

WORK MEANINGFULNESS: A MODERATOR IN THE RELATIONSHIP BETWEEN CAUSAL ATTRIBUTIONS AND SAFETY PERFORMANCE OF GHANAIAN LOCAL ARTISANS

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The health and safety of workers, irrespective of the type of work, is crucial for the growth of the economy and the well-being of the workforce. Several studies have been conducted in the formal sector to find out the antecedents, correlates, determinants or predictors of safety performance. However, there is a dearth of empirical studies regarding the health and safety of workers in the informal sector. This study investigated the extent to which causal attributions predict safety performance among Ghanaian local artisans and the moderating role of their perception of how meaningful their work is to them. One hundred and seventy-seven workers (172 males and 5 females) involved in welding and fabrication, auto-mechanics, auto spraying and vulcanizing purposively sampled were studied in a cross-sectional survey. The results showed that both external and internal causal attributions significantly predicted safety performance of the artisans, with external relating stronger to safety performance than internal attributions. When meaningfulness of work was entered into the equation, the effect of external attribution was still significant, but internal attribution was not. Meaningfulness of work moderated the effect of internal (but not external) causal attribution on safety performance. The practical significance and implications for further research were discussed.

Keywords: Occupational health and safety, Causal attributions, Meaningfulness of work, Informal sector.

Introduction

A healthy workforce is considered to be one that has aspects of its health and safety well catered for. A workforce that lacks a proper safety is usually riddled with negative outcomes such as presenteeism (present at work but functioning impaired), absenteeism (lost time) leading to productivity loss. Costs for disability benefits and low workforce participation are other consequences of poor safety performance. Research has also shown that having a safer and healthier workplace results in increased productivity and job satisfaction (Fabius et al., 2013).

“Safety and health at work is not only a sound economic policy, it is a basic human right” (Kofi Annan, Former UN SecretaryGeneral). This is reiterated in the 1992 Constitution of Ghana in Article 24(1) which states that every person has the right to work under safe and healthy conditions. This was

further emphasized in the Labour Act of Ghana which stressed that every employer is obligated to “ensure that every worker employed in Ghana works under satisfactory, safe and healthy conditions (Labour Act, 2003 Act 651, Article 118:1). These provisions emphasized the need for ensuring the health and safety of all workers, irrespective of the sector they work. The focus of this study is on Ghanaian local artisans.

Artisans are workers in a skilled trade especially one that involves making things by hand. These include mechanics, technicians, operatives, and smiths. These workers by the nature of their work are exposed to numerous health risks that arise as a result of key activities such as fixing car engines, vulcanizing, spraying, and welding among others. However, because they are usually self-employed with a number of apprentices, they usually neglect safety work practices. The informal sector of many developing countries including Ghana has been found to comprise of an atmosphere of relaxation and friendliness due to the unregulated operational rules and regulations that are adopted by the operatives in this sector (Hedidor & Bondinuba, 2017). The *Factories, Offices and Shops Act 1970 (Act 328)* of Ghana requires the Chief Inspector to keep a register of factories, shops and office and ensure that they comply with health and safety provisions in the act. However, the inspectorate Directorate in Ghana seemed to be biased towards the formal sector notwithstanding the fact that more than half of Ghana’s labour force is in the informal sector (GSS, 2012, GLSS, 2014).

Occupational health and safety as well as industrial and organizational (psychology) researches have also largely focused on the formal sector in areas such as construction, mining, oil and gas etc (e.g. Gyekye & Haybatollahi, 2012; Gyekye, 2001, 2003, Gyekye & Salminen, 2004, 2006), mining (Amponsah-Tawiah & Dartey-Baah, 2011; Amponsah-Tawiah & Mensah, 2016; Amponsah-Tawiah, Jain, Leka, Hollis, Cox, 2013). The world informal sector employment constitutes about 91.3% (Heintz, 2005; World Bank report, 2015) and Ghana’s constitutes more than 80% (Ghana Living Standard Survey, GLSS 6, 2014; Osei-Boateng & Ampratwum, 2011). This means that the bulk of organisational research and health and safety attention in Ghana are focused on less than 20% of the labour force. This trend was also observed by Monney, Dwumfour-Asare, Owusu-Mensah and Kuffour (2014) who affirmed the limitation of empirical data on the safety practices of artisans in Ghana.

