



**The motivation of operatives in small construction firms towards health and safety - A Conceptual Framework**

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3 **Title:** The motivation of operatives in small construction firms towards health and safety - A  
4 Conceptual Framework  
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6 **Purpose** - Health and safety in small construction firms is often neglected by owners leading  
7 to poor health and safety performance and unacceptably high fatality and injury rates. A body  
8 of knowledge has established significant links between the motivational behaviours of  
9 operatives towards health and safety. Motivation is also considered as a key tool for  
10 improving operative productivity as when operatives experience safe worksites, they can  
11 carry out their work in a more productive manner. The purpose of this research is to develop  
12 a framework to examine the motivational factors that affect operative health and safety in  
13 small construction firms.  
14

15 **Design/methodology/approach** - A critical review and synthesis of the body of knowledge  
16 incorporating motivational theory, health and safety literature and the factors which  
17 characterise small firms, is used to develop the framework.  
18

19 **Findings** - Key components of the framework include the presence of intrinsic and extrinsic  
20 components, appropriate health and safety policies and procedures, the type of work  
21 environment, the operatives (i.e. attitude, experience and training), as well as the presence  
22 of appropriate management and supervision. The study revealed that operatives in small  
23 firms are less likely to be extrinsically motivated due to the absence of training, management  
24 commitment, policies and the wider working environment.  
25

26 **Research limitations/implications** - Failure of motivational support can result in increased  
27 danger and risk in exposing operatives to injury in the small firm environment. In this context,  
28 the damage caused to operative's health and safety in small construction firms is dependent  
29 mainly on the extrinsic factors.  
30

31 **Practical implications** - The framework provides a basis for improving our understanding of  
32 how to motivate operatives to act safely and will help to improve the health and safety  
33 performance of small firms. It is therefore vital to emphasise enhancement efforts on these  
34 extrinsic strategies in the small firms' environment especially in the initial stages of the project  
35 (or activity), so that the health and safety of operatives in small firms can be improved.  
36

37 **Originality/value** - This study proposes a contribution in developing an understanding of the  
38 motivational factors and their influence on the health and safety of operatives in small  
39 construction firms. The study revealed that operatives in small firms are less likely to be  
40 extrinsically motivated and have only intrinsically motivated elements in their workplace. The  
41 study proposes an indirect link between the extrinsic and intrinsic factors that affect  
42 motivation.  
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46 **Keywords:** Health and safety; motivation; extrinsic; operatives; management  
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48 **Article Type:** Research Paper  
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# The motivation of operatives in small construction firms towards health and safety - A Conceptual Framework

## ABSTRACT

Health and safety in small construction firms is often neglected by owners leading to poor health and safety performance and unacceptably high fatality and injury rates. Motivation is also considered as a key tool for improving operative productivity as when operatives experience safe worksites, they can carry out their work in a more productive manner. The purpose of this research is to develop a framework to examine the motivational factors that affect operative health and safety in small construction firms. A critical review and synthesis of the body of knowledge incorporating motivational theory, health and safety literature and the factors which characterise small firms, is used to develop the framework. The framework provides a basis for improving our understanding of how to motivate operatives to act safely and will help to improve the health and safety performance of small firms. Key components of the framework include the presence of intrinsic and extrinsic components, appropriate health and safety policies and procedures, the type of work environment, the operatives (i.e. attitude, experience and training), as well as the presence of appropriate management and supervision. The significance of these components is seen to vary implying that some factors are more critical than others. It is recommended that small construction firms and their site management use this framework to help understand what motivates operatives and to help prioritise what steps to take to improve their health and safety.

**Keywords:** Health and safety; motivation; extrinsic; operatives; management

## 1.0 INTRODUCTION

The construction industry is beset by serious difficulties as operations are carried out in an environment that is exposed to a variety of risks. The industry is characterised by fragmentation, multiplicity of operations and an industrial culture which in turn contributes to unfamiliar hazards and unsafe behaviour of workers (Nejati, 2013). The UK Health and Safety Executive (HSE) (2019) report that injuries and fatality rates are four times higher in UK construction than in all other industries. Achieving high levels of workplace health and safety is a main consideration for most construction firms. Over the last century, workers' health and safety in construction has improved significantly, yet recently progress has stalled and it remains the second most dangerous industry, with around 40 fatalities each year and costing the UK economy £1.1 billion (Bagnara et al., 2019). Despite their importance, small firms tend to have poorer health and safety performance. In 2019 alone, it was recorded that 147 workers in the UK has lost their lives to injuries stemming from the workplace (HSE, 2019). Nearly 25% of workplace injuries happen in UK construction firms (Gosi, 2017).

In the UK, 99 percent of the construction firms are small size firms, which accounts for nearly 60% of employment of the entire private sector (BPE Statistics, 2018). Studies have shown that many small firms recognise the potential benefits of good occupational health and safety systems (Hillary, 2017; Rainnie, 2016). However, the nature of small firms is unlikely to support focused and dedicated health and safety supervision of staff regardless of good intentions to protect operatives and processes at the workplace (Walters and James, 2009). In addition, small firms tend to have poorer health and safety performance due to a variety of reasons. For example, small firms lack full time professional health and safety advisors, often

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2 have poor working conditions, are commonly financially insecure, and have limited knowledge  
3 and resources to implement health and safety management activities such as risk  
4 assessments, training, audits and site inspections (Stiles et al., 2012; Çalışkan, 2014).  
5 Furthermore, Hayman, (2017) found that small firms have been characterised as a sector  
6 notoriously resistant to training and found that smaller firms provide less formal training than  
7 larger firms and are less likely to participate in government training initiatives. It was explained  
8 by Jamieson et al. (2012) that owners of small firms do not know the importance of health and  
9 safety because the managers themselves do not have any safety knowledge and they observe  
10 that their work is simple and repetitive. Consequently, they tend to undervalue worker health  
11 and safety and they consider hazards to be an accepted part of the work.  
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16 In addition, health and safety in construction industry is a very complicated issue and there are  
17 many factors (such as e.g. legal, physical and personal) were reduced by addition of new  
18 requirements but health and safety continue to be the poorest in the construction industry  
19 (Haug, 2006). However, attention has been paid by both academic and expert domains to  
20 how operatives behave and work regarding workplace well-being and safety matters. Smith,  
21 (2007) study found that the popularity of behavioural related health and safety programs are  
22 one example of this consideration and attention. In addition, some other researchers  
23 suggested that improvements of health and safety in the workplace will achieve if operatives  
24 change their behaviours and also suggested that motivation is one of the key one for the  
25 operatives to create a healthy and safe work environment (Hinze, 2002; Reese, 2018). It is  
26 therefore important to establish motivational interventions and factors to support small firms  
27 in order to strengthen their health and safety systems (Kazaz et al., 2008).  
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31 Motivation is an essential factor in determining how operatives behave (Reese, 2018).  
32 Herzberg (2008) found that motivation of workers is known to be key to them working more  
33 safely. In addition, Kazak et al., (2008) argues that small firms need to consider motivational  
34 interventions and factors to strengthen operative's health and safety in the workplace. The  
35 intervention may be in the form of training initiatives, providing safe working conditions, H&S  
36 management interventions, adoption of proper management commitment and external  
37 motivation to improve safety in the workplace (Wirth and Sigurdsson, 2008). Reese (2018)  
38 further found that motivating workers to work securely is known to significantly help prevent  
39 worksite safety incidents. This is because motivation is known to be critical in explaining the  
40 behaviour of workers (Bock and Kim, 2002). Herzberg (1959) concluded that a good leader will  
41 address motivators in the workplace. Many studies confirmed the relationship among  
42 workplace injuries and motivation. However, while there has been much research on health  
43 and safety performance, it seems that little research has focused on motivational factors that  
44 affect health and safety performance for small firms.  
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49 The present study contributes in an area where the specific literature on motivational factors  
50 and health and safety of construction operatives is limited and rare to a small body of  
51 knowledge, particularly in small firms (Barg et al, 2014). Diugwu's (2008) study suggests that  
52 small firms show dismal compliance to health and safety policies, rules and regulations and  
53 have a higher number of deaths and accidents than larger firms. Cooney (2016) found that  
54 small firms faced many fatalities and injuries and lack management commitment, proper  
55 working conditions, policies to enhance operative's health and safety performance. Future  
56 research must be required to examine how to enhance health and safety within small  
57 construction firms. As Moon et al.'s (2019) study suggests, key to operative's (and therefore  
58 the firm's) health and safety performance is therefore to keep them motivated externally and  
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internally. Many studies confirmed the relationship among workplace injuries and motivation. However, while there has been much research on health and safety performance, it seems that little research has focused on motivational factors that affect health and safety performance for small firms. Therefore, this research seeks to develop a framework to examine and investigate the motivational factors that affect operative health and safety in small construction firms. The framework will present an important advancement of understanding in our attempts to improve health and safety in small construction firms.

