

# Leadership Influence on Construction Site Workers' Health and Safety Behaviour

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## Abstract

Leadership in construction health and safety (H&S) management has drawn great attention from scholars in the western world. In contrast to Sub-Saharan countries and Nigeria in particular, very little or no research has been conducted into leadership and construction H&S management. The current study aims to fill this gap on H&S for leadership research with possible application in workers' H&S behavior improvement by examining the influence of key project stakeholders' H&S leadership roles on workers' H&S behavior. A review of existing international literature was conducted from Google, ASCE and Science Direct. Findings revealed that positive H&S behaviour of workers could be influenced by incorporation of H&S into the work plan programme by project manager and facilitation of financial provisions for H&S into the contract documents by quantity surveyors, demonstration of commitment and visible leadership towards workers' H&S by contracting firms at all levels of management as well as key projects leaders' H&S leadership and behaviour. Client H&S visible leadership manifests through appointment of competent design team, allocation of adequate financial recourse for H&S, and designing H&S into construction projects by design at the early design stage. These findings will increase awareness on the importance of leadership and commitment in improving H&S behaviour of construction workers on sites. The study recommends that key leaders on a project should demonstrate visible leadership and commitment towards workers' H&S.

**Keywords:** construction, health and safety, leadership, project leaders, worker behaviour

## 1. Introduction

Globally, accident and fatality statistics in the construction industry have remained roughly the same over the years (Luria, 2011). There is a strong argument that legislation, regulations, trade unions and Health and Safety (H&S) management systems alone cannot improve construction H&S performance. Though H&S legislation, regulations and management systems have brought success to accident and injury prevention in the workplace (Construction Industry Development Board (CIDB), 2011), Lees and Austin (2011) argue that such successes are limited as workplace accidents are on-going. The typical top-down control approaches to H&S management and rules enforcement no longer achieve the desired results at most worksites (Lees and Austin, 2011). Arguably, most of the at-risk work practices or unsafe behaviour of workers on sites can be traced back to the roles played by the key project leaders during the project conception stage.

The inadequacies in rule enforcement and management oversights have led to an on-going search for better ways of managing construction H&S. One of those ways is through H&S leadership, commitment and

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**Commented [Y2]:** Your research does NOT address the paucity of information on leadership and construction H&S management in Sub-Saharan Africa, or Nigeria for that matter. Instead, it simply reviews existing literature on the role of project leaders in H&S management programmes and how their active involvement/participation, from the inception of projects, could reduce the numbers of injuries and at-risk behaviors among workers.

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behaviour of the key project leaders, which have been found to have both direct and indirect relationships with workers' H&S behaviour ~~on-site~~ (Zou, 2011; Okorie, 2014). Performance-based leadership can change at-risk behaviours by first understanding and analyzing the reasons people behave in certain ways and then using behavioural modification techniques to improve human performance (Zou, 2011).

Previous studies have either focused on clients' leadership and commitment to project H&S (Musonda and Smallwood, 2008); due diligence and commitment to H&S on projects by the consultants including as designers, project managers and quantity surveyors and excluding clients (Okorie, 2014); and contractors' leadership and commitment to workers' H&S at all levels of management (Lu and Yang, 2012), or examined leadership, commitment and safety risk assessment on two different levels: workers and corporate management (Zou, 2011). Others have also focused on direct investigation of the roles of site managers as leaders of their team and the range of managerial styles they adopted in managing site operations (Cooper, 2010; Lees and Austin, 2011). Leadership of site managers on its own cannot bring about significant improvement in construction site workers' H&S behaviour. It is the collective leadership of the key project leaders, as Cooper (2010) and Lees and Austin (2011) opined, that can impact positively on the workers' H&S behaviour. Oloke (2010) argues that there are fundamental differences between leadership in construction process and contractor's site H&S management. Leadership in the context of workers' H&S behaviour are not common. In addition, it appears that limited research has been conducted into leadership and construction H&S management and specifically, on the various leadership roles which key project stakeholders could play to improve worker H&S on sites. Better understanding of all leadership roles and behaviour of the key project leaders will lead to a positive workplace H&S culture (Okorie, 2014). The current paper incorporates all key project stakeholders in leadership roles to examine their potential influence on workers' H&S behaviour. Attention to workers' H&S behaviour is necessary because they are the main assets of any construction company; their productivity can be maximised without sacrificing their H&S; and they need the right mindset, beliefs, values and attitudes to indulge in safe practices (Zou, 2011).

