

# **DRIVERS BEHIND HEALTH AND SAFETY IMPLEMENTATION IN CONSTRUCTION ORGANISATIONS WITHIN THE GAUTENG PROVINCE IN SOUTH AFRICA**

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Research about the implementation of health and safety (H&S) in the construction industry is required, as it may create more awareness on strategies to significantly reduce the rate of incidents and fatalities in construction organisations. It may encourage such organisations to improve their H&S performances on construction projects. The aim of this research is to establish the drivers of H&S implementation in construction organisations within the Gauteng Province in South Africa. The research adopted a quantitative research methodology. A survey questionnaire was used to collect primary data. Judgemental and snowball sampling techniques were employed to select the respondents consisting of site engineers, site agents, contracts managers, construction managers and project managers. Data were analysed through descriptive statistics, mean item score and standard deviation. Findings indicated that the most important drivers are the need to manage hazards; organisations regard H&S as important; compliance with the legislation; consideration of H&S as a way to do business and to reduce costs associated with accidents and injuries. These results may assist construction organisations in setting H&S as a priority, since little attention has been paid to the objective of H&S implementation. This study was restricted to large construction organisations within the Gauteng Province in South Africa and therefore may not be generalizable to all construction organisations within South Africa and in other geographical locations.

Keywords: construction industry, health and safety implementation, Gauteng

## **INTRODUCTION**

Construction sites all over South Africa produce enormous numbers of accidents annually and the construction industry is known for being highly dangerous and complex, despite the important role it plays as contributor to economic growth (Smallwood, Haupt and Shakantu, 2009). Okorie and Smallwood (2010) indicated that the construction industry is responsible for the highest cases of lost workdays. Abdul Hamid *et al.* (2008) indicated that construction accidents are rampant because clients and contractors tend to focus more on profit maximization, and less on H&S (health and safety) implementation and this results in poor housekeeping, decline in productivity, programme delay, increased cost of accidents, increased compensation insurance claims and harm to the environment, *etcetera* (Smallwood 2002; Smallwood *et al.* 2009).

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According to Muiruri and Mulinge (2014), health and safety is a humanitarian and economic concern that needs to be managed orderly. They further stated that this economic concern is in form of costs, which can be divided into direct costs (hospitalisation, liability and property losses) and indirect costs (delays, training of new workers, *etcetera*). Therefore H&S implementation is necessary to reduce the impact of the costs of accidents. Other reasons for implementing H&S as identified by Smallwood (2010) are legislation, financial issues, fines and penalties, quality, late completion and the reputation and image of the construction organisation. In the study by Muiruri and Mulinge (2014), it was indicated that construction managers tend to think profits will decrease and H&S costs will increase when H&S measures are implemented on construction projects. However, it was found that investment in construction H&S increases profitability by increasing productivity and uplifting employee confidence, and it decreases attrition (Muiruri and Mulinge, 2014). According to the British Safety Council (2014) when an organisation invests in their employees' H&S, then the organisation invests in success and continuity. It is therefore important to continuously conduct research on H&S implementation and particularly, implementation drivers in order to determine what actually makes construction organisations decide to act on the prevention of incidents, accidents and fatalities. Findings from this study will help in deciphering the root causes of poor H&S performance and in devising ways to tackle the problem. The objective of the paper is therefore to identify the drivers of H&S implementation in construction organisations in the Gauteng Province of South Africa. The next section will review the drivers behind H&S implementation. The empirical results will then be presented and discussed; followed by the conclusion.

## **DRIVERS BEHIND HEALTH AND SAFETY IMPLEMENTATION**

The most important parameters of a project are cost, time, quality and H&S. However, cost, time and quality are dominating factors in the execution of a project as they receive more attention and take preference over H&S (Muiruri and Mulinge, 2014). As a result, a higher risk of accident existence will be developed.

According to Smallwood and Haupt (2006), a project team's efforts to accomplish a project on time within quality and budget can be highly affected by accidents and its associated costs. Furthermore, bad publicity from such accidents may also damage the construction organisation's name and strain relationships between project stakeholders, where one is quick to blame each other, in terms of responsibility. Therefore, on a project, H&S may be implemented because of the cost of accidents, legislation (the OHS Act 85 of 1993, the Construction Regulations 2014, etc.), improvement in quality, client satisfaction, completion of projects on time, preserving the image and reputation of the organisation and improved productivity and profitability.