## 2.0 HEALTH AND SAFETY IN SMALL CONSTRUCTION FIRMS

Small construction firms represent an important sector and have a significant impact on the UK economy (Lentz, 2006). Statistics illustrates that in the UK, 93 percent of the construction firms are small firms, approximately 43% percent of firms have one staff, 50% percent with nine or more staff (Katrin, 2018). Small firms account for nearly 48% of employment of the entire private sector with a shared yearly income of £1.5 trillion, representing nearly 37% of all private sector income in the UK (BPE Statistics, 2019). Despite the large number of small businesses and their significant contribution to the construction sector, Kheni et al. (2005) found that studies on health and safety with a specific emphasis on small construction firms are rare. In addition, Barber et al.'s (2016) study found that small firms consistently identify more barriers than larger firms and have significantly different characteristics from large firms in terms of their financial, training, management system, infrastructure, supervision and staffing capabilities. Small firms frequently seem to be unaware of their legal obligations (McKinney, 2002). One survey revealed that, for various small firms, there is a deficiency of awareness of what exact health and safety regulation is related to their business (Vickers et al., 2003). Strategies might be problematic to put into practice due to their uncertain legal responsibilities. Other factors were revealed by Goss (2015) and stated that small firms are also deficient in policies and administration, lack of training and motivation, have limited resources, and are at higher risk of bankruptcy than large firms.

Moreover, small firms' commitment to health and safety remains a cause for concern. Authors have continually shown that small firms have more risky working environments and more work-related injuries and illnesses than large firms (Loosemore et al., 2003; Sørensen et al., 2007; Arquillos et al., 2012;). Kheni et al. (2005) further stated that injuries and accidents are more prevalent in small construction firms. Mostly, small firms are not dedicated and committed to health and safety because small firms do not have the appropriate legislation, training, management culture in terms of motivation towards safety, however they can be compliant with health and safety guideline and rules (HSE, 2018). In addition, McKinney (2002) found that small firms are unaware of their legal policies and responsibilities, do not understand the risks of poor and bad practice and have inadequate resources to dedicate to operative's health and safety. Raines (2019) stated that owners or managers in small firms also work as a safety manager, which can render the health and safety management system unproductive and ineffective. Koo and Ki (2020) found that small firms have a high rate of accidents at their workplaces that affect the well-being of workers and their safety. Nearly 25% of workplace injuries happen in UK construction firms (Gosi, 2017). The HSE (2018) statistics shows that thirty million working days were lost because of workplace injuries. Getting operatives to ensure they work in a safe way in difficult situations remains a key challenge for small construction companies. According to HSE, (2018), a total of 144 workers were killed at work in Great Britain in 2017/18, representing an increase of 9 fatalities from 2016/17. It is observed that the construction firms have the peak accident rate among all other industries as well as the peak rate of injuries and fatalities (Hinzi 1997). Therefore, there

is no doubt that the importance of health and safety needs to be remained a dominant impact.

### **2.1 Role of Health and Safety Executive in Construction Industry**

The responsibility of Health and Safety Executive is to enforce health and safety guidelines and regulations for workers at work to reduce work-related death and serious injury in the workplace (Clarke and Cooper, 2004). HSE's role includes reviewing, shaping and implementing regulations in construction industry. Many studies observed the implications of health and safety during the initial design stage (Walters, 2010). It appears that decisions are made upstream from the construction site significantly impact operative's safety. A clear relation has discovered among design for construction safety and operatives' losses at the site. Existing research has shown that the high rate of injury in the construction industry is primarily due to inadequate or non-existent HSE systems (Lin & Mills, 2001). This shows the key role of HSE in ensuring safety at the construction site. The HSE must discover a system to successfully monitor and impose safety procedures and regulations (Hasel, 2006). It was suggested by Books (1997) that HSE must come up with motivation incentive programs that encourage and boost small firms to prioritise health and safety for workers, so that the firms' performance could be enhanced.

### **2.2 Role of Standard form of Contracts in Construction Industry**

Standard form contracts involve standard conditions which form the basis upon which parties to a contract agree (Mosey, 2009). Fenn et al., (1997) stated that UK construction firms generally uses three standard forms of contracts named Joint Contracts Tribunal (JCT), New Engineering Contract (NEC) and GC/Works. GC/Works are primarily for government contracts, JCT are most common and used for commercial development projects. The NEC Engineering and Construction Contract is a framework developed by the United Kingdom Institution of Civil Engineers that guides the drafting of documents on civil engineering and construction projects to obtain tenders and to administer contracts. This principle is consistent with Construction (Design and Management) Regulations. CDM regulations exist to improve the health and safety record on construction workplace by requiring all parties involved in a construction project to take responsibility for health and safety standards. The CDM regulations apply to all construction projects of any type, including domestic, any duration and any size. Small builders and individual trades need to know about CDM just as much as the big corporations. Hence, standard form contracts and agreements can be useful in construction project initial stages and form the extrinsic elements to provide a platform for expressing health and safety contractual provisions (Potts and Ankrah, 2014).

## **3.0 MOTIVATION**

Motivation is an internal drive that provides the energy to do what is needed to accomplish a goal (Thomas, 2000). Herzberg (1966) studied motivation for many years and defined motivation as the driving force behind all our actions. Smith (1987) defined motivation as literally the desire to do something. Brody (2013) found that motivation is goal-directed, not random. Zoogah and Beugre (2012) further explained that motivation is the energy that drives workers to engage in a course of action. Within the context of work, Pinder (2014) said that motivation is a force that exists within workers in the workplace to initiate work related behaviour and to determine its form, intensity, direction and duration. Motivation is an essential driver of workers' behaviour and performance. Marques et al.'s (2007) study concluded that motivation is a critical factor for today's firms to consider because motivation drives human activity and behavioural aspects in the workplace. As the old proverb "*You can lead a horse to water, but you can't make it drink*" demonstrates, motivation is not something

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2 that can be commanded. One of the significant functions and purposes of a firm is to produce  
3 the "right" type of motivation.  
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### 5 6 **3.1 Motivation Types**

7 Various authors view motivation as a two-dimensional construct, being intrinsic motivation  
8 and extrinsic motivation (Herzberg, 1959; Benabou and Tirole, 2003; McLean, 2003).  
9 Motivation can be classified as intrinsic and extrinsic motivation (Herzberg, 1959). It was  
10 stated by Thomas (2000) that operatives work hard for one of two reasons; first, because  
11 operatives are involved in the work itself (i.e. intrinsic motivation); or two, because they are  
12 caused by the external environment (i.e. extrinsic motivation). In the workplace, Herzberg  
13 offered a clear way for managers to use extrinsic and intrinsic motivation in the practice to  
14 increase safety among workers (Herzberg, 1959). Bergström et al, (2016) study revealed that  
15 supervisors and managers observe a strong effect of intrinsic and extrinsic motivation on  
16 operative's engagement in the workplace. Obiekwe's (2016) study found that there are many  
17 ways to improve workers performance in the firm (such as leadership, diversity, training) and  
18 that managers and supervisors should focus on intrinsic and extrinsic factors as these can  
19 significantly improve operative output. Al-Haadir, (2013) found that better safety behaviour  
20 using extrinsic and intrinsic motivation methods can be effective once factors are carried out  
21 in the setting of a positive safety climate. Lin, 2007 suggested that extrinsic and intrinsic  
22 motivation impact operatives' purposes, goals, their intentions concerning behaviours and  
23 activities. Extrinsic and intrinsic motivation is now briefly explained below.  
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#### 29 **3.1.1 Intrinsic Motivation**

30 From many decades a huge number of researchers examined the concepts of extrinsic and  
31 intrinsic motivation. Benz, (2005) found that motivation is intrinsic if an activity is undertaken  
32 for an operative who wants direct pleasure and satisfaction in the work. Van Young, (2005)  
33 argue that motivation is intrinsic when an operative performs an activity for itself which  
34 provides them both pleasure and satisfaction. Gagné and Deci, (2005) further found that  
35 intrinsic motivation can contain involvement in behaviour patterns, action and activity for  
36 their own importance. Some researchers found that intrinsic motivation refers to personal  
37 factors, internal to the operative and include psychological aspects, and these usually have  
38 greater influence on the health and safety behaviour of operatives (Herzberg, 1959; Moody et  
39 al., 2006). Herzberg (1959) states that intrinsic factors improve and enhance job satisfaction  
40 which contributes to psychological growth. Intrinsic factors include psychological issues,  
41 attitude, satisfaction, responsibility, and recognition (Herzberg, 1959; Leithwood and Beatty,  
42 2007; Clark and Cooper, 2004).  
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47 In addition, Coon and Mitter (2010) found that intrinsic motivation is an important enabler of  
48 creativity because intrinsic motivation is the desire of awareness, interest and the pleasure  
49 and satisfaction of work that is performed. DeVaro (2020) suggested that every firm must  
50 provide a source of intrinsic motivation that energises the workers to work hard to advance  
51 the mission. Wiley (1997) further explained that intrinsically motivated tasks, activities and  
52 behaviours lead naturally to external consequences that support the behaviour and give  
53 useful information for improving the operative's behaviour. It was found by Ryan and Deci  
54 (2000a) that operatives who are motivated intrinsically have high confidence, interest and  
55 excitement in the workplace.  
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59 As many scholars have described, the concept of intrinsic motivation refers to personal  
60 factors, that comes from within an operative. Intrinsic motivation also provides operatives