This study therefore investigated the prevalence of occupational health and safety incidents and the extent to which causal attributions influenced the safety performance of the local artisans in Ghana. The moderating role of work meaningfulness on the relationship that exists between causal attribution and safety performance was also examined. The local artisans play crucial role in the development of the Ghanaian economy and constitute more than 10% of the Ghanaian population (Osei-Boateng & Ampratwum, 2011; GLSS 6, 2014). The findings of the study would aid in proper identification of psychological antecedents and moderators of safety performance of the local artisans which would help safety practitioners in their quest to provide healthy work to employees.

Literature Review

Attribution refers an inference that individuals make about the causes of events that occurred, which is about the individual’s disposition, inherent tendency, inclinations or other psychological states to give causal explanations to significant events (Weary, Stanley & Harvey, 1989). It attempt to understand how people assign causality to behaviour with the intention of offering a better understanding of future behaviour (Gyekye, 2010). Attribution theory posits that people assess the locus of causality of significant and relevant events as either internal or external (Eberly, Holley, Johnson & Mitchell, 2011; Harvey & Martinko, 2009). What this means is that research focus on the linkages between major events and occurrences in people’s lives must examine reasons assigned by individuals regarding major incidences in their lives.

The attribution theory (Weiner, 1985) has been utilized extensively to explain emotions and satisfactions of individuals following the occurrences of certain events. This theory has been employed widely in the fields of social psychology (Kenworth & Miller, 2003; Wong, 2000), consumer behaviour as well as sports psychology. There is however, limited research regarding the effects of attributions on

the safety performances of workers. Attribution research focuses on whether or not employees or people attribute their work performance occurrence of significant events to internal causes and to bad performance or accidents to external causes. Gyekye and Salminen (2004) indicated that accident victims attributed their accidents to external causes more than internal. Kouabenan, Mesina, Gilbet and Bouzon (2001) found self-protective attribution bias to be directly related with accident severity. Thus, when the accident is severe, victims tend to attribute the occurrence to external causes beyond their control. Individual who are high on external attribution are less likely to accept personal responsibility and so tend to experience more adverse consequences than those high on internal attribution.

Causal attributions have been purported to influence workplace variables (Harvey, Madison, Martinko, Crook & Crook, 2014). In a study on causal attributions of Ghanaian industrial workers for accident occurrence, Gyekye and Salminen (2004) confirmed the self-defensive attribution hypothesis. The self-defense attribution hypothesis holds that individuals explain occurrence of adverse events in ways that minimize their personal responsibility. They therefore employ externalizing causality and invoke alternative explanations to protect their self esteem (Gyekye, 2001). Similar studies showed that Ghanaian workers attributed their mistakes to external factors rather than internal causes due to their interdependent self-orientation (Gyekye, 2004). Goncalves, Silva, Lima and Melia (2008) found work accident experience to be positively related with external attributions, whereas unsafe behaviours were inversely associated with internal attributions.

Gyekye (2006, 2004) stressed the essence of understanding the role of causal attributions in the workplace since safety experts derive information from it to develop policies. Attribution analysis has been explored in work settings (Gyekye, 2001, 2003, Gyekye & Salminen, 2004) and it has been utilized to explain behaviour in hazardous work (Ashkanzy, 1995; Hoffmann & Stetzer, 1996; Zhang, Gao & Yao (2011). The findings suggest that causal attributions have strong link with industrial safety and that safety management policies derive more from causal attributions analyses than anything else (Hofman & Stetzer, 1998, Dejoy, 1997). Given that causal attributions have strong link with safety performance, there is the need to explore intervening variables in the management of workplace safety. The moderating role of sense of meaningfulness of work was therefore examined in this study.

The sense of performing a meaningful work has been found to play significant role in psychological well-being (Chalofsky, 2003) and expression of ideas in creativity manner at work. Meaningful work has also been purported to be beneficial in increasing the levels of work engagement (Chen et al., 2011; Hirschi, 2012; May et al., 2004), reduced absence at work (Soane et al., 2013) and better-quality performance (Rodell, 2013). Earlier studies have also highlighted its importance on the psychological wellbeing as well as creativity among workers (Hackman & Oldham, 1980; Wilensky, 1960).