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The objective of the present paper is to ~~identify-investigate~~ the influence of various project leaders on workers' H&S behaviour on construction sites. A review of empirical and qualitative literature, based on international and Nigerian context, on leadership and construction H&S with particular interest in workers' H&S behaviour improvement, is conducted. Databases including Google, ASCE Library and Science Direct were consulted. Search phrases including construction worker behaviour, construction H&S improvement, leadership roles, construction project leadership, causes of site accidents, and construction H&S management were used. This review paper is presented in the following sections: section 2 presents the findings from the review; section 3 presents the lessons learnt and model of key project leaders' influence on workers' H&S behaviour developed from the review; and section four concludes.

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## 2. Literature Review

### 2.1 Health and safety management through leadership

Leadership in construction H&S is a complex and often subjective issue, but an understanding exists that 'good H&S is good business' (Flin and Yule, 2003). Nonetheless, Sunindijo and Zou (2011) argued that poor leadership not only impacts on overall project performance and stakeholders' profit margins, but also has a serious negative impact on workers' H&S behaviours. The CIDB (2011) report on construction quality

in South Africa noted that lack of integrity and openness among construction leaders manifests as poor construction quality, cost overrun and workers' poor H&S performance. Poor leadership such as lack of integrity, transparency, ~~bribery-nepotism~~ and corruption, existing particularly in the public sector client, leads to award of contracts to contractors without H&S competencies.

The relevance of leadership in today's competitive world is evident in all areas that require strategic planning. Hopkins (2007) and Lees and Austin (2011) asserted that leadership is the single most important factor that influences workers' H&S performance and determines the ultimate success or failure of a project or an organisation. Naoum (2011) contends that leadership is the personal values that lead to outstanding managerial performance. Leadership and leaders' commitment to workers' H&S are very important for effective H&S management in any organisation (Zou, 2011). Flin and Yule (2003) contended that no amount of detailed regulation for H&S improvement could make up for deficiencies in effective leadership. However, Naoum (2011) argued that leadership is not a panacea to all management problems and state that leaders have been found to often lose focus and become overwhelmed. Nonetheless, leaders have the ability and personality to direct, influence and motivate groups or workers/employees to achieve organisationally set goals including H&S. Thus, such leadership qualities are needed in the construction industry for improvement of workers' behaviour.

Personal and organisational effectiveness including workers' H&S behaviour has been linked to leadership. It can be argued that improvement of workers' H&S behaviour is largely dependent on the quality of leadership. Without strong leadership at every level, involving guidance and motivation of others to want to do what is right and in the right way, accidents would continue to occur on sites (Zou, 2011). Accidents do not occur without a reason as they are partly caused by ~~a failure of~~ leadership and unethical behaviour (Sunindijo and Zou, 2011). Leaders have responsibility for establishing the best practice standards to which an organisation must adhere to. Failure of leadership could manifest in many forms including clients' lack of commitment in the appointment of competent professionals (Okorie, 2014), lack of supervision ~~s~~ by clients agents (Behm, 2005), poor designs (Gibb and Bust, 2008), and absence of building plan approval (Iyagba, 2009). ~~while u~~ unethical behaviour exists in ~~the~~ form of ~~bribery~~, fraud, unfair practices and ~~corruption~~ among public office holders (CIDB, 2011). Arguably, achieving sustainable improvement in workers' H&S behaviour in the industry could be achieved through commitment and behavioural change of ~~the~~ key project leaders.

Collective leadership of the key project leaders can impact positively on the workers' H&S behaviours (Cooper, 2010; Lees and Austin, 2011). Oloke (2010) argues that there are fundamental differences between leadership in construction process and contractor's site H&S management. He further stated that leadership in construction project is a strategic function that involves the input of all the key project leaders during the project planning stages, while project H&S management is an operational function of a contractor. Leadership with regard to workers' H&S behaviour must start during the project planning stages to completion.