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2 more pleasure and satisfaction in the work. When operatives are intrinsically motivated their  
3 job satisfaction and pleasure for work enhances and increases.  
4

### 5 6 **3.1.2 Extrinsic Motivation**

7 It was found by Ryan and Deci (2000) that extrinsic motivation gives an external value. Extrinsic  
8 motivation can also be a positive factor in workers safe behaviour and working environment  
9 (Hardre & Reeves 2003; Baker 2004). It is an external force used by firms. It was proposed by  
10 Deci (1975) that extrinsic motivational factors always come first in work in order for improved  
11 performance. The reason why people look first to external reasons is that external forces are  
12 clearly noticeable and hence more reliable. Extrinsic factors include working conditions,  
13 company policy and administration, training, management commitment, supervision and H&S  
14 management systems (Herzberg, 1959; Brown et al., 1982; Kuria and Nzuve, 2015; Geller,  
15 2016, Hyman, 2017). A study by Sansone et al. (2000) indicated that there is an important  
16 association among extrinsic motivation and work performance. Many studies showed the  
17 significant influence of all extrinsic factors on operatives' performance such as Shaikh (2019),  
18 Senanayake and Gamage (2013) and Majau and Wanjohi (2019). Stranks' (2007) study found  
19 that H&S management system acts as an extrinsic factor and are considered an essential  
20 approach to control safety risks in the workplace. Rowlinson (2004) further found that safety  
21 management systems do not only influence safety outcomes (e.g., injuries and accidents) by  
22 controlling hazards but also by improving the physical working conditions.  
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27 In addition, James (2005) found that extrinsic motivation is a good predictor of safe work  
28 performance in firms. The effects of extrinsic factors on health and safety, safety behaviour  
29 and safety awareness were measured in Jordanian firms and found that improper training,  
30 poor health and safety management and improper policies at work were found to affect  
31 health and safety behaviours and safety awareness (Al-Refaie, 2013). Stella (2008) clarified  
32 that high performance and motivation for successful firms can be accomplished by many  
33 extrinsic factors such as training, policies, management commitment, H&S management,  
34 supervision and working condition.  
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38 As from the above discussion, it can be concluded that extrinsic motivation is motivation that  
39 points to external forces such as training, safety management, good working conditions and  
40 policies. Managers and supervisors can use this external force in the workplace for their  
41 operatives. If a supervisor and manager observe that an operative is not motivated as  
42 required, they can use external factors to increase and enhance the operative's extrinsic  
43 motivation in the workplace. This will also lead to creating a safe and healthy work  
44 environment.  
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### 48 **3.1.3 Relationship among Extrinsic and Intrinsic Motivation**

49 It was suggested by Ryan and Deci (2000) that the intrinsic and extrinsic motivators is  
50 interconnected. Prior studies proposed several extrinsic factors and approaches, such as  
51 training, safe working condition, policies implementation and safety management system to  
52 improve an operative's intrinsic motivation (Hartman and Sternberg, 1992; Amabile, 1993;  
53 Pelletier et al., 2007). Wood (2011) found that blending intrinsic and extrinsic motivators in  
54 the workplace in an organised way can produce a well-organized and safe workplace. It would  
55 be inappropriate to label such behaviours as either exclusively intrinsically or exclusively  
56 extrinsically motivated; both forces are clearly at work.  
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In order to manage projects effectively, it is essential to decide how the activities of the lifecycle steps are to be achieved and making the right things to happen in the right way and at the right time. The more comprehensive the initial starting process, the less firms would face issues later. Figure 3.1 is constructed and supports the argument of Wood (2011) that using an intrinsic and extrinsic motivator in an organised way in the workplace can produce a well-organized and safe workplace. In figure 3.1, extrinsic and intrinsic motivational factors are arranged into three steps based on their appearance in the firm for achieving better health and safety performance in the workplace.

In the first step, the figure shows that extrinsic motivational factors arise before intrinsic factors in a project. The figure shows a task with observed risk on the site, which means that firms need to observe the working environment and all the risks involved before any physical work activity in the starting stage of the project. Stella (2008) found that better performance of operatives and firms can be accomplished by many external factors such as training, policies, management commitment, H&S management, supervision and working condition. All the extrinsic motivational factors need to be considered first before starting any physical labour work in a construction project. This supports the statement of Deci (1975) that extrinsic motivators always come first. As stated, these external forces are clearly noticeable and hence more reliable. After proper implementation of extrinsic factors, intrinsic motivational factors need to be taken into consideration.

In the 2<sup>nd</sup> step, personally motivated operatives overlap with the extrinsic motivation. After this step, the overlapping of intrinsic and extrinsic motivation occurs. This overlapping would occur over the whole project. The output from external motivational factors becomes the input of intrinsically motivated operatives and vice versa. Decker et al., (2009) stated that extrinsic factors such as training, managerial behaviour and policies in the workplace move intrinsic motivation. In addition, Jolly (2003) stated, if a foundation of competencies is determined, a proper H&S planning, management system and risk valuation process would develop which will lead to enhanced control across major risks in the workplace and hence, operatives would achieve their work in a safer way as shown in step 3.

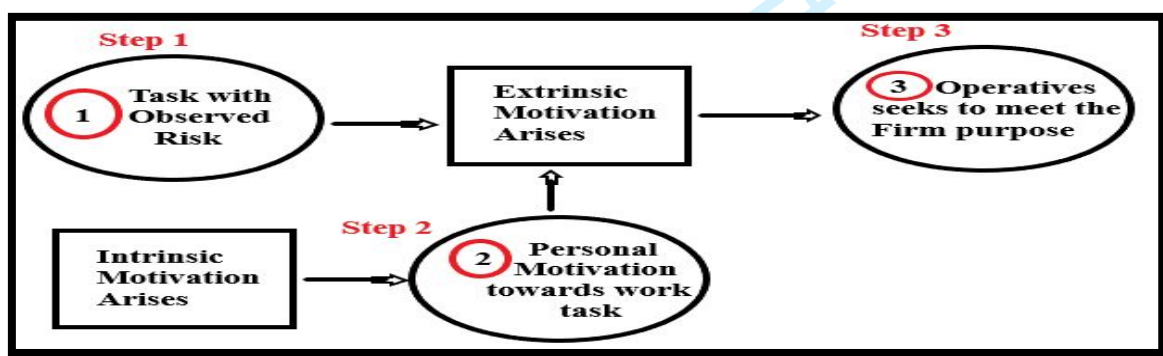


Figure 3.1: The Intrinsic and Extrinsic motivational pathway

### 3.2 Extrinsic and Intrinsic Factors Impact on Operatives

Herzberg (1959) found that a good leader will address both extrinsic and intrinsic motivators in the workplace because both intrinsic and extrinsic motivation has an impact on operatives. Christian et al.'s (2009) study found that both intrinsic and extrinsic motivation can provide effective methods of energizing behaviour. Herzberg (1959) further found in the two-factor theory that intrinsic factors enhance and improve job satisfaction at work and extrinsic factors

decreases job dissatisfaction at work. Either of these motivational strategies can be used to get an individual to perform a task, and both intrinsic and extrinsic rewards can bring satisfaction to the individual (Geller, 2016; Lai 2009; Lingard, 2002). Both Herzberg (1987) and Knoop (1994) concluded that extrinsic and intrinsic motivation are significant and can help as having a motivating consequence in the work. This study presents the significant factors that affect the operative's health and safety in small construction firms. These factors are briefly explained below.

### 3.2.1 Training

Training is a systematic approach that comes under the category of an extrinsic factor (Geller, 2016). Some studies simply acknowledged training as an extrinsic factor (Harris et al., 2005; Catania and Randall, 2013). Green (1997) stated that firms provide training for a variety of reasons, such as improved quality of work, a decrease in injuries, increased working performance (Chow et al., 2008). In addition, Scaduto et al. (2008) found that there is positive relationship between training and motivation in terms of health and safety. Barrett (2003) found that training proved to be a tool to motivate the operatives. Chempox (2003) suggested that training is used to enhance the skills, efficiency, and knowledge of operatives and familiarizes operatives with the organization's goals, rules, and regulations and the working conditions. Barrett (2003) acknowledges that it is critical that operatives are trained so that they can identify and behave appropriately against hazards related to their workplace and further result into better or improved health and safety performance. Scaduto et al. (2008) also found that training showed an important positive effect on operative's job satisfaction, attitude, job involvement and firm commitment. Barrett (2003) concluded that training is a proven tool to motivate operatives which further results into better or improved health and safety performance.

