kikwasi (n.d:55) and keep the drum beat with regards to performance monitoring. It can be observed that H&S is still not considered as a priority on construction projects, hence the low FS.

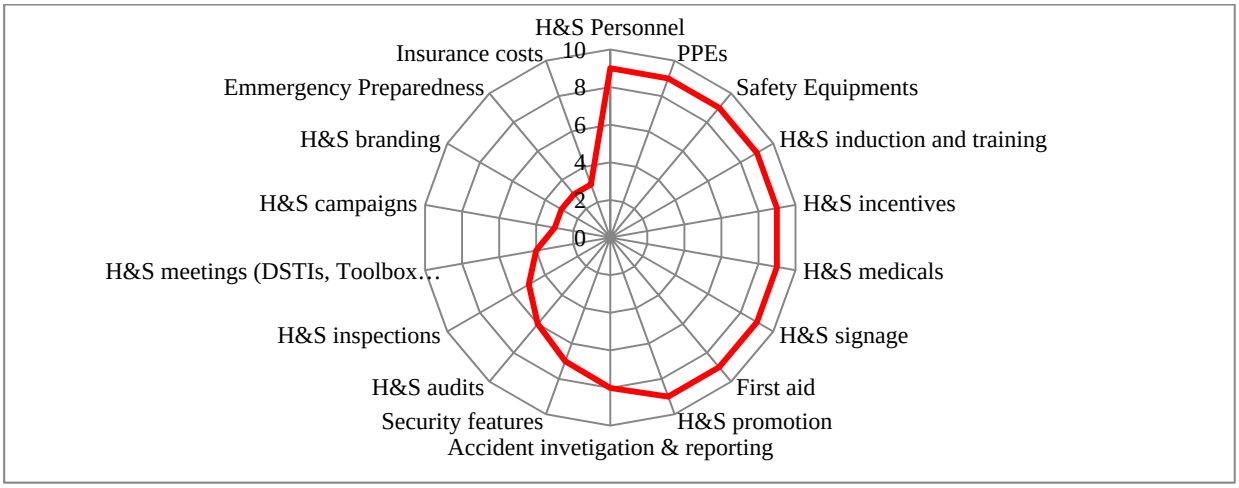

Figure 1: H&S Elements Priced for on construction Projects

The findings of the also revealed that projects with higher values had also a higher H&S expense for the project compared to those with lesser value. H&S costs were found to be directly proportional to the project value. Considering all elements being equal, it was observed that for projects valued below R500 million, the H&S expenses ranged between 2.9% and 3.98% whereas on projects valued above R500 million, the H&S expenses ranges between 4.08% and 4.90%. Thus, the higher the project value, the higher the cost of H&S.

4.2. FINDINGS FROM INTERVIEWS

The results from interviews portrayed striking similarities between participants with regards to clients' compliance with regulation 5(f) and (g) of the CR 2014 specifically, pricing for H&S on construction projects and H&S specifications. All participants acknowledged that not all clients provide them with H&S specifications on the projects. Secondly, all the participants emphasized that the specifications provided by the clients are very generic and a repeat of the CR 2014 are not site or project specific as required by the CR 2014, which leave them with no choice but to comply with the minimum H&S requirements. Thirdly, they concurred that with the lack of a standardised pricing model, clients in the CI cannot ensure that H&S measures is provided for adequately on construction projects .With regards to pricing, all participants acknowledged that they are using an itemised approach in pricing for H&S on their projects and have deceited from using percentages as such method is considered not accurate. With the use of an itemised costing approach for H&S, better pricing and cost control can be achieved.

5. THE AKAWI PRICING MODEL (APM)

The APM was theorised based on the findings in literature and empirical study. The 18 cost drivers as identified in literature (*Table 1*) were synthetized into a 12 elements model referred in this study as the APM. Preambles and costs components were provided and purposed to serve as pricing guidelines as laid out in *Table 4*.

Table 4: The Akawi Pricing Model (Conceptual Model)