## 2.2 Key project leaders' influence on worker health and safety behaviour

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Leadership and commitment of key project leaders towards project H&S are critical factors for the sustainability of workplace H&S culture. Okorie (2014) contended that key project stakeholders' H&S leadership and commitment have potential to create healthy and safe work environment that optimizes workers' H&S behaviour. HeThe author further observed that effective construction H&S management depends on a leadership-driven model that identifies the H&S leadership roles of all the key project leaders involved in construction from the early design stage to construction. Luria (2011) observed that it is the quality of leadership demonstrated by the key project leaders - client, designer, project manager, quantity surveyor and contractor during the project conception/design stage that determines or influences workers' H&S behaviour on site. Therefore, the right attitude and behaviour must come from the key project leaders (clients, designers/engineers, project managers, quantity surveyors and contractor) to achieve the optimal workers' H&S performance in the industry. Thus, a positive change at the upstream will manifest at the downstream (safe behaviour of workers). The key project leaders and their potential influence on workers' H&S behaviour are discussed in the next section.

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### 2.2.1 Clients' health and safety leadership role

The client as the imitator and financier of all construction projects has important roles to play with regards to workers' H&S behaviour. Clients' visible leadership and commitment in the appointment of competent professionals is the first step towards the realisation of optimal workers H&S performance (McAleenan, 2010). Clients are required under the law to appoint competent professionals (architects, engineers, quantity surveyors and project managers) that-who will bring in their technical expertise into the projects use that will lead to the appointment of contractors with H&S competencies. The clients and their project consultants' commitment are very important since the leadership qualities exhibited by the clients and their appointed consultants set best practice standards for the contracting organisation to meet workers' H&S needs and enable compliance with the national regulatory agencies and industry standards (Lutchman, Maharaj and Ghanem, 2012).

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Clients through their appointed consultants should ensure that adequate financial resources are allocated for H&S. Geller (2008) contends that investment in H&S should be justified on a similar basis as other competing projects' parameters such as cost, quality and time. Workers' H&S should be considered equally important as other projects parameter, as workers are most valuable assets of any organisation. Therefore, clients and their appointed consultants should demonstrate visible leadership and commitment towards workers' H&S for sustainability of workplace H&S culture leading to improved workers' H&S behaviour.

Clients are also required to provide all necessary information regarding the site in advance. This is very important at the project conception/initiation stage as lack thereof will lead to site accidents (Hinze, 2006). Spangenberg (2009) asserts that on projects where competent professional were not appointed at the early stage such projects are characterized with site injuries and fatalities.

At-risk work practices or unsafe behaviour of workers on site have been linked to clients' poor H&S leadership and lack of commitment to projects' H&S (Howarth and Watson, 2009; Musonda and Smallwood, 2008). According to Oloke (2010), the desirability of client commitment and involvement stems from the high rates of site accidents and incidents. The CIDB (2011) reports noted that clients' visible leadership, commitment and active involvement are the critical factors that can sustain positive workers'

H&S behaviour in the industry. Haupt(2010) assertedthat at-risk practices or unsafe behaviour of workers are caused by inappropriate response by client to certain constraints and the environment. Clients' failure to act positively to the constraints such as early appointment of competent professionals, robust procurement methods, project budgeting, prequalification of consultant and contractors on H&S are manifestations of poor leadership. The consequences are at-risk worker practices and unsafe behaviour of workers.

### 2.2.2 Designers' health and safety leadership role

Research conducted in both the developed and developing countries indicated that design-related aspects have direct and indirect impact on workers' H&S behaviour (Behm, 2005).According to European Foundation for the Improvement of Living and Working Condition, 60% of fatal injuries in construction are as a result of decisions made before work begins at the construction site (HSE, 2007). Haupt (2011) argues that the thrust of designing H&S into project leads to a reduction of at-risk worker practices and unsafe behaviour.Oloke (2011) supported this view stating that designers (architects/engineers) have a duty and responsibility to incorporateH&Sinto projects duringthe design process. He further states that designers can use their knowledge and influence to design-in safetyfeatures that will improve the actual construction of the projects itself, as well as its maintenance after completion. Designers' lack in integrity and commitment in their design decisions can result inunsafe practices and unsafe behaviour (Behm, 2005). Inadequate and faulty designs(Gibb and Bust, 2008) and specification of substandard materials during design phases(Gambatese, Toole and Behm, 2008) were also cited as factors contributing to site accidents. Designers should recognise their important roles concerning human lives as demanded bytheir professional codes of conductbyexercising diligent and due care when designing. The ILO (2010) emphasisesthat those involved with the design and planning of construction projects should demonstrate visible leadership and commitment towards workers' H&S.