### **Cost of accidents in the construction industry**

Darshi De Saram and Tang (2005) indicated that construction accidents have an immense impact on families and construction organisations in terms of damages and losses. The cost of a poor H&S record will, either earlier or later on, reflect on the balance sheet of the construction organisation. Smallwood et al.'s (2009) study in

South Africa estimated that 5% of a completed projects' value is responsible for cost of accidents; whereas the implementation of H&S systems is estimated to cost between 0.5% and 3% of the total project value. Therefore, the cost of accidents goes beyond the cost of H&S. According to Hughes and Ferrett (2016), poor H&S management may lead to accidents. However, reduced cost of accidents can be achieved through a positive H&S culture (Chinda and Mohamed, 2008). Costs of accidents can be classified as direct or indirect costs.

#### *Direct costs*

Hughes and Ferrett (2016) and Waehrer *et al.* (2007) defined direct costs as costs directly related to an accident, usually covered by the workers' compensation insurance premiums and may include hospitalisation, medical costs, liability and property losses, sick leave administration, premiums for workers and temporary disability payments. These costs are associated with the treatment of an injury and any compensation offered to injured workers (Smallwood *et al.*, 2009; Hinze, 2006).

#### *Indirect costs*

Griffin (2006), Waehrer *et al.* (2007) and Hughes and Ferrett (2016) define indirect costs as those not directly related to the accident but may result from a series of accidents. Hughes and Ferrett (2016) and Griffin (2006) agreed that these costs are the most evasive cost component associated with construction worker injuries, and the elusiveness of the indirect costs of these injuries lies in the lack of clear definition. Hughes and Ferrett (2016) and Smallwood *et al.* (2009) provides typical indirect costs incurred by construction organisations including reduced productivity of the injured worker/s; reduced productivity of workforce; costs resulting from delays; additional supervision costs; costs of clean-up after the accident; costs resulting from rescheduling of work to ensure timely completion, lost work days, and so on. According to statistics from the Federated Employer's Mutual Assurance Company (FEMAC) (2016) (Table 1), the construction industry in the Gauteng Province suffered lost workdays and a lot of accidents over four years. It can be seen that the number of accidents, although lower in 2014 (than in 2012, 2013 and 2015) is still high and costs companies enormous amounts.

*Table 1: Gauteng Province health & safety statistics (as at June 2016)*

Year of accident	No. of accidents	Lost days	Average cost/accident
2012	3873	45 269	25 694
2013	3954	38 060	27 272
2014	3654	31 294	28 422
2015	3840	30 520	31 682

*Source: FEMAC (2016)*

### **Legislations**

Legislations such as the OHS Act (85 of 1993) and Construction Regulations of 2014 set out critical standards to which the performance of companies towards production is expected to comply with and be monitored against (Othman *et al.* (2008). The Act

further provides that construction organisations achieve the fundamental principles. It firmly specifies that an H&S plan must be prepared and executed for the protection of all participants against hazards and risks of injuries at and around the working environment. Azimah *et al.* (2009) stated that for H&S performance to be enhanced, the H&S legislation and regulations must be communicated on a regular basis.

### **Improved quality**

Nicholas and Steyn (2012) define quality as specifications or requirements that are being met. It was further identified that when construction organisations meet the project specifications, the chance that the organisation will be taken to court by the client is likely to be zero. According to Adnan, Husin and Jusoff (2008) quality management may be defined as the arrangement of efforts to ensure that the requirements as specified are achieved on the first attempt, in order to avoid “rework”. “Rework” according to Collins COBUILD Dictionary (2006), is to re-organise the work and make changes to improve it. The Project Management Institute Staff (PMIS) (2013) agreed that for project quality to be satiating, one must plan for quality, perform planned quality activities and control quality. Wanberg *et al.* (2013) found a strong relationship between injuries and rework, due to the fact that rework involves unstable work processes, pressure from the schedule programme and demolition work.

### **Achieve client satisfaction**

According to Kärnä (2009) client satisfaction within the construction industry could be determined by the extent to which a physical facility and the construction process meets the client’s expectations. Omonori and Lawal (2014) added that client satisfaction is essential when it comes to the construction process development and client relationship. Their findings indicated that client satisfaction involves the quality of a construction project within budget, and affects the future of the company, as well as increasing profitability. A good H&S record will lead to a satisfied client, because the project will be completed on time (Zou and Sunindijo, 2015). Therefore, when the client is satisfied, the construction organisation will be more profitable and will have an increased reputation.

### **Complete projects on time**

According to Zou, Zhang and Wang (2007), who performed a study on risks and their significance on project objectives, it was indicated that an improperly planned schedule would have a negative impact on workers, in terms of accidents. Moreover, Zekri (2013) supported the statement by implying that an unworkable schedule can deeply affect the success of project objectives in terms of safety, cost, quality and environment. When accidents take place or construction programs clash, the project schedule may be more delayed. In addition, rapidity of work and impracticable target deadlines by the client may also contribute to accidents. According to statistics from the FEMAC (2016), the number of workdays lost due to accidents in the year 2013 mounted up to 38 060, compared to 31 294 in 2014 and 22 163 in 2015.

