

EMPLOYEE PERCEPTIONS, ADHERENCE AND BEHAVIOURS TOWARDS WORK-RELATED HEALTH AND SAFETY AS CORRELATES OF OVERALL HEALTH AND SAFETY AWARENESS

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—Abstract —

This paper tested a conceptual framework which identifies the perceptions, adherence to safety and health standards, and behaviours of employees towards work-related health and safety as correlates of overall employee health and safety awareness. The study was conducted using data collected from a purposively selected sample of 165 employees from a multinational steel processing company based in Gauteng Province, South Africa. The strength of associations between constructs was tested using Pearson correlations. Predictions between the dependant and independent constructs were tested using regression analysis. Correlation analyses showed moderate to strong positive associations between the constructs. Regression analysis showed that all three independent variables, namely perceptions, adherence and behaviours of employees towards work-related safety and health issues significantly predict their overall health and safety awareness. The study is significant in that its results may be used by managers in the steel industry in their analyses of the role played by employees in the diagnosis of work-related health and safety challenges.

Key Words: *Work-related health and safety, employee perceptions, health and safety behaviours, health and safety adherence, health and safety awareness*

JEL Classification: L2

1. INTRODUCTION AND BACKGROUND

Globalisation has created widespread changes in the labour market, with many organisations facing enormous pressure to stay profitable and competitive. Technological advances occupy an important position amongst these changes, and are primarily intended to improve productivity (Lund and Marriot, 2011). The rapid changes taking place in the labour market which are triggered by globalisation compel some organisations to take short cuts in the completion of work, leading to high rates of work-related health hazards and accidents (Huang et al., 2012). This unfortunately happens at the expense of the safety of employees in the workplace since strict safety regulations are typically disregarded (Baram, 2009). Adherence to work-related health and safety regulations is a huge challenge encountered by many organisations, and this phenomenon has serious implications on the productivity and reputation of an organisation (Omogoroye and Oke, 2007). Continuous efforts are therefore needed to curb the high incidents of health- and safety-related diseases and accidents in the workplace.

The South African steel processing sector and its upstream and downstream industries continue to play a critical role in the South African economy, directly employing approximately 1 779 000 employees nationwide (Statistics South Africa, 2015). Steel processing and manufacturing industries constantly need to maintain the desired safety standards to improve the present health and safety standard in order to protect the lives of employees, property as well as the working environment (Pajero-Moscoso, Rubio-Romero and Perez-Canto, 2012). This is because the steel manufacturing sector is a very hazardous environment to work in, as it is associated with various work-related hazards such as excessive heat, high noise level, hazardous gases and vibrations (Pollitt, 2011). Mthlane, Othman and Pearl (2007) report that employees in the steel processing sector experience various types of accidents such as stepping or striking against objects, sprains, strains, slipping, falling from heights, machinery and transport accidents in addition to numerous health risks. Hence, employees' safety in the workplace is paramount especially in the steel manufacturing sector which is characterised by such high levels of accidents.

The aim of this study was to investigate the influence of employee perceptions of health and safety, health and safety adherence and employee health and safety behaviours on overall work-related health and safety awareness. The study was conducted in the auspices of South Africa's steel processing industry. As mentioned by Robbins and Judge (2007), non-compliance to the health and safety

regulations continues to be major challenge for steel companies. Millions of work-related accidents and deaths occur in steel plants worldwide, which is a major cause of concern (Lingard, Blismas and Cooke, 2009). Unfortunately, management sitting at the highest echelons in steel processing organisations is often aloof, has little information, and is inexperienced in shop floor issues regarding health and safety, making it very difficult for them to relate to the health and safety needs of the employees at the shop floor level (Bosak, Coetsee and Cullinane, 2013). Yet the increase of work-related injuries and diseases in the workplace is worrisome, given its severe impact on employees' welfare and the high cost to businesses and the country's economy (Casey and Krauss, 2013).