Item No.	Category	Preambles	Cost components items	Units

1	PPEs	All PPEs to specifications. Type, size and make to be described as per manufacturer's specifications.	Protective footwear, protective clothing, hand protection, eyes and earing protection, head protection, fall arrest/prevention; respiratory protection, reflective wear, special PPEs.	• Head count (No.)
2	Induction & Training	All training to be project specific as required by the CR 2014. Special training to be done when required.	PPE ; emergency response; crane/machinery operations; refresher courses; inductions; accidents investigation & reporting; first aid; special training	• Head count (No.)
3	SHE personnel	Personnel appointed for various responsibilities	SHE/SHEQ manager; SHE officers (Site based); SHE reps; first aiders; supervisors	• Fixed monthly remuneration
4	Medicals	The type of medicals to be undertaken by workers should be fully described and priced.	Entrance, periodicals and exit medicals; medical surveillance; OHP; OH; and OMP.	• Head count (No.) time based for consultation with OHP, OH & OMP.
5	Site Security features	Security equipments to specifications. Type, size, shape to be described.	Fencing and site enclosure; security equipment; access cards; lighting protection; site illumination; emergency plan and preparedness.	• Item (sum); head count (No.); time based (Cost/hr)
6	Safety Equipments (SEs)	SEs equipment to specifications. Type, size, shape and to be described as per manufacturer's specifications	Fire extinguishers; firefighting equipment harnesses; cones; alarm canisters; flags; speed bumps/humps; breathalysers; portable ladders; scaffolding; lifelines; inspections and maintenance costs.	• Item (No.); Cost/hr & item (sum) as applicable
7	Welfare, wellbeing and Environmental	The items in this category should be described in full as laid down in the H&S specifications.	Accommodation; transportation; skips for hazardous waste; drip trays; food security; wheel bins; ablutions; eating area & cooking area; cleaning equipment; disposables; storage facilities; cleaning personnel.	• Sum (once off) • Cost of consumables (Monthly costs) • Maintenance costs • Salary for cleaning personnel
8	Signage	H&S signage to specifications. Type, Shape, size and make to be described as per manufacturer's specifications	Warning, information; directional prohibitory signs; mandatory; emergency traffic control signs (i.e.: speed limits, Stops blocks, etc.) signs	• Cost per item (No.)
9	SHE Administration & Management	Activities in this category are time related as they are linked to compliance with regulations.	SHE file; Permits approval; Police clearance; Inspection & audits; Stationary (i.e.: paper, files, labels, dividers, etc)	• Item costed based on time inputs (i.e.: Cost/hr which is reliant on frequency (i.e.: once-off, fortnight, weekly, monthly, etc).
10	Accidents investigations & reporting	Accident investigations – probabilities based on statistics	Direct costs (medical treatment, hospital costs and indirect costs (legal costs; investigation costs, etc)	• Provisional sum/allowance
11	Insurances	Ensure project risks are covered; risks transferred to other parties	Contributions for COID, Insurance premiums (motor vehicles, public liabilities); PI cover	• Insurance premiums, motor vehicles insurance, COID contribution
12	Sundries & Miscellaneous	Additional items as per client's specifications	H&S awards; H&S branding; incentives (i.e.: monetary, non-monetary tangible, etc.).	• Fixed cost (H/O overheads & costs); • insurance premiums • COID contributions, etc.

6. CONCLUSIONS AND RECOMENDATIONS

The study aimed at conceptualizing a model for pricing H&S on construction projects. In order to achieve that, there was need to identify the costs drivers that should be considered when pricing for H&S and how much should be allowed for. H&S cost drivers presented in the findings are regarded as the minimum to be priced for if it all H&S performance can be assured on construction projects.

From the findings, it was evident that contractors itemised the cost of H&S on their projects even though such breakdown is not included as a trade in the BOQs. Since each contractor has its own way of pricing

for H&S, it is evident that the lack of a standardised model for pricing H&S on construction projects makes the adequate pricing, monitor and controlling of H&S costs unlikely.

It was also observed that the costs of H&S on projects were directly proportional to the project values. Higher H&S specifications will have an impact on H&S cost compared to projects with lower specifications. Since projects are driven by clients, it was also observed that clients had an indirect impact on H&S cost on projects. An H&S minded client would have a higher H&S specifications, thus affecting H&S costs.

It is recommended that a similar study be conducted on a different population and sample size to improve its application and generality. It is to note that the APM as presented in this study was not validated. Recommendations for further study will be to validate the model using a Delphi study Survey and Structural Equation Modelling (SEM).

The APM as presented in this study would be of great benefit to the CI and its stakeholders if endorsed and implemented on construction projects. It can be argued that the implementation of the APM in the CI will ensure that the accurate pricing and adequate monitoring and controlling of H&S costs are achieved.

REFERENCES

Alli B O (2008) *Fundamental principles of occupational health and safety*, (available online http://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/@publ/documents/publication/wcms_093550.pdf [accessed on 26/07/2016])

Babu A and Kanchana S (2014) "Role of insurance in construction and infrastructure projects." *International Journal of Civil Engineering and Technology (IJCIET)* **12:**206-210.

Bizzell S G (2008) "Safety practices of small to medium-sized construction firms", *Published Doctoral dissertation*, University of Florida.

Bokor, Z (2010) "Cost drivers in transport and logistics." *Transportation Engineering* **38(1):** 13-17.

Bowen, G A, (2009) "Document Analysis as a Qualitative Research Method". Qualitative Research Journal, **9(2):** 27-40.

Compensation for Occupational Injuries and Diseases (COID) Act (1993), South Africa.

Construction Industry Development Board (CIDB) (2009) *Construction Health and Safety in South Africa: Status and Recommendations*, (available online http://cidb.org.za/publications/Documents/Construction%20Health%20and%20Safety%20in%20South%20Africa.pdf [accessed on 25/02/2016])

Construction Regulations (CR) (2014), South Africa.