### 3.2.2 Management Commitment

The commitment of management to the safety of operatives in this research study can be understood as management's active participation and involvement to confirm a safe firm environment and provision of work-related safety practices and policies (Vredenburgh, A.G., 2002; Legg et al, 2015). Previous research has further found that management commitment implies the direct contribution in critically important features of firms which contributes to the health and safety of workers, work environment and providing safe external support to achieve the desired work outcome in the firm (Hon et al., 2014). Effective accident and hazards prevention approaches are based upon the support of good management (Labodová, 2004), which is mostly reliant on strong management commitment. Many studies have rated management commitment with high impact and concluded that strong management commitment is important for building a positive safety culture and for the prevention of hazards (Hon et al., 2014; Panuwatwanich et al., 2017). Finally, Labodová (2004) found that management and operatives' commitment and involvement in the workplace contributed to satisfaction with health and safety.

### 3.2.3 Working Conditions

Working condition is defined as the conditions such as working hours, stress, degree of safety, or danger that affect the operative in the workplace. Brown et al. (1982) found that working condition is an extrinsic factor as it deals with all features of the strategy and management of the work system and how the system interacts with employees and their places of work. Rahim et al. (2014) found that providing safe working condition is important for operatives for avoiding injuries and increasing well-being and comfort in the workplace. In addition, Dollard et al., (2007) found that in the working environment, several negative health-related psychosocial factors were identified. Factors include work overload, physical danger, role

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2 conflict and problems in relationships at work. Kheni, et al. (2005) supported the statement  
3 and found that small firms lack resources, safety information and guidance, skilled labour, and  
4 machineries and equipment. They also have a low literacy rate of workers and these  
5 characteristics cause demotivation, poor working conditions, bad working attitudes and other  
6 negative psychological factors. It was concluded by Emeka et al. (2015) that good working  
7 condition boosts an operative's motivation in terms of their health and safety performance in  
8 the workplace.  
9

### 10 **3.2.4 Safety Management System**

11 The primary function of a safety management system is the identification of workplace  
12 hazards (Manu et al. 2014). Safety management systems work as an extrinsic factor intended  
13 to manage health and safety aspects in the workplace such as safety regulations, policy, and  
14 procedures (Clarke and Cooper, 2004). Construction projects are among the environments  
15 that are most conducive to work hazards (Manu et al. 2014). This is because of the  
16 construction site environment, physical working conditions, use of heavy equipment and the  
17 dynamic nature of the work (Menzel, 2010; HSE, 2019). Based on these dangerous situations at  
18 work, effective implementation of health and safety management system is highlighted as a  
19 crucial condition to ensure safety for operatives in the workplace (Bartusik, 2008).  
20 Furthermore, Kheni (2008) found that the presence of a safety management system leads to  
21 better health and safety performance in firms as this leads to the consideration and  
22 understanding of the operative's psychological factors and attitudes which can give rise to  
23 workplace hazards, accidents and health and safety failures. Health and safety management  
24 systems include those set out by the Construction (Design and Management) Regulations  
25 2015 (CDM 2015) or other health and safety management systems. Key aspects are identified  
26 for decreasing workers accidents and improvement in planning, implementation and  
27 evaluation stages (Mrugalska and Sławińska 2014; HSE, 2019).  
28 Management commitment to safety

### 29 **3.2.4 Job Satisfaction**

30 Leithwood and Beatty (2007) revealed that job satisfaction is an intrinsic motivational factor.  
31 The level of job satisfaction is associated with positive behaviour of the firm, for example,  
32 employee retention and growth in worker performance. Job satisfaction has a connection  
33 with psychological aspects, good quality job, job security, promotion and growth and training  
34 facilities available to employees. Satisfied employees will commit to their jobs, come to work  
35 early, work overtime, beat deadlines, and achieve high work goals (Kreitner & Kinicki, 2007).  
36 On the contrary, dissatisfied employees are characterized with lateness, absenteeism, low  
37 morale, and low productivity at work (Moos et al., 1987). However, empirical studies seem to  
38 agree on work motivation measures that can be taken by the management to ensure  
39 employees are satisfied with their jobs. Job satisfaction results from work motivation factors  
40 such as compensation, training, recognition and working conditions (Slocum & Hellriegel,  
41 2009). A good work environment and good work conditions can increase employee job  
42 satisfaction and the employees will attempt to give their best which can increase the  
43 employee work performance.  
44

### 45 **3.2.5 Psychological factors**

46 Intrinsically motivated behaviours are associated with psychological factors (Ryan and Deci,  
47 2000). Operatives in construction firms are 1.7 times more prone towards psychological  
48 health issues like psychiatric disorders involving stress related problems as compared to other  
49 industries workforces (Clark and Cooper, 2004; Peterson, 2008). Longenecker (2009) found  
50 that there are some psychological factors (attitudes, workload, deadlines and the  
51 relationships with superiors) that have the greatest relevance to small firms' workers and  
52 impact their performance in the workplace. Semmer (2003) found that the occurrence of  
53 these psychological factors is due to bad job design, poor management and a poor and unsafe  
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work environment. Bonde (2008) found that psychological factors can lead to harmful and negative psychological issues in the workplace such as work-related mental health, stress, depression and wellbeing. Idrees et al. (2017) concluded that mental stress, job security, workload and job satisfaction are the psychological areas to be focused upon to increase operative's perception to their health and safety.

#### 4.0 Conceptual Framework

Many studies have confirmed the relationship among workplace injuries and motivation. For many decades researchers have found findings and results that were sometimes challenging one another because of the authors have focused on different aspects, firm types, variables and countries. It is observed that no clear solutions and answers have been made on what specifically motivates operatives in terms of their health and safety and satisfactory performance at their workplace. This is due to the fact that motivational factors are applied differently according to the firm size and type. However, it seems that extrinsic motivational factors are more important than intrinsic motivational factors in the project initiation stage within the project or activity life cycle.

Figure 4.1 presents the main conceptual framework of this research. A critical review and synthesis of the body of knowledge incorporating key health and safety features and the extrinsic and intrinsic motivational factors which characterise small firms, has been used to develop the framework. The framework consists of intrinsic and extrinsic motivational factors and how they impact on a small construction firm's environment. The framework is presented in two stages representing firstly, that operatives in small construction firms are influenced by extrinsic factors (as per the figure 3.1). Secondly, representing the extrinsic factors indirectly influencing the intrinsic factors. All the parameters shown are considered to produce a conceptual framework of motivational factors that affect operative's health and safety in small construction firms. The following sections explain the relationships between the parameters shown.

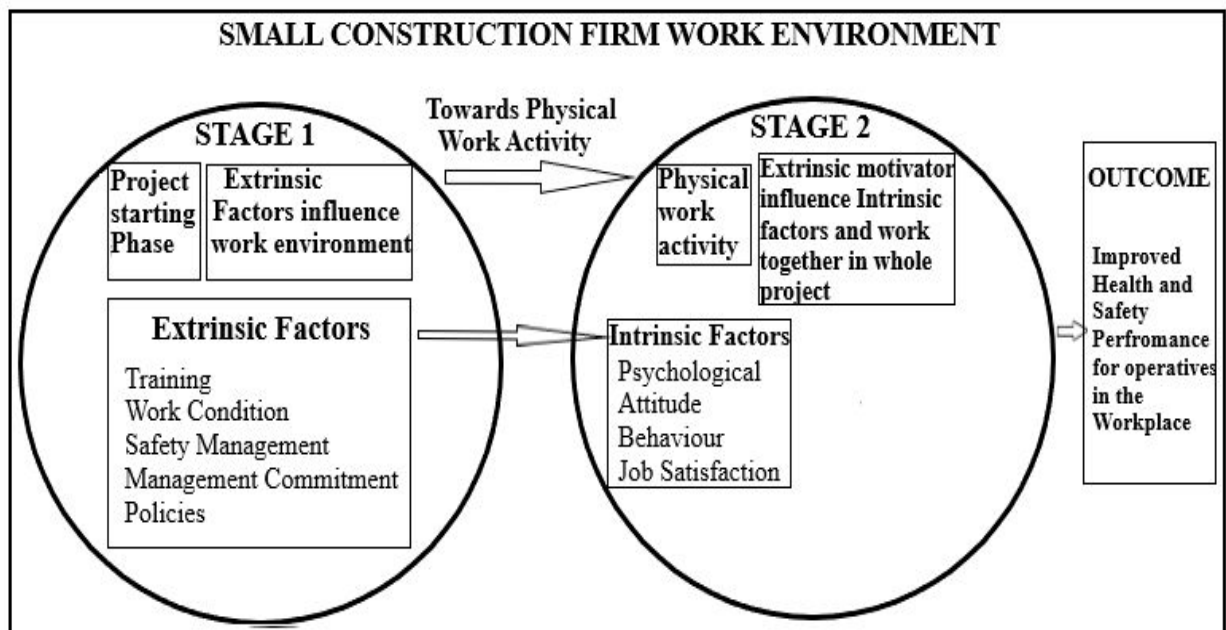


Figure 4.1. A conceptual framework of motivational factors that affect operative health and safety in small construction firms

#### 4.1 Extrinsic Factors Influence Work Environment

The framework indicates that training, working conditions, policies, health and safety management and management commitment are the key external motivators that influence a firm's environment and operative's safety performance in the workplace. The framework indicates that unhealthy work conditions are prevalent and are a strong de-motivating factor for operatives. Mental and physical health problems such as depression, stress and other negative outcomes result in injuries for operatives in the workplace. Studies also found that training also influences operatives safe working performance and motivation in the workplace. This is because properly trained operatives become familiar with the organization's goals, rules, and regulations and the working conditions. These operatives are more likely to behave appropriately against hazards related to their workplace and this further reduces the chance of suffering from injuries and results in creating a positive health and safety culture.