The costs to employees injured whilst furthering the interests of the employer in the workplace has serious implications on the injured employee. This places limits on future employment prospects for employees due to serious injuries suffered in the workplace (Watson *et al.*, 2005). Other costs include the loss of wages, setting up rehabilitation centers and high medical costs (Bosak *et al.* 2013). In addition, it has been observed that work-related accidents and diseases occur mostly due to the decisions primarily made about work, choices about the way work is organised, and the materials and technologies used in the workplace (Rosenberg, Levenstein and Spangler, 2005). Unionised workplaces are more likely than non-unionised organisations to be inspected by labour inspectors. This is because employees that are unionised have health and safety committees in their workplaces as compared non-unionized employees (Gray and Mendeloff, 2005). Also, the lack of a safety culture among employees and failure to take responsibility for their safety contributes to high levels of accidents (Dahl, 2013). These issues require empirical attention, in order to generate appropriate long term solutions.

The present study is motivated by the lack of a previous research that focused on the interplay between employee perceptions, safety adherence, safety behaviours and health and safety awareness in the context of the steel processing sector in South Africa. More precisely, the following objectives were set for the study

- To determine the influence of employee perceptions of health and safety on their overall awareness of work-related health and safety within the steel processing industry;
- To establish the influence of adherence to health and safety standards by employees on their overall awareness of work-related health and safety in the steel processing industry;

- To determine the influence of the behaviours of employees in the steel processing industry regarding health and safety on their overall awareness of work-related health and safety.

2. RESEARCH METHODOLOGY

2.1 Research design and sample

In this study, a quantitative approach using the survey was adopted since it was deemed to be relatively cheaper, flexible, and more objective (Malhotra, 2010). The sample consisted of 165 employees of a steel processing multinational company based in Gauteng Province, South Africa. A list of these employees was obtained from the Human Resource Division of the company. Sample size was determined using Green's (1991) rule of thumb, which prescribes a minimum of 50 participants are suitable for multivariate analysis, and the number should increase as the number of independent variables increases. Respondents were selected using the purposive sampling technique which ensured that only those employees that were involved in the actual processing of steel were included in the sample. To be selected as a respondent, one had to be working in areas that were exposed to the high risk of health hazards and occupational accidents. These areas included workshops, hangers and furnaces.

2.2 Procedures for data collection

A survey questionnaire was designed and used as the data collection instrument. The questionnaire was divided into five sections. Section A elicited respondents' demographic information. Section B focused on employee health and safety awareness; Section C focused on employee health and safety adherence, Section D focused on employee health and safety behaviours and Section E focused on employee perceptions of health and safety. Measurement scale items are listed in Appendix 1. Questionnaires were distributed and collected in January 2015 after permission had been granted by management at the steel processing company. Trained fieldworkers were employed to assist in the distribution and collection of questionnaires. Ethical considerations such as informed consent, voluntary participation and respondents' confidentiality were observed during the data collection process.

2.3 Data analysis

The Statistical Packages for the Social Sciences (SPSS version 22.0) was utilised as the tool for statistical analyses. Demographic analysis was conducted using descriptive statistics. The strengths of associations between constructs was tested using Pearson correlation analysis. Predictive associations between dependant and independent variables were tested using regression analysis.

3. RESEARCH RESULTS

3.1 Demographic profile of respondents

The demographic profile of respondents is presented in Table 1.

Table 1: Profile of respondents

Demographic parameter	Classifications	N	n	%
Gender	Males	165	116	70.3
	Females		49	29.7
Age group	<28 years	165	73	44.2
	29-40 years		67	40.6
	41-50 years		21	12.7
	≥51years		4	2.4
Race	African	165	126	76.4
	White		35	21.2
	Mixed race		1	0.6
	Indian		3	1.8
Work experience	<4 years	165	62	37.6
	5-10 years		54	32.7
	10-15 years		22	13.3
	≥15 years		27	16.4
Current position	Apprentice	165	35	21.2
	Artisan/Technician		70	42.4
	Supervisor		23	13.9
	Engineer		37	22.5

An analysis of Table 1 shows that there were more male respondents (70.3 %; n=116) compared to female respondents (23.9%; n=49). With reference to age groups, a greater number of the employees fell within the 18-28 years age group (44.2%; n=73), followed by individuals in the 29-40 years age group (40.6%; n=67). With respect to race, the majority of respondents were African (76.4%; n=126), followed by Whites (21.2%; n=35). With regard to work experience, 37, 6% (n=62) of the respondents possessed less than four years of work experience,

closely followed by those with between 5 and 10 years' of experience (32, 7%; n=54). Concerning current positions of respondents, 21percent (n=35) were employed as apprentices, 42 percent (n=70) were either employed as artisans or technicians, 14 percent (n=23) were supervisors and 23 percent (n=37) were engineers.