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Gambatese et al. (2008) concurred with the aforementioned and stated that design of project is a function of skill, talent, knowledge, and leadership ability. Despite the important roles of designers relative to project H&S performance, there are also legislative supports that exist in almost all countries that designers should integrate workers' H&S into their design decision. However, designers tend to perceive construction site H&S as the responsibility of the contractor (Choudhry, 2007). This myth is a serious challenge in the area of improving workers' H&S. Regardless of this long-lived myth, designers should demonstrate visible leadership and commitment to their professional duties and design-in H&S into projects to improve workers' H&S behaviour on construction sites.

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### 2.2.3 Project managers' health and safety leadership role

Project managers, in terms of their contractual relationship with clients have important H&S leadership roles to play in ensuring that workers' H&S are takenintoconsideration during projects design/inception stage to completion (Lutchman et al., 2012). The Project Management Body of Knowledge (PMBOK) identifies project managers' activities that can influence project performance as: review of concept design; design coordination; site inspection and meetings;design reviews, including details and schedules; facilitation of financial provision for project during planning phase and tendering stage; pre-qualification

of contractors, and advice regarding choice of procurement system. These scopes of work place important leadership roles on the shoulders of project managers. In contrast, Nigeria has no such regulations that define the duties and responsibilities of the project managers concerned with health, safety, welfare of the workforce (Idoro, 2004).

Project managers as project leaders can influence workers' H&S during the upstream phases of project design. It has been noted that on projects where project managers were not involved during the upstream decisions those projects encountered problems such as poor quality work, cost overrun, delay, poor worker H&S performance and complete abandonment (McAleen, 2010). The CIDB (2010) notes that project managers' leadership role is more visible on project sites when they monitor contractors' quality plans, conduct site meetings and inspections and ensure that workers' H&S is maintained. It can be argued that poor leadership and lack of commitment by project managers relative to inadequate project monitoring and irregular site inspection and meetings are manifestations of poor leadership resulting in poor workers' H&S behaviour.

#### **2.2.4 Quantity surveyors' health and safety leadership roles**

Paucity of funds is one of the major factors contributing to contractors' poor site H&S intervention. Inadequate allocation of financial resources for H&S during the early project planning or at the tendering stage by quantity surveyors is one of the major factors contributing to at-risk work practices or unsafe behaviour on site (Olatunji, Sher and Gu, 2011). Arguably, when a contractor compromises workers' H&S due to lack of funds, the resultant effect will be accidents and incidents. Inadequate financial provision for H&S at the project tendering stage or during projects negotiation by quantity surveyors points to poor leadership and lack of commitment to professional ethics.

Almost all construction projects are normally paid for as the work proceeds, so interim valuation at monthly intervals during the progress of the work is utmost important to contractors. This monthly valuation helps contractors to have a steady cash-flow, as lack thereof will lead to poor project performance including workers H&S (Olatunji et al., 2011). It has been noted that lack of commitment in preparation of interim monthly valuations by quantity surveyors has a direct link with the workers' H&S behaviour. Thus, prudent management of financial resources on construction projects is linked to safe work practices.

#### **2.2.5 Contracting organisations' health and safety leadership roles**

Contractors tendering for construction projects must adequately provide for H&S in their tenders. They have duties and responsibilities under the law to carry out construction activities without causing harm to workers/employees and the general public. These are achieved through planning, organising, controlling and monitoring of the construction phases and coordinating activities of other contractors on site (Hawarth and Watson, 2009). It is the leadership styles demonstrated by contracting organisation at all levels of management that determines how construction process will be plan, organise, control, and monitor to ensure workers' H&S are optimised. Leadership and commitment to workers' H&S exhibited at all level of management are the critical factors that drive organisational H&S performance (Zou, 2011). Hopkins (2008) maintains that to achieve the desired workers' H&S behaviour in the industry, the key project leaders required leadership skills not only management skills.