Work meaningfulness represents the level with which an individual gives value to his work goals in relation to his personal held views and standards. It also denotes how significant work is to people (Rosso, Dekas & Wrzesniewski, 2010; Steger, Dik & Duffy, 2012). Extant literature suggests that the presence of a sense of work meaningfulness can lead to job engagement as well as an increase in the personal or work growth of individuals in relation to employee work outcomes (May, Gilson & Harter, 2004). Work meaningfulness has also been associated with reduction in stressful outcomes and enhanced individual performance (Elangovan, Pinder & McLean, 2010; Wrzesniewski, 2003). Findings from Rosso et al. (2010) have indicated that work has been termed as meaningful sometimes as a result of how the work is designed or the context of the organisation. Further, Berg, Dutton & Wrzesniewski (2013) suggested that work meaningfulness can be improved when there are certain changes in an organisation which affects the individual.

Summary of review of the literature indicates that health and safety research in the informal sector is limited, especially regarding Ghanaian local artisans. Again, causal attributions have been found to have significant implications for workplace health and safety. There is therefore the need to explore the role of other psychological variables that could help in workplace health and safety interventions and management. The following hypotheses were therefore tested in the study.

Research Hypotheses

1. Causal attributions (external and internal) of Ghanaian local artisans will predict their safety performance
2. Sense of work meaningfulness will predict safety performance of Ghanaian local artisans
3. Sense of work meaningfulness will moderate the effect of causal attributions on safety performance

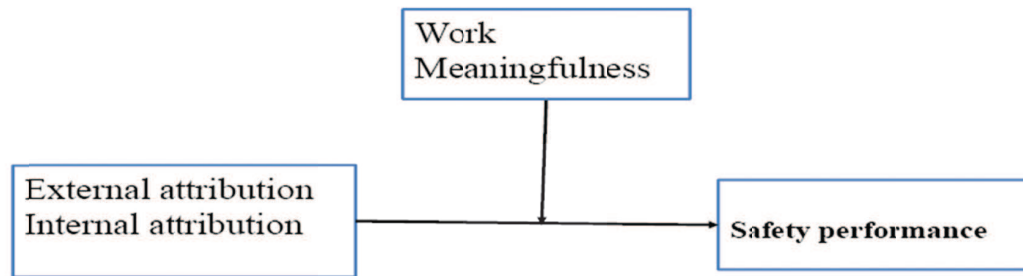


Figure 1. Conceptual framework of the study

Research Methodology

Population

The theoretical population for the study was all local artisans in Ghana which includes auto mechanics, auto sprayers, auto electricians, welders, vulcanizers and carpenters. There are no official statistics about the number of people involved in these trades. However, the Ghana Living Standards Survey (GLSS 6, 2014) indicated that Ghanaian local artisan were about 10.0% of the Ghanaian population, while Osei-Boateng and Ampratwum (2011) put the number at 13.4% of the population. The accessible population comprises local artisans in the Cape Coast Metropolis.

Sample and Sampling Procedure

The sample for the study consisted of 172 (97.2%) males and 5 (2.8%) females, giving a total of 177, with an average age of 45.96 years. Table 1 presents the distributions of the characteristics of the respondents in the study. The purposive sampling procedure was used to get the respondents for the study because the kind of respondents used in the study could not have been obtained through random sampling procedure or any other sampling procedure.

Table 1. Demographic Characteristics of Respondents

Demographic variables		Frequency	Percent
Sex	Male	172	97.2
	Female	5	2.8
	Total	177	100.0
Artisan type	Welders	47	26.6
	Auto Mechanics	39	22.0
	Auto Sprayers	37	20.9

	Auto Electricians	35	19.8
	Vulcanisers	19	10.7
	Total	177	100.0
Age	18-25	67	37.9
	26-30	56	31.6
	31-35	22	12.4
	36-40	14	7.9
	41-45	9	5.1
	46-50	4	2.3
	51-55	5	2.8
	Total	177	100.0

Research Tools

Three main standardized survey questionnaires were used to collect data for the study, in addition to the demographic data.

1. Demographic Information of Respondents

The beginning part of the set of questionnaires used obtained demographic information on the gender, age, type of artisan work and educational level. The age of the respondents were initially recorded but later categorized into age brackets. The gender, educational level and type of artisan work were all coded as nominal measures.

2. Work Meaningfulness Measure

The items used to measure work meaningfulness for this study were adapted from the Copenhagen Psychosocial Work Environment questionnaire (2010). Three items scored on a 6-point Likert-type of scale ranging 1 (never) to 6 (always) was used in this study. The score range for this scale therefore range between 3 and 18. Reliability obtained in this study was .76, which is within the reported reliability of .75 and above.