3.2 Validity and Reliability

In this study, scale reliability was measured using the Cronbach Alpha coefficient. The alpha readings for the four measurement scales used in this study are presented in Table 2.

Scale	Number of items	Cronbach Alpha
Employee safety awareness	5	0.832
Employee perceptions of health and safety	4	0.868
Employee safety adherence	5	0.865
Employee behaviour with regard to health and safety	7	0.833
Overall reliability	25	0.850

Table 2: Scale reliabilities

As suggested by Feinberg, Kinnear and Taylor (2013) the acceptable level for measuring reliability of an instrument is 0.70. Table 2 indicates that reliabilities for the four constructs ranged between 0.865 and 0.933. The overall Cronbach value for the entire scale was 0.969. As all alpha readings were above the recommended 0.7 value depicts that the scales used in this study were reliable or internally consistent.

To ascertain content validity, the measuring instrument was reviewed by a panel consisting of two academics, a statistician and a health and safety officer. The review by this panel was intended to ensure relevance of the content covered on the research topic by checking for any ambiguities in language, structure and design of the questionnaire (Babbie, 2013). Construct validity was ascertained by pilot testing the questionnaire with 30 part-time safety management students who were employees in the steel sector. The aim of conducting the pilot study was to use the collected data to determine whether the items making up each variable showed adequate item-total correlations. Items with low item-total correlations were removed from the variables used in the final data analysis. Participants from the pilot study were left out in the final distribution of the questionnaire for the main study so as not to contaminate the sample. Convergent validity was checked

using Pearson correlation analysis. As reported in Table 3, there were positive correlations between the constructs, which attests to the existence of satisfactory convergent validity in this study. Predictive validity was assessed through regression analysis. The results of regression analysis (Table 4) indicate that there were statistically significant associations between the dependent and independent variables, which confirms the existence of predictive validity in this study.

3.3 Correlation analysis

The strengths of associations between the employee health and safety perceptions, adherence behaviours and overall health and safety awareness were tested using the Pearson correlation coefficient (r). The results of this analysis are presented in Table 4.

Table 3: Results of correlation analysis

Constructs	Employee Perceptions	Safety Awareness	Safety Adherence	Employee Behaviour
Employee Perceptions	1.000	.541**	.559**	.452**
Employee Safety Awareness	.541**	1.000	.622**	.597**
Safety Adherence	.559**	.622**	1.000	.454**
Employee Behaviour	.452**	.597**	.454**	1000.

**Correlation is significant at the .001 level (2-tailed)

As presented in Table 3, Pearson correlation coefficients suggest that there is positive linear associations between perceptions and awareness ($r=. 0.541$; $p<.000$); perceptions and adherence ($r=0.559$; $p<.000$) and perceptions and employee behaviour ($r=0.452$; $p<.000$). Strong positive associations were observed between awareness and adherence ($r=0.622$; $p<.000$), and between awareness and employee behaviour ($r=0.597$; $p<.000$). Finally there was a moderate positive association between adherence and employee behaviour ($r=0.454$; $p<.000$). Thus by implication, an increase in a construct results in increases in the other constructs if a positive correlation exists, while the reverse is also true.

2.4 Regression analysis

Table 4 presents the results of linear regression analysis between employee perceptions, adherence, behaviours and awareness. Employee perceptions,

adherence and employee behaviour were entered in the regression model as the independent variables whilst awareness was entered as the dependent variable.

Table 4: Regression analysis results

Model 1 Dependent variable Health & Safety Awareness	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std. Error	Beta (β)		
(Constant)	.419	.263	.	1.593	.113
Employee perception	.110	.052	.126	2.118	.036*
Safety adherence	.504	.061	.517	8.327	.000**
Employee behaviour	.286	.063	.274	4.516	.000**
R=0.772		R ² =0.596	Adjusted R ² =588	F=79.136	Sig at p<0.005