### **Preserve the image and reputation of the construction organisation**

A good H&S record and safety management system (SMS) according to Holt (2005) and Ikpe (2009) are very important tools for expanding a business as well as attracting new clients. It was further stated by Li and Poon (2013) that if there is no proper safety measures implemented for the protection and wellbeing of workers,

then the reputation of the organisation is at stake. The British Safety Council (2014) supported this by stating that an enterprise that sustains a lot of injuries and accidents will be unattractive to current and future investors, and the public. Therefore, an organisation's image and reputation is linked with its H&S performance.

### **Improved productivity and profitability**

According to Tangen (2005), profitability is most of time confused with productivity. Profitability considers the monetary effects, while productivity considers the real progression that takes place among purely physical phenomena. Pekuri, Haapasalo and Herrala (2011), stated that profitability is a critical indicator, when it comes to determining whether a company is making money. Productivity, according to Lingard *et al.* (2007), improves when company H&S goals and objectives are clearly understood by all workers. For this to be understood, Gatti and Migliaccio (2013) stated that management must ensure a higher level of supervision and communication. As a result of improved H&S, better services will be rendered with the same resources in a shorter timeframe. Through this attempt, accidents as well as cost overruns, can be reduced (Wanberg *et al.*, 2013) as well as accidents. These views are reinforced in a study done by Aviva (2011), where it was found that round about two-thirds of workers indicated that if an employer invests in their H&S, the employees are motivated to work harder, since a safe and healthy workforce is far more productive than an unsafe and unhealthy workforce.

## **METHODS**

This research adopted a quantitative research methodology approach. Such an approach was selected, as it collects numerical data, which can be subjected to statistical treatment for the purpose of agreeing or disagreeing (Williams, 2007). It reduces biasness, as it is objective in nature (James, 2012). The study objective was to establish the drivers behind H&S implementation in construction organisations within the Gauteng Province in South Africa. A 5-point likert-scale (from 1=strongly disagree to 5=strongly agree) survey questionnaire was used to collect the primary data. The questionnaire was constructed in the English language and consisted of twelve close-ended questions relating to drivers behind H&S implementation. Furthermore, the questionnaire was designed according to the review of literature and expert advice. They were distributed, specifically, in the Ekurhuleni Metropolitan (Boksburg), City of Johannesburg Metropolitan (Sandton, Parktown, Midrand and Linksfield) and Central Pretoria. Seven commercial building construction sites were selected using snowball sampling. The researcher initially selected the company where the in-service training was undertaken and potential respondents were then further identified by the respondents in the first company (Etikan *et al.*, 2016b). The target sample comprised of site engineers, site agents, contracts managers, construction managers and project managers at on-going construction sites. These were selected using judgmental or purposive sampling, as the researcher deliberately selected most appropriate respondents due to the qualities they possess (being in managerial and or supervisory positions to implement H&S), to suit the objectives of

this study (Etikan et al., 2016b). Out of a total of fifty-nine questionnaires distributed, fifty-six were completed. Table 2 shows the response rate from the respondents. The data was analysed through descriptive statistics (mean item score and standard deviation) on MS Excel software. Such data was then ranked according to the mean. The Cronbach's alpha value for the drivers on H&S implementation was 0.980, indicating good internal consistency.

Table 2: Profile of respondents

Respondents	Percentage contribution
Site Engineers	25
Site Agents	23
Contracts Managers	16
Construction Managers	20
Project Managers	16
<b>Total</b>	<b>100</b>

## RESULTS AND DISCUSSION

### Findings on drivers of health and safety implementation

The respondents were asked to indicate the factors driving them to implement H&S. Table 3 presents the feedback to these factors. It was found that *the need to manage hazards* had the highest mean item score (MIS) (4.34) with standard deviation (SD) of 0.611. The factor ranked 2<sup>nd</sup>, was due to the fact that organisations *regard H&S as important* (MIS=4.21, SD=0.825) followed by *compliance with the legislation* (MIS=4.20, SD=0.564). The drivers placed among the last four were *to avoid penalties* (MIS=3.64, SD=1.052), *to improve quality* (MIS=3.61, SD=1.073), *to improve productivity* (MIS=3.55, SD=1.111) and *profitability* (MIS=3.45, SD=1.077).

From the results, the area of concentration was on the “agree” and “strongly agree” categories of the scale. The standard deviation values for drivers ranked 1 – 4, 6 and 8 were all less than 1, meaning that the responses were close to the mean (Rumsey, 2010). In other words, respondents had related opinions. The overall average MIS was 3.85 and the average SD 0.916. This may indicate that respondents can be deemed to have had similar views regarding the drivers stated for H&S implementation, although having high and low rankings.