3. Safety Performance Measure

Safety performance in this study was conceptualized as objective measurable safety outcomes such as incidence of near misses, accidents, injuries and ill-health. Twelve items adapted from the scales used by Smith (2000, 2004) and Smith and Wadsworth (2009). Reported reliability coefficients were above .75, with that of this study being .79. This scale can be used as a composite or as a three-dimensional scale of physical symptoms, psychological symptoms and accidents/injuries. High scores on this scale imply high incidence of safety concerns which is not good for the industry.

Data Analysis Procedure

The data analyses comprise both descriptive and inferential statistics. The demographic information of the respondents was presented with frequency and percentages. The Means, standard deviation, skewness (normality analysis), collinearity analysis and the linear correlations of the main variables were also obtained. The inferential statistics involved the use of standard linear multiple regression analysis to determine the effect of causal attributions on safety performance. The process procedure (Hayes, 2013) for moderation and mediation analysis was used to test the moderation effect of work meaningfulness.

Results

The means, standard deviations, coefficient of variations and the score ranges of the main variables are presented in table 2 below. The results presented in the table indicated that external causal attribution (mean = 53.51, sd = 10.63) was quite high with the internal (mean = 38.82, sd = 13.52) being moderate. The mean score for safety performance (mean = 34.33, 9.38) was also quite high considering that the health and safety of persons who contribute a lot to the progress of the Ghanaian economy.

Table 2. Descriptive statistics of the variables

Variables	Mean	Std. Deviation	Coeff of variation	Score range
Safety performance	34.33	9.38	.273	0-60
External attribution	53.51	10.63	.198	0-75
Internal attribution	38.82	13.52	.348	0-75
Work Meaningfulness	12.01	3.28	.273	3-18

The standard linear multiple regression analysis requires that there is linear relationship between the independent variables and the dependent variable. This was done with the Pearson's Product moments correlations and the results demonstrated linearity of relationships between the independent variables and the dependent variables as shown in table 3. The correlation coefficients also indicated that there were no issues of multicollinearity, and this was further supported by the variance inflation factors (VIF) and tolerance statistics in table 4.

Table 3. Correlations among the variables

Variables	Meaningful work	External attribution	Internal attribution	Safety performance
Meaningfulness of work	1			
External attribution	-.276**	1		
Internal attribution	.467**	-.105	1	
Safety performance	-.705**	.470**	-.366**	1

Effects of Internal and External causal attributions on Safety performance

The results presented in table 4 indicated that both external and internal attributions significantly predicted safety performance. Both external attribution ($\beta = .436$, $p < .001$) and internal attribution ($\beta = .321$, $p < .001$) related positively with safety performance. External safety performance had a stronger relationship with internal attribution. This model was significant at .001 with $R^2 = .323$ and adjusted $R^2 = .315$.

In the second model, meaningfulness of work (the moderator variable) was included in the equation. The results shown that work meaningfulness ($\beta = -.596$, $p < .001$) predicted safety performance more than the external attributions. Internal attribution was not significant ($\beta = .056$, $p = .312$) when internal attribution was in the equation, but external attribution ($\beta = .288$, $p < .001$) was still significant, though the effect was reduced drastically from .436 when work meaningfulness was not in the equation. This suggests a possible mediation effect of work meaningfulness. The second model was also significant ($R = .763$; $R^2 = .582$; adjusted $R^2 = .574$, R^2 Chg. = .259; $p < .001$).

Table 4. Multiple regression analysis results

Model		Unstd Coeff	StdCoeff	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta		Tolerance	VIF
1	(Constant)	-1.009E-013	.062		.000	1.000	
	External attribution	.436	.063	.436	6.956	.000	.989
	Internal attribution	.321	.063	.321	5.110	.000	.989
2	(Constant)	1.001E-013	.049		.000	1.000	
	External attribution	.299	.051	.299	5.850	.000	.923
	Internal attribution	.056	.056	.056	1.015	.312	.781
	Meaningfulness of work	-.596	.058	-.596	-10.353	.000	.729

a. Dependent Variable: Zscore (Safety performance)

Model 1: $R = .568$; $R^2 = .323$; $Adjusted R^2 = .315$; $p < .001$

Model 2: $R = .763$; $R^2 = .582$; $Adjusted R^2 = .574$, $R^2 Chg. = .259$; $p < .001$

The scores and coefficients presented have been standardiopzed, therefore, the equation for predicting safety performance of the local artisans for the first model without work meaningfulness in the equation is:

$Z_{\text{safety perf}} = .436 (Z_{\text{external attribution}}) + .321 (Z_{\text{Internal attribution}})$; and with the meaningfulness of work in the equation, internal attribution was not significant therefore the equation becomes:

$$Z_{\text{safety perf}} = .299 (Z_{\text{external attribution}}) - .596 (Z_{\text{work meaningfulness}})$$

Moderation effect of work meaningfulness on internal causal attribution

The test of moderation (see Tables 5 and 6) indicated that work meaningfulness moderated the effect of internal causal attribution ($\beta = -.136$, $p < .05$) but not the effect of external attribution ($\beta = .105$, $p = .146$) on safety performance.

Table 5. Model Summary: Internal Causal Attribution

R	R-sq	MSE	F	df1	df2	p
.213	.045	.971	2.73	3.0	173.0	.046
Model						
coeff	se	t	p	LLCI	ULCI	
constant	.063	.081	.782	.435	-.096	.222
Meaningfulness	-.259	.096	-2.690	.008	-.450	-.069
Internal attribution	.131	.084	1.553	.122	.035	.297
<i>int_1</i>	<i>-.136</i>	<i>.068</i>	<i>-1.997</i>	<i>.047</i>	<i>-.270</i>	<i>-.002</i>
R-square increase due to interaction(s):						
R ² -chng	F	df1	df2	p		
int_1	.022	3.99	1.0	173.0	.047	

Table 6. Model Summary: External Causal Attribution

R	R-sq	MSE	F	df1	df2	p
.409	.168	.847	11.61	3.0	173.0	.000
Model						
coeff	se	t	p	LLCI	ULCI	
constant	.029	.072	.403	.688	-.113	.171
Meaningfulness	-.003	.072	-.043	.965	-.146	.139
External	.405	.072	5.596	.000	.262	.548
int_2	.105	.072	1.460	.146	-.037	.248
R-square increase due to interaction(s):						
R2-chng	F	df1	df2	p		
int_2	.010	2.13	1.0	173.0	.146	

Int_1 = interaction effect of work meaningfulness and internal causal attribution

Int_2 = interaction effect of work meaningfulness and external causal attribution