Dawson, C (2002) *Practical Research methods: A user friendly guide of mastering research*, 5th Edition, UBS Publishers' Distributors (available online: http://www.modares.ac.ir/uploads/Agr.Oth.Lib.21.pdf [accessed on 15 September, 2016]).

Farinyole O, Odusami K and Adewunmi Y (2013) "Theft and Vandalism Control Measures on Building Sites in Lagos, Nigeria." *Journal of Engineering, Project, and Production Management* **3(1):** 9-21.

Hinze J and Gambatese J (2003) "Factors that influence safety performance of specialty contractors." *Journal of construction engineering and management* **129(2):** 159-164.

HSA (2010) *Tips, Tools and Practical Advice to easily implement Health and Safety in your workplace*, Fleet Street Publications (Pty) Ltd.

HSE (2015) "Health and Safety Statistics: *Annual Report for Great Britain"*.

Hymel P A, Loeppke R R, Baase C M, Burton W N, Hartenbaum N P, Hudson T W, McLellan R K, Mueller K L, Roberts M A, Yarborough C M and Konicki D L (2011) "Workplace health protection and promotion: a new pathway for a healthier and safer workforce." *Journal of occupational and environmental medicine* **53(6):** 695-702.

Kartam N A, Flood I and Koushki P (2000) "Construction safety in Kuwait: issues, procedures, problems, and recommendations." *Safety Science* **36(3):** 63-184.

Kikwasi, G J (n.d) Client involvement in construction safety and health, (available online: http://www.irbnet.de/daten/iconda/CIB10259.pdf [accessed on 17/07/2016]).

Kothari, C R (2004) *Research Methodology: Methods and Techniques (2nd ed.)*, New Age International Publishers, New Delhi, (available online: http://www2.hcmuaf.edu.vn/data/quoctuan/Research%20Methodology%20-%20Methods%20and%20Techniques%202004.pdf [accessed on 15/09/2016])

Kumar, R (2011) *Research Methodology: A step-by-step for beginners*, 3rd edition, SAGE Publications Limited, 1 Oliver's Yard, 55 City Road, London, EC1Y 1SP (available online: https://www.google.co.za/?gfe_rd=cr&ei=ShZ2Wcm6Gemo8weHy7DoDA&gws_rd=ssl#q=research+methodology+by+ranjit+kumar+3rd+edition+pdf+free+download&spf=1500911283542 [accessed on 15/09/2016]).

López-Alonso, M, Ibarrondo-Dávila, M P, María Carmen Rubio-Gámez, M C and Munoz, T G (2013) "The impact of health and safety investment on Construction Company costs." *Safety Science* **60:** 151–159.

Musonda I and Haupt T C (2011) “Identifying factors of health and safety (H&S) culture for the construction industry”, *Proceedings of the 6th Built Environment Conference*, 31 July-2 August 2011, Johannesburg, South Africa.

Musonda I and Pretorius JHC (2015) “Effectiveness of economic incentives on clients' participation in health and safety programmes.” *Journal of the South African Institution of Civil Engineering* **57(2):** 2-7.

Musonda, I. (2012). Construction Health and Safety Performance Improvement – A Client centred model. *Published Doctorate Thesis*, University of Johannesburg.

Rikhardsson P (2005) “Accounting for Health and Safety costs: Review and comparison selected methods”, “*Proceedings of the Business Strategy and the Environment conference*”, University of Leeds, September 2005.

Sadus A M V and Griffiths S (2004) “Marketing strategies for enhancing safety culture.” *Safety Science* **42:** 301-619.

Saunders, M, Lewis, P and Thornhill, A (2009) *Research methods for business students*, 5th Edition, Pearson Education Limited, Edinburgh Gate, Harlow Essex CM20 2JE, England.

Sawasha E, Naoum S and Fong D (1999) “Factors affecting safety performance on construction sites.” *International journal of project management* **17(5):** 309-315.

Smallwood, J and Emuze, F (2014) “Financial Provision for Construction Health and Safety (H&S)”, *“Construction Research Congress 2014”:* Construction in a Global Network: 1881-1890.

Smallwood, J J (1999) “The Role of Health and Safety in Project Management”, *Regional African Project Management*, Project Management Institute South Africa (PMISA), South Africa, 3 – 5 November 1999: 1-16.

Sumner, S and Farrell, P (2003) “The influence of clients on health and safety standards in construction”, *Proceedings of the 19th Annual Association of Researchers in Construction Management (ARCOM) Conference*, University of Brighton, **Vol. 1:** 193-202.

Yilmaz, F and Çelebi, UB (2015) “The Importance of Safety in Construction Sector: Costs of Occupational Accidents in Construction Sites.” *Business and Economics Research Journal* **6(2):** 25-37.