The influence of a safety management system and management commitment were other extrinsic factors which are identified to have an influence on operative's health and safety. This is because these systems help to establish procedures, policies and regulations for operatives in the workplace and are known to decrease worker accidents and lead to improvements in the planning, implementation and evaluation stages. In addition, it is concluded that extrinsic motivational factors constitute a key part in the workplace, serve as a guidance for operatives and help to create a safe and favourable working environment where operatives feel safe and can working comfortably in the workplace.

#### 4.2 Extrinsic factors indirectly Influence Intrinsic factors in the Workplace

The framework identifies psychological factors, operative's behaviour, attitude and satisfaction as the intrinsic factors influenced by extrinsic factors. These external features act as an input to intrinsic motivation. Working conditions and management commitment to safety influence an operatives' psychological factors and attitudes. The presence of a safety management system is known to lead to better health and safety performance in the firms. This leads to the consideration and understanding of the operative's psychological factors and attitudes that contribute to workplace hazards, accidents and health and safety failures. In addition, unsafe working conditions and poor safety management leads to work-related mental health, stress, depression in the workplace and which leads to operatives' injuries. Those operatives who were purely motivated extrinsically experienced much greater distress when faced with psychological factors at work. Lunau et al. (2017) study revealed that psychosocial risks are mostly lower in countries with more developed safety management systems. The framework also indicates that training is influencing operatives' attitude and satisfaction in the workplace and that training is an important aspect in creating positive attitudes. These further influences safety performance and job proficiency, while poor training results in poor attitude to safety performance, with dissatisfaction during work and could results into injuries and poor working performance. Hence, extrinsic factors are shown to influence intrinsic factors in the workplace and so can help improve operative's safety. The failure or absence of these extrinsic factors support can result in an increased danger and risk in exposing operatives to injury in the firm environment.

#### 4.3 Summary

This framework represents a contribution to the study of health and safety of operatives in the context of small construction firms. The framework represents the challenges and factors that affect operatives in the workplace. Included in the framework are extrinsic and intrinsic

factors that influence the outcome for improving health and safety in small construction firms. Extrinsic motivators include training, safety management system, management commitment, policies and working environment. These are the key factors that directly influence the work environment and indirectly the intrinsic factors and act as an input to intrinsic motivation and results in establishing the safety culture in the workplace. The framework supports the statement of Reeve (2006) that an extrinsic motivator can enhance intrinsic motivation for specific tasks in the workplace and improves worker safety. Failure of motivational support can result in increased danger and risk in exposing operatives to injury in the small firm environment. In this context, the damage caused to operative's health and safety in small construction firms is dependent mainly on the extrinsic factors.

## 5.0 METHODOLOGY

This paper applied a literature review of theoretical background. A search of literature was performed on health and safety in small construction firms in the UK with an objective to find out the motivational factors affecting the safety of semi-skilled construction operatives in small construction firms. The main factors are retrieved from literature as presented in the conceptual framework.

## 6.0 RESULT

The conceptual framework is representing the results of this research study. Conceptual framework highlighted and explain the key extrinsic and intrinsic motivational factors (such as training, policies, health and safety management commitment, attitude, behaviour and working conditions) that influence a firm's environment and operative's safety performance in the workplace.

## 7.0 CONCLUSION

A conceptual framework for improving the health and safety in small construction firms has been discussed and presented. The conceptual framework presented is considered to be of key importance to improving the understanding of health and safety in small construction firms. The literature review revealed that very little research has been conducted on the motivational factors and their impact on health and safety in small construction firms. This study proposes a contribution in developing an understanding of the motivational factors influencing health and safety in small construction firms.

The framework results show that all the key barriers are extrinsic motivational factors, thus small construction firms have limited to no control over them. Lack of safety training, policies, health and safety management commitment, bad attitude, behaviour and working conditions that influence a firm's environment and operative's safety performance in the workplace. However, it is something than can be addressed by looking at the barriers and factors in small firms as many small firms have only intrinsically motivated elements in their workplace. Alternatively, semi-skilled construction operatives in small firms are less likely to be extrinsically motivated and are mainly influenced by the training, management commitment, policies and working environment. It is therefore vital to emphasise enhancement efforts on these extrinsic strategies to consider in the small firms' environment especially in the initial stages of the project (or activity), so that the health and safety performance of operatives in small firms can be improved.

## 8. RECOMMENDATION

Health and safety within small construction firms is known to be very important as many small firms have only intrinsically motivated elements in their workplace. Besides highlighting the extrinsic and intrinsic factors, Small construction firms should acknowledge that emphasise on motivational factors will lead to a reduction in construction operatives' injuries. It is therefore vital to emphasise enhancement efforts on these extrinsic strategies to consider in the small firms' environment especially in the initial stages of the project (or activity), so that the health and safety performance of operatives in small firms can be improved. Furthermore, the government must come up with incentive plans that reassure the small construction firms to focus on health and safety of operatives.

## 9. FUTURE WORK

This kind of a new framework on the motivation for health and safety can be a significant contribution to a knowledge. The framework can be seen a blueprint for further investigation in the specific topic area and serve as a basis to be further developed. In seeking clarification as operatives real life workplace experience and collecting more empirical evidences, in order to say that the framework is a true representation that how operatives experiencing the situation ( such as the work environment, behavioural elements, contextual variables and the extrinsic and intrinsic motivational factors) in the way that theorized in the framework. So, this does support the qualitative study and reinforces its suitability for further research to get empirical evidence about the physical setting in small construction firms with the help of qualitative research with an interview as a research method to collect the empirical evidence by knowing operatives field experience and their perception towards health and safety and motivational factors at work.

## References

- Asad, S. and Dainty, A.R., 2005. Job Motivational Factors for disparate occupational groups within the UK Construction Sector: a comparative analysis. *Journal of construction research*, 6(02), pp.223-236.
- Adjei, E.A.G., 2009. Motivational strategies to improve productivity in the construction industry in Ghana.
- Al-Refaie A. (2013). Factors affect companies' safety performance in Jordan using structural equation modeling. *Safety Sci*, 57: 169–178
- Andriessen, J.H., 1978. Safe behaviour and safety motivation. *Journal of Occupational Accidents*, 1(4), pp.363-376.
- Aisha, A.N. and Hardjomidjojo, P., 2013. Effects of working ability, working condition, motivation and incentive on employees multi-dimensional performance. *International Journal of Innovation, Management* 4(6), p.605.
- Amabile, T.M., 1993. Motivational synergy: Toward new conceptualizations of intrinsic and extrinsic motivation in the workplace. *Human resource management review*, 3(3), pp.185-201.
- Barg, J.E., Ruparathna, R., Mendis, D. and Hewage, K.N., 2014. Motivating workers in construction. *Journal of Construction Engineering*, 2014.
- Books, H.S.E., 1997. Successful health and safety management. *HS (G)*.
- Bergström, E. and Garcia Martinez, M., 2016. The Influence of Intrinsic and Extrinsic Motivation on Employee Engagement: A qualitative study of the perceptions of managers in public and private sector organizations.
- Bagnara, S., Tartaglia, R., Albolino, S., Alexander, T., & Fujita, Y. (2019). Proceedings of the 20th Congress of the International Ergonomics Association (IEA 2018): Volume VII
- Barrett, R., 2003. *Training, developing, and motivating people*. Nelson Thornes.
- Barber, J., Metcalfe, S. and Porteous, M., 2016. *Barriers to growth in small firms*. Routledge.
- Brody, N., 2013. *Human motivation: Commentary on goal-directed action*. Elsevier.
- Berry, J.W., 2006. Acculturative stress. In *Handbook of multicultural perspectives on stress*, Springer, Boston, MA.
- Brown, G., 2017. *Listening to spoken English*. Routledge.
- Bonde, J.P.E., 2008. Psychosocial factors at work and risk of depression: a systematic review of the epidemiological evidence. *Occupational and environmental medicine*, 65(7), pp.438-445.