Top management H&S leadership is crucial to workers' H&S behaviour. John (2009) stated that positive behaviour of top leaders sends messages to workers on value management placed on workers' H&S. This was also echoed in Lutchman et al. (2012) in which it was stated that 'workers hear what we say, but what they do reflected on what we do'. This statement vividly explains the importance of top leaders' behaviour and commitment relative to workers' H&S behaviour.

Howarth and Watson (2009) argued that managers play important roles in promoting positive workers' H&S behaviour on site, which reduce accidents. Studies comparing cases of low and high rates of injuries on construction sites reported excellent performance in both workers' safety and quality of work where managers demonstrated good quality leadership, planning, organisation and role modelling to others (Hinze, 2006). In Hinze's opinion, a site which is characterised by unsafe behaviours or at-risk work practices is one with an autocratic leader who is dogmatic and lacks human relational skills. He further argued that when these attributes are lacking among site managers, and thus there is less optimal performance among workers. Hopkins (2007) and Sunindijo and Zou (2012) concurred that most site managers lack intelligence and interpersonal skills and this negatively impacts on workers' H&S behaviours on site. These leadership qualities are lacking among site managers in Nigeria, and they impose serious challenges to the improvement of workers' H&S (Okorie, Okolie and Ajator, 2015). The huge challenge of identifying and training site managers in the areas of leadership and interpersonal skills that would improve their H&S behaviour is exacerbated by the high levels of bribery and corruption, which have become a part of the social life in Nigeria (Okorie, Okolie and Ajator, 2015).

#### Methods section

### 3. Model of leadership influence on workers' H&S behaviour (Lessons learnt)

Most construction site disasters could be prevented by collective efforts of the key project leaders at all stages of construction, from design/planning to completion (Oloke, 2010). All at-risk work practices, unsafe conditions and unsafe behaviour emanating from construction site activities are preventable. Researchers and scholars such as Lees and Austin (2011) and Wu and Fang (2012) argue that if the causes of unsafe conditions and unsafe behaviour emanating from construction site activities are traced back to the H&S management practices of clients, designers, project managers, quantity surveyors, and contractors at all levels of management, workers' unsafe behaviour can be prevented. The literature survey indicated that the root causes of construction site accidents, injuries and fatalities originate/emanate from the decisions of the identified key project leaders during the project conception and construction stage. Emphasizing the importance of behaviour-based health and safety, Hopkins (2007) reiterated that attention should be directed to the critical related behaviour of the upstream factors who are the creator of the work environment.

Better understanding of the leadership roles and behaviour of the key project leaders will lead to a positive workplace H&S culture. Figure 1 below illustrates how the collective H&S leadership roles and behaviour of key project leaders identified in this study could result in safe or unsafe behaviour of construction site workers. The key project leaders identified in Figure 1 below play important H&S leadership roles at different stages of the construction project process. The assumption is that unsafe conditions or unsafe behaviour of workers arise from a failure in leadership between the clients, designers (architects/engineers),

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project managers, quantity surveyors, and contractors, at different stages. In other words, their poor leadership and unethical behaviour at different stages of construction processes allow the potential incident to become a reality.

Behm(2005) identifies clients' poor H&S leadership in terms of appointment of incompetent design team and inadequate allocation of financial resources for project H&S. H&S not being designed into project and faulty designs by designers contributes to unsafe behaviour of workers on site (Hinze, 2006). Project managers' poor H&S leadership relative to lack of commitment in prequalification of contractor on H&S and ensuring that adequate funds were allocated for project H&S, quantity surveyors' poor H&S leadership in terms of inadequate provision of financial resources for project H&S in the contract documents and lack of visible leadership and commitment towards workers' H&S management in contracting organisations at all levels of management, influence worker H&S behaviour (Hopkins, 2006; Olatunji et al., 2011; Sunindijo and Zou, 2012). It has been noted that addressing workers' H&S behaviour during the projects planning and at the construction phases can have positive impacts on site workers' H&S behaviour in the followings: workers are most aware of the necessity of safe behaviour; workers are more alert and respond to unsafe conditions and practices; workers maintain a better safety culture and ethic; workers respond more positively to H&S guidance and compliance, and workers aim for H&S achievement and awards.