### Implications of the findings

The three top-ranked drivers, namely: *the need to manage hazards*, *the importance of H&S and compliance with the legislation* indicates that the sampled construction organisations are, in practice, mindful of the fact that the implementation of H&S in their work practices, through managing hazards in the workplace, provision of correct personal protective equipment (PPE), and so on, would reduce accidents. According

to Aviva (2011) and the British Safety Council (2014), an employer investing in their employees' H&S will result in a far more productive workforce (due to protection) and invests in success of the entire organisation, and thus improves quality, productivity and profitability in the long run.

*Table 3: Findings on drivers of H&S implementation*

Drivers	Percentage frequency of responses					MIS	SD	Rank
	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree			
Need to manage hazards	0	0	7.14	51.79	41.07	4.34	0.611	1
They regard H&S to be important	0	3.57	14.29	39.29	42.86	4.21	0.825	2
To comply with the legislation	0	0	8.93	62.50	28.57	4.20	0.564	3
They consider H&S as the way to do business	0	3.57	14.29	50.00	32.14	4.11	0.779	4
To reduce costs associated with accidents and injuries	3.57	5.36	23.21	39.29	28.57	3.84	1.023	5
To preserve image and reputation of company	3.57	5.36	16.07	57.14	17.86	3.80	0.923	6
To achieve client satisfaction	1.79	10.71	23.21	39.29	25.00	3.75	1.014	7
For ethical reasons	3.57	1.79	32.14	41.07	21.43	3.75	0.939	8
To avoid penalties	0	17.86	25.00	32.14	25.00	3.64	1.052	9
To improve quality	3.57	12.50	25.00	37.50	21.43	3.61	1.073	10
To improve productivity	5.36	14.29	17.86	44.64	17.86	3.55	1.111	11
To improve profitability	5.36	12.50	30.36	35.71	16.07	3.45	1.077	12
<b>Average</b>						<b>3.85</b>	<b>0.916</b>	

The finding that improved quality, productivity and profitability ranked the least could indicate that the organisations included in the study did not really view H&S implementation as a means to improving profit margins (only). The responses of the sampled personnel regarding these drivers reflected a "neutral" stance, as shown by the mean score just above 3.0, indicating these factors may not be the underlying reasons why they implement H&S in the organisations. This finding is partly consistent with results in Smallwood (2004), which rated project parameters that were affected by poor H&S and found that quality is mostly affected. However, productivity and profitability ranked the least in that study, corresponding with findings in the current study. In another study by Smallwood (2009), it was found that productivity, followed by quality, was mostly affected by inadequate implementation of H&S and these result are inconsistent with the findings of the current study. The findings may have been slightly different due to the fact that there is increased awareness of H&S performance in the construction industry and organisations are conscious of the fact that there is a need to focus on managing hazards and preventing accidents through compliance, rather than focusing on widening profit margins. Thus view is supported in Chiocha et al. (2011), which acknowledged that legislations have an impact among project managers and contractors in particular, and on reducing accidents, but implied that the influence of legislations may be reactive rather than proactive. Issues relative to H&S should become business priorities and this will

provide a platform for H&S improvement without the need to constantly change laws (Chiocha et al., 2011). In essence, this mind set will increase profitability and productivity (Muiruri and Mulinge, 2014).

## CONCLUSION

This research study aimed to establish the drivers behind H&S implementation in construction organisations within the Gauteng Province in South-Africa. The objective was achieved. The study findings revealed the need to manage hazards, the importance of H&S and compliance with the legislation as the top three ranked drivers, and improved quality, productivity and profitability as the lowest. Research about the implementation of Health and Safety (H&S) within the construction industry is critical, as construction organisations are aiming to improve their H&S performances on projects. With the current study findings, it can be said that construction organisations within the Gauteng Province are driven more by the H&S of their employees, than by making profits. Therefore, organisations should continuously pay attention to managing hazards and preventing accidents through compliance and this would invariably reduce accidents and fatalities and in the long run, improve quality, productivity and profitability. The current study provides useful information to assist construction organisations to pay more attention to H&S implementation. However, the drivers included in the study may not be exhaustive and the results may only be generalisable to the Gauteng Province and South Africa in general, but not to other geographical regions. Therefore, further studies could include more drivers and be conducted in other regions. Additionally, since the study adopted a quantitative approach, other studies could employ qualitative methods to obtain more in-depth information regarding these H&S implementation drivers. Further research is also required in order to determine the influence of the identified drivers on H&S implementation.

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