- 1 Benabou, R. and Tirole, J., 2003. Intrinsic and extrinsic motivation. *The review of economic studies*,  
2 70(3), pp.489-520.
- 3 Beehr, T.A., 2014. *Psychological stress in the workplace (psychology revivals)*. Routledge.
- 4 Books, H.S.E., 1997. Successful health and safety management. *HS (G)*
- 5 BIS UK Construction (2019) An economic analysis of the sector. Available at:  
6 [https://www.gov.uk/government/publications/business-population-estimates-for-the-uk-and-regions-2019-](https://www.gov.uk/government/publications/business-population-estimates-for-the-uk-and-regions-2019-statistical-release-html)  
7 [statistical-release-html](https://www.gov.uk/government/publications/business-population-estimates-for-the-uk-and-regions-2019-statistical-release-html) (Accessed: 2 Dec 2019).
- 8 Bock, G.W. and Kim, I., 2002. Knowledge management and process innovation: the knowledge transformation  
9 path in Samsung SDI. *Journal of knowledge management*.
- 10 Clarke, S., 2006. The relationship between safety climate and safety performance: a meta-analytic review.  
11 *Journal of occupational health psychology*, 11(4), p.315.
- 12 Clarke, S. and Cooper, C.L., 2004. *Managing the risk of workplace stress: Health & safety hazards*. Psychology  
13 Press.
- 14 Christian, M.S., Bradley, J.C., Wallace, J.C. and Burke, M.J., 2009. Workplace safety: a meta-analysis of the roles  
15 of person and situation factors. *Journal of applied psychology*, 94(5), p.1103.
- 16 Catania, G. and Randall, R., 2013. The relationship between age and intrinsic and extrinsic motivation in workers  
17 in a Maltese cultural context. *International Journal of Arts & Sciences*, 8(2), p.31.
- 18 Cooney, J.P., 2016. *Health and safety in the construction industry-a review of procurement, monitoring, cost*  
19 *effectiveness and strategy* (Doctoral dissertation, University of Salford).
- 20 Çalışkan, B.Ö.Ö., 2014. Occupational health and safety in SMEs: Overview as a part of management system. In  
21 *Effective Human Resources Management in Small and Medium Enterprises: Global Perspectives* (pp. 167-182).
- 22 **Clarke, S. and Cooper, C.L., 2004. *Managing the risk of workplace stress: Health and safety hazards*.  
23 Psychology Press.**
- 24 DeVaro, J., 2020. *Strategic Compensation and Talent Management: Lessons for Managers*. Cambridge  
25 University.
- 26 Department for Business Innovation and Skills (BIS) (2019). Business population estimates for the UK and the  
27 regions, Online available at: [the UK and regions - 2019 Statistical Release.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/421111/the-uk-and-regions-2019-statistical-release.pdf)
- 28 Dester, W.S. and Blockley, D.I., 1993. Safety—behaviour and culture in construction. *Engineering,*  
29 *Construction and Architectural Management*, 2(1), pp.176
- 30 Decker, F.H., Harris-Kojetin, L.D. and Bercovitz, A., 2009. Intrinsic job satisfaction, overall satisfaction, and  
31 intention to leave the job among nursing assistants in nursing homes. *The Gerontologist*, 49(5), pp.596-610.
- 32 Diugwu, I. (2008) A Framework to evaluate critically the health and safety strategies in supply chains in the UK.  
33 Unpublished PhD Thesis. Coventry: Coventry University
- 34 Franklin-Thomas, S.M., 2016. *Intrinsic motivational factors of the millennial generation consultants in the*  
35 *professional services workplace*. Northcentral University.
- 36 Fenn, P., Lowe, D. and Speck, C., 1997. Conflict and dispute in construction. *Construction Management &*  
37 *Economics*, 15(6), pp.513-518.
- 38 Graber, D.A., 2002. *The power of communication: Managing information in public organizations*. CQ press.
- 39 Griffith, A., Stephenson, P. and Watson, P., 2014. *Management systems for construction*. Routledge.
- 40 Geller, E.S., 2016. *The psychology of safety handbook*. CRC press.
- 41 Gagné, M. and Deci, E.L., 2005. Self-determination theory and work motivation. *Journal of Organizational*  
42 *behavior*, 26(4), pp.331-362.
- 43 Gultekin, H. and Erkan, A.C.A.R., 2014. The intrinsic and extrinsic factors for teacher motivation. *Revista de*  
44 *cercetare si interventie sociala*, 47, p.291.
- 45 HSE, (2018). MAC Tool - Psychosocial risks factors. [online] Available at:  
46 <http://www.hse.gov.uk/msd/mac/psychosocial.htm> [Accessed 1 Aug. 2019].
- 47 Hegney, D., Plank, A. and Parker, V., 2006. Extrinsic and intrinsic work values: their impact on job satisfaction in  
48 job. *Journal of management*, 14(4), pp.271-281.
- 49 Hollnagel, E., 2018. *Safety-I and safety-II: the past and future of safety management*. CRC press.
- 50 Health and Safety Executive (HSE) (2019), Annual Report and Accounts, Online at:  
51 <http://www.hse.gov.uk/aboutus/reports/ara-2018-19.pdf>
- 52 Herzberge, F., Mausnar and Snyderman, B. (1966), *The Motivation to Work*. New York: John Wiley.
- 53 Hinze, J., 1997. *Construction safety*. Prentice Hall.
- 54 Hogg, K. and Higgs, C., 2013. *Willis's practice and procedure for the quantity surveyor*. John Wiley & Sons.



- 1  
2 Hobfoll, S.E., 1988. The ecology of stress. Taylor & Francis.
- 3 Herzberg, F., 2017. Motivation to work. Routledge.
- 4 Hillary, R. ed., 2017. *Small and medium-sized enterprises and the environment: business imperatives*.  
5 Routledge.
- 6 House, R.J. and Wigdor, L.A., 1967. Herzberg's dual-factor theory of job satisfaction and motivation: A review  
7 of the evidence and a criticism. *Personnel psychology*, 20(4), pp.369-390.
- 8 Hartman, H. and Sternberg, R.J., 1992. A broad BACEIS for improving thinking. *Instr Science*, 21(5), pp.401-425.
- 9 Herzberg, F., 2008. *One more time: How do you motivate employees?*. Harvard Business Review Press.
- 10 Hon, C.K., Chan, A.P. and Yam, M.C., 2014. Relationships between safety climate and safety performance of  
11 building repair, maintenance, minor alteration, and addition (RMAA) works. *Safety science*, 65, pp.10-19.
- 12 Hyman, J., 2017. *Training at Work: Critical Analysis of Workplace Training and Development* (Vol. 18).
- 13 Horcones, C., 1987. The concept of consequences in the analysis of behavior. *The Behavior Analyst*, 10(2),  
14 p.291.
- 15 IOSH. 2018. Working well-promoting health and wellbeing at work. [ONLINE] Available at:  
16 <https://www.iosh.com/media/3685/ps0355-working-well-guide-new.pdf>. [Accessed 6 December 2019].
- 17 Idrees, M.D., Hafeez, M. and Kim, J.Y., 2017. Workers' age and the impact of psychological factors on the  
18 perception of safety at construction sites. *Sustainability*, 9(5), p.745.
- 19 Jamieson, D., Fettiplace, S., York, C., Lambourne, E., Braidford, P. and Stone, I., 2012. Large Businesses and  
20 SMEs: Exploring how SMEs interact with large businesses. *ORC International*, July, 8.
- 21 James Jr, H.S., 2005. Why did you do that? An economic examination of the effect of extrinsic compensation on  
22 intrinsic motivation and performance. *Journal of economic psychology*, 26(4), pp.549-566.
- 23 Jolly, A. ed., 2003. *Managing business risk*. Kogan Page Publishers.
- 24 Jitwasinkul, B., Hadikusumo, B.H. and Memon, A.Q., 2016. A Bayesian Belief Network model of organizational  
25 factors for improving safe work behaviors in Thai construction industry. *Safety science*, 82, pp.264-273.
- 26 Kuria, R.N. and Nzuve, P.S., 2015. Factors Perceived to Influence Employees' Performance;  
27 Kuhnert, K.W. and Palmer, D.R., 1991. Job security, health, and the intrinsic and extrinsic characteristics of work.  
28 *Group & Organization Studies*, 16(2), pp.178-192.
- 29 Khan, A.A., 2013. *Human resource management and industrial relations*. Abir Publication.
- 30 Koo, J. and Ki, E., 2020. Corporate Social Responsibility and Employee Safety: Evidence from Korea.  
31 *Sustainability*, 12(7), p.2649.
- 32 Kheni, N.A., Dainty, A.R.J. and Gibb, A.G.F., 2005, September. Health and safety management practices of  
33 small subcontractors. In *21st Annual ARCOM Conference, University of London, Association of Researchers in*  
34 *Construction Management*
- 35 Kazaz, A., Manisali, E. and Ulubeyli, S., 2008. Effect of basic motivational factors on construction workforce  
36 productivity in Turkey. *Journal of civil engineering and management*, 14(2), pp.95-106.
- 37 Labodová, A., 2004. Implementing integrated management systems using a risk analysis based approach.  
38 *Journal of cleaner production*, 12(6), pp.571-580.
- 39 Legg, S.J., Olsen, K.B., Laird, I.S. and Hasle, P., 2015. Managing safety in small and medium enterprises.
- 40 Lentz, T.J. and Wenzl, T.B., 2006. Surveillance: small businesses with high fatality rates: assessment of hazards  
41 and their prevention. *Journal of occupational and environmental hygiene*, 3(2), pp. D8-D14.
- 42 Laszlo, C., 2003. *The sustainable company: How to create lasting value through social and environmental*  
43 *performance*. Island Press.
- 44 Longenecker, J.G., 2009. *Small business management: Launching and growing new ventures*. Cengage  
45 Learning.
- 46 Lingard, H. and Rowlinson, S.M., 2005. *Occupational health and safety in construction project management*.
- 47 Lawler, J., 2015. Motivation and meaning: The role of supervision. *Practice*, 27(4), pp.265-275.
- 48 Lundstrom, T., Pugliese, G., Bartley, J., Cox, J. and Guither, C., 2007. Organizational and environmental factors  
49 that affect worker health and safety and patient outcomes. *American journal of infection control*, 30(2), pp.93-  
50 106.
- 51 Lai, C., 2009. Motivating employees through incentive programs.
- 52 Li, R.Y.M. and Poon, S.W., 2013. *Construction safety*. Springer Science & Business Media.
- 53 Leithwood, K. and Beatty, B. eds., 2007. *Leading with teacher emotions in mind*. Corwin Press.
- 54 Lingard, H. and Rowlinson, S., 2004. *Occupational health and safety in construction project management*.  
55 Routledge.