The regression analysis provided an r-square (R^2) value of 0.588 which implies that approximately 59% of the variation in health and safety awareness can be explained by employee perceptions, adherence and behaviour. The beta weights were registered as follows; adherence ($\beta= 517$), awareness ($\beta=274$) and perceptions ($\beta=126$). In parallel with these results, a study by Kifle, Engdaw *et al.* (2014) consisting of 453 employees in the iron and steel industry in Addis Ababa established that employees who perceive that their employers are compliant with health and safety regulations exhibited higher levels of safety adherence. In other studies by Basha and Maiti (2013) and Kouabenan, Nguetsa and Mbaye (2015) in the Indian steel processing sector it was established that there was a positive relationship between employee behaviour modification and reduction of work-related accidents and injury rates. Research conducted by Wachter and Yorion (2014), Mbaye and Kouabenan (2013) and Nordlof, Wiitavaara, Winblad, Wijk and Westerling (2015) at major manufacturing companies established that when proper safety management systems are in place and implemented correctly health and safety adherence in the workplace is followed. Also in agreement are the results of a study by Garcia-Herero, Mariscal, Garcia-Rodriguez and Ritzel (2012); which indicated that psychological factors such as behaviour have an impact on the degree of health and safety adherence in the work environment. The highest beta weight ($\beta=517$) associated with adherence indicates that that safety

adherence exerts the highest impact on overall health and safety awareness when compared to perceptions and behaviour.

4. LIMITATIONS AND IMPLICATIONS FOR FURTHER RESEARCH

The results of the research must be approached with caution due to several inherent limitations. The study was limited to a steel manufacturing company situated in Gauteng Province, South Africa. Also, the research was composed of employees involved in the manufacturing process only. In addition, the sample size of n=165 employees involved in the study also should be taken into consideration, since it was not a universal representation of all employees in the steel processing sector. Future studies could be conducted using larger samples that are inclusive of other employees to enhance the generalisability of the study. A non-probability purposive sample was used in the study, which naturally enhanced the study's susceptibility to sampling bias. It is suggested that future studies be conducted using probability sampling methods, which ensure that all elements within the population have an equal chance of being selected. The study followed a quantitative approach which provokes the necessity to use a mixed method in future studies in order to facilitate probing for answers that need further clarity. It is further proposed that future studies be conducted in other geographical areas apart from Gauteng Province.

5. CONCLUSIONS

The literature revealed that non-adherence to health and safety standards tends to adversely affect the well-being of employees. Work-related accidents and injuries cause serious devastation to families and stifle economic growth as resources are channelled towards rehabilitating the injured employees. Correlation analysis revealed that there were positive associations between perceptions of health and safety, employee adherence to health and safety, employee behaviours and employee health and safety awareness. Regression analysis revealed that perceptions of health and safety, employee adherence to health and safety, and employee behaviours predicted overall employee health and safety awareness. Health and safety adherence emerged as the strongest predictor of overall employee safety awareness. The study is an addition previous scholarly research within the field of work-related health and safety and extends the existing knowledge related to the relationship between constructs that were considered within the context of the steel processing industry. It is concluded then that employee perceptions of health and safety, employee adherence to health and

safety and the behaviours of employees with respect to health and safety predict overall employee health and safety awareness in the steel processing industry.

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APPENDIX A

Measurement Scales Used in the Study

Health and Safety Awareness

A copy of the Occupational Health and Safety Act is available at the employer's premises

Employees are provided with the necessary skills in the organisation to perform their work safely

A health and safety representative is available at my workplace

All employees are involved in the planning of health and safety programs of the organisation

Safety meetings are held regularly with employees

Perceptions of Health and Safety

Adherence to safety standards leads to good business performance

Employee awareness of the Occupational Health and Safety Act will lead to a reduction of accidents

I feel that I should follow safety procedures at work

I know my rights as an employee when it comes to health and safety

Employee Safety Adherence

Safety procedures and instructions are adhered to

I usually wear my Personal Protective Equipment (safety goggle, safety boots, helmets and gloves) that are provided by the employer

Information on the proper use of Personal Protective Equipment is provided by the employer

A health and safety culture is promoted from managers to employees

Employees who do not adhere to Occupational Health and safety Act are disciplined by the employer

Employee Behaviour in Occupational Health Safety

I usually follow safety procedures when doing my job

I prefer to spend more time on a task to ensure it is done safely; rather than rushing to complete a task

Employees sometimes ignore safety procedures

Some employees get away with unsafe conduct in the workplace

Performing my work safely has become a habit for me rather than a challenge

As an employee I am fully aware of hazards in my daily job

Every employee is responsible for their own safety in the organisation