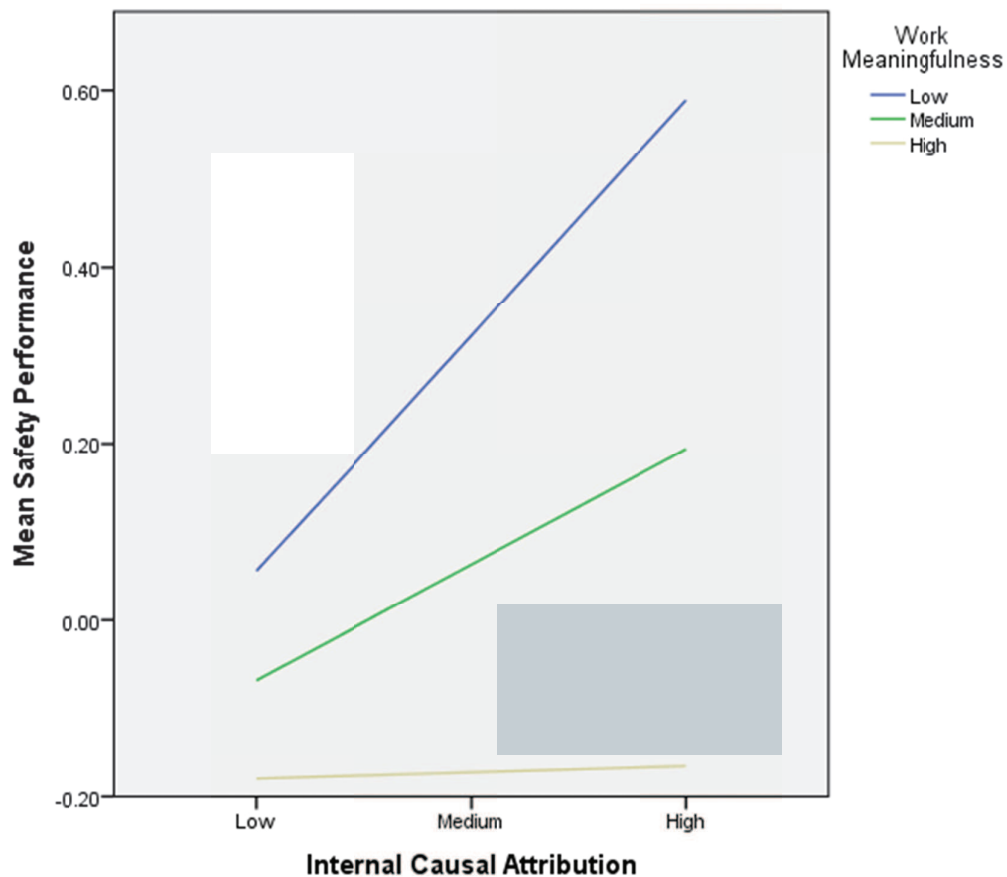


Figure 2. Moderation plot of internal attribution and work meaningfulness on safety performance

Figure 2 shows the moderation plot of the interaction of internal causal attribution and work meaningfulness on safety performance of the local artisans. The plot shows that when the artisans perceived their work to be meaningful, at all levels (low, medium or high) of internal causal attribution, safety performance was drastically reduced almost 1 standard deviation below the mean (grey line). When work meaningfulness is low (blue line) safety performance was highest with increasing internal attribution, and as work meaningfulness increases, safety performance reduces.

Conclusions and Discussions

The study concludes that causal attributions have great implications for workplace safety and work meaningfulness also plays a significant role in reducing the adverse consequences of causal attribution on safety performance. The findings from the study indicate that the artisans made more external attributions than internal. This supports the assertion by Gyekye (2004) that Ghanaians tend to attribute work outcomes especially accidents to external factors due to the concept of collectivism. In collectivist cultures where there are relatively strong social ties, it does seem that individuals tend to protect their ego by attributing causes of adverse events to external factors. Kouabenan et al.'s (2001) self-protective attribution bias seems to be prominent in the Ghanaian society and other collectivist cultures.

The findings of this study also indicate that both external and internal causal attributions positively related with health and safety incidences (safety performance), but internal had a weaker relationship and was not significant when meaningfulness of work was in the equation. This finding was consistent with Kouabenan et al.'s (2001) and Gyekye and Salminen's (2004) findings. Kouabenan et al. for instance observed that external causal attributions were directly related with accident severity. This therefore suggests that the self-protective attribution bias hypothesis is activated more in serious incidents than in minor one. Again, external attribution tends to be related stronger to safety performance possibly because individuals with external locus of attribution are less likely to take personal responsibility of actions and events in their lives which has implications for their safety behaviour, which in turn affects their safety performance.

Work meaningfulness also significantly moderated the effect of internal causal attributions on the safety performance of the local artisans in this study. Thus, work meaningfulness is an important psychological variable in the management of health and safety incidences, possibly through taking personal responsibilities, because the artisans perceived their work to be valuable and provide them with a sense of meaning and purpose in life. This supports the findings by Geldenhuys, Łaba and Venter (2014) which shows the importance of considering work meaningfulness as a moderator among workplace variables for better workplace and individual functioning. When individuals perceive their work as something that provides them with a sense of purpose and meaning in life, their psychological health is boosted. Previous studies stressed the significance of a sense of meaningfulness in one's work on the psychological wellbeing and creativity among workers (Hackman & Oldham, 1980; Wilensky, 1960). The sense of work meaningfulness also makes individuals take charge of their work roles and accept personal responsibilities which lead to improved safety behaviour, hence moderating and reducing the negative consequences of causal attributions on safety performance.

Implications

The findings of the present study have implications for health and safety management in Ghana. Given that work meaningfulness had a negative relationship with safety performance and also moderated the positive effect of causal attribution on safety performance, we argued for the need for health and safety education for Ghanaian local artisans and occupational counselling to help the artisans value their work and find meaning in what they do.

Also, it was observed that the level of safety performance was quite high. For this reason, the Factories, Offices and Shops inspectorate directorate should expand its inspection functions to the work of local artisans to ensure artisan shops comply with safety regulations. The functions of the inspectorate Directorate, as spelt out in Act 328 (1970), requires that the workplaces of the local artisans are inspected and where necessary, corrective measures and sanctions are put in place to prevent adverse consequences.

The presented study contributed to the literature by investigating the relevance of work meaningfulness in the causal attribution - safety performance relationship in the Ghanaian context. We recommend further research into other psychological variables that have implications for safety performance so that holistic safety prevention and management model, policy and programmes could be put in place to ensure healthy workforce in Ghana.

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