- 1  
2 Moon, T.W., Hur, W.M. and Hyun, S.S., 2019. How service employees' work motivations lead to job  
3 performance: The role of service employees' job creativity and customer orientation. *Current Psychology*,  
4 38(2), pp.517-532.
- 5 **McLean, A., 2003. *The motivated school*. Sage.**
- 6 McCabe, S., 2014. Quality improvement techniques in construction: principles and methods. Routledge.
- 7 Micheal, S. Wogalter, 2006. Handbook of Safety Warning, LEA Publishers London
- 8 McSween, T.E., 2003. *Values-based safety process: Improving your safety culture with behavior-based safety*.  
9 John Wiley.
- 10 McShane, S.L., Steen, S.L. and Tasa, K., 1992. *Canadian organizational behaviour*. Irwin.
- 11 Mrugalska, B. and Sławińska, M., 2014. Narzędzia makroergonomii pracy. *Zeszyty Naukowe Politechniki*  
12 *Poznańskiej. Organizacja i Zarządzanie*.
- 13 Mohamed, S., 2004. Safety culture, climate and performance measurement. *Construction safety management*  
14 *systems*, pp.123-135.
- 15 Mosey, D., 2009. *Early contractor involvement in building procurement: contracts, partnering and project*  
16 *management*. John Wiley & Sons.
- 17 Moos, R.H. and Schaefer, J.A., 1987. Evaluating health care work settings: A holistic conceptual framework.  
18 *Psychology and Health*, 1(2), pp.97-122.
- 19 Moody, R.C. and Pesut, D.J., 2006. The motivation to care. *Journal of health organization and management*.
- 20 Marques, J., Dhiman, S. and King, R., 2007. *Spirituality in the workplace: What it is, why it matters, how to make*  
21 *it work for you*. Personhood Press.
- 22 Nejati, M. ed., 2013. *Frontiers of business, management and economics: an Interdisciplinary collection of*  
23 *managerial research findings and breakthroughs*. Universal-Publishers.
- 24 Noe, R.A., Hollenbeck, J.R., Gerhart, B. and Wright, P.M., 2017. *Human resource management: Gaining a*  
25 *competitive advantage*. New York, NY: McGraw-Hill Education.
- 26 Neal, A. and Griffin, M.A., 2006. A study of the lagged relationships among safety climate, safety motivation,  
27 safety behaviour, and accidents at the individual and group levels. *Journal of applied psychology*, 91(4), p.9
- 28 O'Dea and Flin, R., 2003. *The role of managerial leadership in determining workplace safety outcomes*. The  
29 Executive.
- 30 Obiekwe, N., 2016. Employee motivation and performance.
- 31 Panuwatwanich, K., Al-Haadir, S. and Stewart, R.A., 2017. Influence of safety motivation and climate on safety  
32 behaviour and outcomes: evidence from the Saudi Arabian construction industry. *International journal of*  
33 *occupational safety and ergonomics*, 23(1), pp.60-75.
- 34 Perry, M., 2012. *Small firms and network economies*. Routledge.
- 35 Pinder, C.C., 2014. *Work motivation in organizational behavior*. psychology press.
- 36 Rauner, F. and Maclean, R. eds., 2008. *Handbook of technical and vocational education and training research*  
37 (Vol. 49). Dordrecht: Springer.
- 38 Reese, C.D., 2018. *Occupational health and safety management: a practical approach*. CRC press.
- 39 Ryan, R.M. and Deci, E.L, 2010. Self-determination. *The Corsini encyclopedia of psychology*, pp.1-2.
- 40 Rainnie, A., 2016. *Industrial relations in small firms: Small isn't beautiful*. Routledge.
- 41 Rowlinson, J.S., 2004. *On the continuity of the gaseous and liquid states*. Courier Corporation.
- 42 Raines, S.S., 2019. *Conflict management for managers: Resolving workplace, client, and policy disputes*.
- 43 Rahim, N.A., Ng, H.K., Biggs, D.M. and Boots, K., 2014. Perception of safety, physical working conditions and  
44 stress between Malaysia and United Kingdom. *International Journal of Business and Society*, 15(2), pp.321-  
45 338.
- 46 Sørensen, O.H., Hasle, P. and Bach, E., 2007. Working in small enterprises—is there a special risk?. *Safety*  
47 *Science*, 45(10), pp.1044-1059.
- 48 Shaikh, H. and Shaikh, S., 2019. The Impact of Job Satisfaction with Intrinsic Factors and Employee  
49 Performance.
- 50 Shorrock, S. and Williams, C., 2016. *Human factors and ergonomics in practice: Improving system performance*  
51 *and human well-being in the real world*. CRC Press.
- 52 Smith, M., 1987. The Humean theory of motivation. *Mind*, 96(381), pp.36-61.
- 53 Sansone, C. and Harackiewicz, J.M. eds., 2000. Intrinsic and extrinsic motivation: The search for optimal  
54 motivation and performance. Elsevier.
- 55  
56  
57  
58  
59  
60

- 1  
2 Scaduto, A., Lindsay, D. and Chiaburu, D.S., 2008. Leader influences on training effectiveness: motivation and  
3 outcome expectation processes. *International Journal of Training and Development*, 12(3), pp.158-170.
- 4 Stone, I., 2012, November. Upgrading workforce skills in small businesses: Reviewing international policy and  
5 experience. In *Report for Workshop on 'Skills Development for SMEs and Entrepreneurship', Copenhagen*  
6 (Vol. 28).
- 7 Singh, R., 2016. The impact of intrinsic and extrinsic motivators on employee engagement in information  
8 organizations. *Journal of Education for Library and Information Science*, 57(2), pp.197-206.
- 9 Semmer, N.K., 2003. Job stress interventions and organization of work.
- 10 Stranks, J.W., 2007. Human factors and behavioural safety. Routledge.
- 11 Senanayake, Y.L.K. and Gamage, S.K., 2013. Impact of Intrinsic and Extrinsic Factors on Organizational  
12 Performance with Special Reference to Operational Level Managers in Sri Lanka Telecom.
- 13 Thomas, K.W., 2009. Intrinsic motivation at work: What really drives employee engagement. Berrett Publish  
14 Valencia, C., 2008. Motivation and Productivity in the Workplace. Retrieved April, 26, p.2012.
- 15 Vredenburg, A.G., 2002. Organizational safety: which management practices are most effective in reducing  
16 employee injury rates?. *Journal of safety Research*, 33(2), pp.259-276.
- 17 Wilson, D.J. (1979) Need importance and need satisfaction for construction Operatives. Unpublished M.Sc.  
18 Project Report. Loughborough University of Technology.
- 19 Westhead, P. and Storey, D.J., 1997. *Training Provision and the Development of Small and Medium-Sized*  
20 *Enterprises. Research Report No. 26.*
- 21 Woods, D.R., 2011. Motivating and rewarding university teachers to improve student learning: A guide for  
22 faculty and administrators. City University of HK Press.
- 23 Wiley, J. and Kowske, B., 2011. Respect: **Delivering results by giving employees.** John & Sons.
- 24 Wirth, O. and Sigurdsson, S.O., 2008. When workplace safety depends on behavior change: Topics for  
25 behavioral safety research. *Journal of safety Research*, 39(6), pp.589-598.
- 26 Walters, D. and James, P., 2009. Understanding the role of supply chains in influencing health and safety at  
27 work.
- 28 Walters, D., 2010. *The role of worker representation and consultation in managing health and safety in the*  
29 *construction industry* (pp. 1-48). ILO.
- 30 Yoo, S.J., Han, S.H. and Huang, W., 2012. The roles of intrinsic motivators and extrinsic motivators in promoting  
31 e-learning in the workplace: A case from South Korea. *Computers in Human Behavior*, 28(3), pp.942-950.
- 32 Zeidner, M., Matthews, G. and Roberts, R.D., 2012. *What we know about emotional intelligence: How it affects*  
33 *learning, work, relationships, and our mental health.* MIT press.
- 34 Zoogah, D.B. and Beugré, C.D., 2012. *Managing organizational behavior in the African context.* Routle  
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Engineering, Construction and Architectural Management

## ECAM Decision on Research Paper with Comments

**Manuscript ID:** ECAM-06-2020-0399.R1)

**Title:** The motivation of operatives in small construction firms towards health and safety - A Conceptual Framework

Dear Editor, Journal of ECAM

We would like to thank you for the letter and the opportunity to resubmit a revised copy of this manuscript. We would also like to take this opportunity to express our thanks to the reviewers for the positive feedback and helpful comments for correction or modification.