#### 4. Conclusion

The present paper sought to identify the influence of various project leaders on workers' H&S behaviour on construction sites. There are few studies concerned with H&S leadership responsibilities of key project leaders and workers' H&S behaviour in Nigeria, so it was possible to extrapolate from the studies that have been conducted internationally on causes of site accidents and construction H&S management. Therefore, from the literature surveyed and the identified H&S leadership roles of the key project leaders, ways of improving workers' H&S behaviour were highlighted, as demonstrated in figure 1. The client has a duty and a responsibility under the law to appoint a competent design team, provide information regarding the site, prequalify contractors on H&S, and regularly visit site to ensure that contractors are conforming to project H&S plans, at-risk work practices or unsafe behaviour of workers have been linked to designers' lack of commitment and unethical behaviour towards workers' H&S. Top management's behaviour and commitment to workers' H&S determine the behaviour of managers and workers on site.

There is a need for behavioural orientation among all public office holders in the Nigerian construction industry, particularly those involved in contracts procurement and award. Behavioural change is imperative to all the key project leaders involved in all stages of the construction process in order to reduce the number of site accidents and incidents. Proper documentation and licensing could also ensure that project designers and managers engage in and enforce H&S practices on their sites. In addition, H&S courses should also be continuously delivered to construction site workers and even incorporated into the training programmes/manuals of all construction professionals. The concerned professional bodies should equally advocate for an inclusion of construction H&S course module into the curriculum of the affected programmes in tertiary institutions.

The major limitation of this research is evident in the fact that it is a review paper. Future studies could adopt alternative techniques such as a quantitative approach to explore the relationship between project leaders' roles and responsibilities and worker H&S behaviour.

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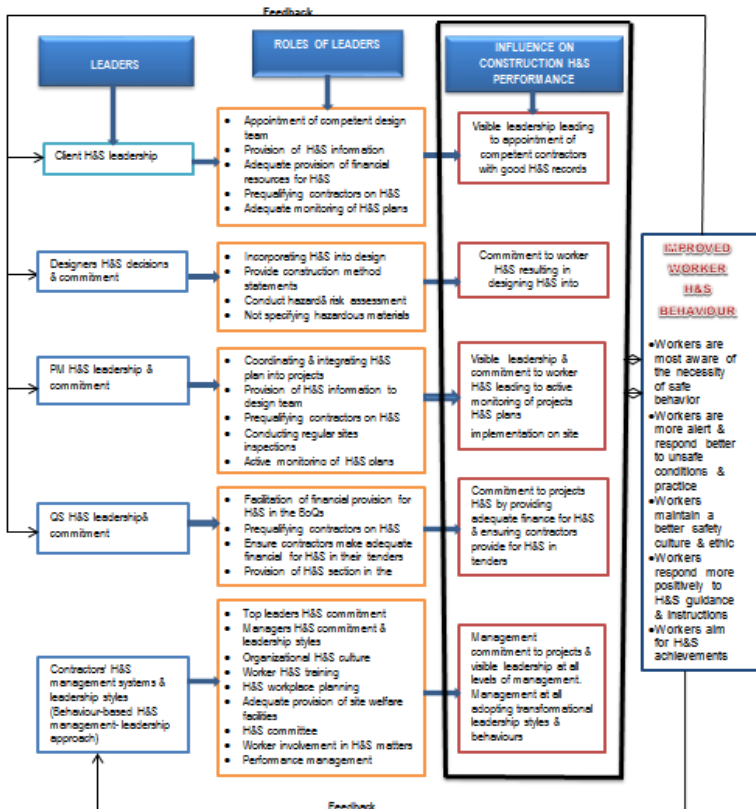


Figure 1: Model of Leadership influence on worker H&S behaviour

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Some missing key references:

### 1. Health & Safety criteria for determining the sustainable value of construction projects

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