We believe have resulted in an improved revised manuscript, which you will find uploaded alongside this document. The manuscript has been revised to address the reviewer comments, which are appended alongside our responses to this letter.

We very much hope the revised manuscript is accepted for publication in Journal.

Sincerely yours,

Mr. Sunan Khan

on behalf of the authors David Proverbs and Hong Xiao

## First reviewer comments and their responses are set out below:

**First Reviewer point 1:** Originality: Does the paper contain new and significant information adequate to justify publication?: No

**Response:** Yes, this paper contains significant originality and novelty. This kind of a new framework on the motivation for health and safety can be a significant contribution to a knowledge.

**First Reviewer point 2:** Relationship to Literature: Does the paper demonstrate an adequate understanding of the relevant literature in the field and cite an appropriate range of literature sources? Is any significant work ignored?: insufficient literature study.

**Response 2:** By taking the comment of the reviewer 1, We have incorporated more studies (Hinze, 2002; Haung, 2006; Barg et al, 2014; Potts and Ankrah, 2014; Gosi, 2017; Marques et al.'s (2007); Reese, 2018; Moon et al.'s (2019); Raines (2019); in the literature review and have mentioned those in this study to address this comment.

**First Reviewer point 3: Methodology:** Is the paper's argument built on an appropriate base of theory, concepts or other ideas? Has the research or equivalent intellectual work on which the paper is based been well designed? Are the methods employed appropriate?: No,

**Response 3:** Methodology paragraph is included on (page 11) to address this comment.

**First Reviewer point 4: Results:** Are results presented clearly and analysed appropriately? Do the conclusions adequately tie together the other elements of the paper?: The Conclusion is not mentioned

**Response 4:** A Conclusion is included on (page 17) to address this comment.

**First Reviewer point 5: Implications for research, practice and/or society:** Does the paper identify clearly any implications for research, practice and/or society? Does the paper bridge the gap between theory and practice? How can the research be used in practice (economic and commercial impact), in teaching, to influence public policy, in research (contributing to the body of knowledge)? What is the impact upon society (influencing public attitudes, affecting quality of life)? Are these implications consistent with the findings and conclusions of the paper?: Research content is insufficient

**Response 5:** We have made more efforts to explicitly understand the implication in a better and transparent manner. Have separated the recommendation and future work section from the conclusion section on (page 12-13).

**First Reviewer point 6: Quality of Communication:** Does the paper clearly express its case, measured against the technical language of the fields and the expected knowledge of the journal's readership? Has attention been paid to the clarity of expression and readability, such as sentence structure, jargon use, acronyms, etc.: No

**Response 6:** We have gone through the entire paper thoroughly to ensure the writing of this paper is error free and easy to understand.

## Second reviewer comments and their responses are set out below:

**Second Reviewer point 1:Originality:** Does the paper contain new and significant information adequate to justify publication?: The theme of achieving or improving a health and safety performance in the construction workplace is a conflicting and often contradictory debate.

The paper has presented an alternative perspective on the understanding of operative motivation in the

1  
2  
3 construction sector for small companies.

4 It could be argued that the paper contains new and significant information adequate to justify publication.

5  
6 **Response 1: We thank the reviewer for this comment.**

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8 **Second Reviewer point 2: Relationship to Literature:** Does the paper demonstrate an adequate  
9 understanding of the relevant literature in the field and cite an appropriate range of literature sources? Is any  
10 significant work ignored?: When addressing safety management philosophy in the construction sector since  
11 the 1920's, most papers discuss the three phases of accident causation modelling:

12 I. Simple linear models

13 II. Complex linear models -

14 III. Complex non-linear models -

15  
16 Simple linear models are very popular in the construction sector for its simplistic approach to accident  
17 prevention. Typically, in the construction field, there is a universal acceptance that 'accidents can be  
18 prevented' (Heinrich, 1931; Bird, 1966; Bird & Loftus, 1976; Bird & Germain, 1985; Connell, 2012). Within the  
19 construction sector of the Sultanate of Oman, the application of complex-linear models (Viner, 1991; Reason,  
20 2008) and complex non-linear models (Hollnagel, 1993; Hollnagel, 1998; Hollnagel, 2004) by safety  
21 practitioners is very limited

22  
23 The conceptual framework refers to Wood (2011), Decker et al (2009), Stella (2008), Jolly (2003) Deci (1975)  
24 and suggests that extrinsic motivation will evolve and promote intrinsic motivated operatives.

25  
26 The literature has omitted to reference the practice of construction industry which is often bound to standard  
27 commercial contracts which detail the scope of activities which form the extrinsic motivation elements.

28  
29 The literature has omitted to reference the leading advisory bodies of Health and Safety, including the Health  
30 Safety Executive in United Kingdom or the Occupational Safety and Health Administration in the United States  
31 Department of Labour.

32  
33 **Response 2: Thank you for your suggestions. All the aspects have been properly addressed. Further discussion  
34 of the literature including the ones you have identified above have been discussed and incorporated into the  
35 paper. Paragraphs are included on (page 3-4) to address this comment.**

36  
37 **Second Reviewer point 3: Methodology:** Is the paper's argument built on an appropriate base of theory,  
38 concepts or other ideas? Has the research or equivalent intellectual work on which the paper is based been  
39 well designed? Are the methods employed appropriate?: No details of the methodology has been included in  
40 the manuscript for the reviewer.

41  
42 **Response 3: Methodology paragraph is included on (page 11) to address this comment.**

43  
44 **Second Reviewer point 4: Results:** Are results presented clearly and analysed appropriately? Do the  
45 conclusions adequately tie together the other elements of the paper?: No details of the results has been  
46 included in the manuscript for the reviewer.

47  
48 **Response 4: The conceptual framework is representing the results of this research study as shown in figure 4.1  
49 on (page 10).**

50  
51 **Second Reviewer point 5: Implications for research, practice and/or society:** Does the paper identify clearly  
52 any implications for research, practice and/or society? Does the paper bridge the gap between theory and  
53 practice? How can the research be used in practice (economic and commercial impact), in teaching, to  
54 influence public policy, in research (contributing to the body of knowledge)? What is the impact upon society  
55 (influencing public attitudes, affecting quality of life)? Are these implications consistent with the findings and  
56 conclusions of the paper?: The limitations of the research have not been included within the manuscript for the  
57 reviewer; however, the implications for practice in the construction sector is very confined.

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4 Health and safety behaviour, attitude and implementation vary considerably within the Western, Middle  
5 Eastern and Far Eastern cultures. The conceptual framework is not reflective of this practice.  
6

7 To add the 'so what' factor to the paper, the top intrinsic enablers need to be detailed for the health and safety  
8 practitioners. In other words, what are the recommended motivational steps to improve the health and safety  
9 performance of a small construction company.  
10

11 **Response 5:** Thank you for this suggestion. Further addition the literature including the ones you have  
12 identified above have been incorporated into the paper, we have made more efforts to explicitly understand  
13 the implication in a better and transparent manner. We have separated the recommendation and future work  
14 section from the conclusion section on (page 11-12).  
15

16 **Second Reviewer point 6: Quality of Communication:** Does the paper clearly express its case, measured  
17 against the technical language of the fields and the expected knowledge of the journal's readership? Has  
18 attention been paid to the clarity of expression and readability, such as sentence structure, jargon use,  
19 acronyms, etc.: This paper for review is an extract of a conceptual framework, and the reviewer is unable to  
20 provide overall assessment on the quality of communication?  
21

22 **Response 6:** Thank you for this suggestion. We have gone through the entire paper few times and have  
23 modified few things and corrected few grammatical errors.  
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#### 26 **Final remarks:**

27 We thank the reviewers for their excellent comments and suggestions. It would be great to get this paper  
28 accepted and to be published. Thank you.  
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