

A review of factors influencing environmental performance: A quantitative analysis of the waste industry in KwaZulu-Natal

BZ CHUMMUN *

University of KwaZulu-Natal

chummunb@ukzn.ac.za

* corresponding author

K GAFFAR

University of KwaZulu-Natal

movkyle@yahoo.com

ABSTRACT

An increased generation of 40% more waste in South Africa prevail due to a rapid hike in population and industrial advancements during the last decade. The waste management sector in South Africa plays a vital role in the South African economy and contributes to 0.51% of the country's GDP. However recently reports of environmental degradation, pollution and non-compliances seem to prevail. The study seeks to investigate the factors that positively affect environmental performance in the waste management industry in Kwa-Zulu Natal. The investigation delved into organisational culture, environmental management and the pro-environmental behavior of employees, and how these factors affect environmental performance. Probability sampling method has been used. A sample of 80 employees out of a population of 100 was targeted. The results revealed that the factors namely organisational culture, environmental management and pro-environmental behavior do indeed positively affect environmental performance. The study will assist and enlighten top management in the waste management sector of the factors that affect environmental performance in their respective organisations.

Key phrases

Environmental management; environmental performance; organisational culture and pro-environmental behaviour

1. INTRODUCTION

Due to rapid innovation in technology, the global economy, and urbanisation, man has established the fourth industrial revolution, which has increased the standard of living. This has led to an increase in industrial processing, which has accelerated the generation of waste. Waste management has rapidly become one of the global environmental issues (Song, Li & Zeng 2015:1).

The waste management sector plays a vital role in the South African economy as waste is generated from all industries, which needs to be disposed of in a legal and accountable manner (Singh, Brueckner & Padhy 2015:16). Much emphasis has been placed on the waste sector lately with the National Department of Environmental Affairs (DEA), declaring a “War on Waste”. The DEA has been striving to implement measures to ensure that waste is recycled, re-used, reduced and benefited (Godfrey & Oelofse 2017:1). Targets and deadlines have been placed on waste generators and waste management companies to comply with national legislation in order to ensure the protection of the environment and the health and safety of the public (Csutora 2012; Young, Davis, Mcneil, Malhotra, Russell, Unsworth & Clegg 2015:670).

Empirical research suggests that sound waste management practices in South Africa are not under control by those who are actively involved in waste management (Godfrey, Scott & Trois 2013:295). Although the intention is there to act responsibly, there are various barriers to good waste behaviour. Also, whilst there is intent to perform proper waste management practices, there is a probability that there has been weak translation into good behaviour (Godfrey *et al.* 2013).

The problem is the illegal handling, disposal and transboundary movement of waste, which, is an ongoing phenomenon which negatively impacts on the health and safety of communities and the environment (Guerrero, Maas & Hogland 2013; Song *et al.* 2015;). Waste management organisations in the private sector are constantly being neglectful towards legal compliance and the protection and sustainability of the environment. The issue is the continued manifestation of events which has led to environmental and health degradation by waste management companies (Belal, Cooper & Khan 2015). There have been various reports of organisations that have been found guilty or have been accused of

polluting the environment and have received noncompliance notices from the DEA for contravening the requirements of legislation (Mungadze 2014; Ntuli 2016; Pieterse 2015).

Environmental performance demonstrates a methodology to ascertain the effectiveness of the environmental initiatives an organisation uses to mitigate pollution and protect the environment. Environmental performance can be measured by a variety of indicators dependent on the organisation and the type of business, such as: waste reduction, waste beneficiation, diversion of waste from landfill, recycling, energy conservation, green procurement, implementation of an environmental management system and compliance with legislation (Paillé, Chen, Boiral & Jin 2014:455).

Due to the number of environmental transgressions, it is imperative to conduct research on the various factors that would initiate and improve overall environmental performance. The objective of the study is to investigate the factors that positively affect environmental performance in the waste management industry in Kwa-Zulu Natal.

The study was directed at waste management industries in Kwa-Zulu Natal. Critical information was ascertained from the research findings, such as the current culture adopted in waste industries. The determination as to whether the companies partake in environmental management activities. The establishment of whether the employees have characteristics and traits of pro-environmental behaviour and to assess if these factors have affected the companies environmental performance.

In the next following segments, a theoretical framework is presented, detailing the theory with regards to organisational culture, environmental management, pro-environmental behaviour and environmental performance amongst various industries in various countries, followed by the methodology of the research, the analysis of the research findings, research implications, limitations and directions for further research and the conclusion to the article.

2. THEORETICAL FRAMEWORK

2.1 Organisational culture

Hamdoun and Zouaoui (2017:77) define organisational culture as “as a set of values, beliefs, assumptions and symbols that define the way in which a firm conducts its business, organisational culture is based on standards and practises learned in the workplace which are valid within the organisation”. Similarly, Sanyal and Pal (2017:60) define organisational

culture as "the system of assumptions, values, convictions and beliefs accepted and commonly interpreted by the members of the organisation". These definitions are believed to be adopted by the personnel who are employed in the firm who in turn pass on the belief and values to the newcomers in the organisation.

The purpose of an organisational culture is to ensure collaboration amongst teams, ensure coherency amongst staff, engage and stimulate employee creativity and innovation, instil values and beliefs, create excitement and enhance and improve an organisations efficiency which in turn enhances employee attitude and behaviour. These traits will provide the norms of behaviour that employees will follow, which will in turn, translate to pro-environmental behaviour amongst employees (Sanyal & Pal 2017; Hogan & Coote 2014). A cohesive organisational culture is substantially dependant on the number of people collaborating with each other with the aim of accomplishing goals in their environment (Valmohammadi & Roshanzamir 2015).

There have been numerous studies in literature which depict a positive relationship between organisational culture and pro-environmental behaviour (Awadh & Alyahya, 2013; Hamdoun & Zouaoui 2017; Hogan & Coote 2014). One such study was undertaken by Sanyal and Pal (2017) in West Bengal amongst 100 employees spanned different sectors. Attention was focused on the following: the role of management in incorporating shared values and beliefs through workshops and training programs designed for employees. The aspects of environmental training which forms an integral part of developing environmental awareness. Pro-environmental behaviour - organisations should share a pool of environmental values and employees should continuously be engaged regarding environmental issues in the workplace.

A study conducted by Hamdoun and Zouaoui (2017) on 108 Tunisian companies put forward that environmental initiatives strengthen a robust organisational culture geared towards pro-environmental behaviour. The authors continued to state that a pro-environmental corporate culture is created by the human aspects of environmental management, such as employee engagement, value change, involvement, and awareness. Environmental proactivity uses an organisational culture of employees to achieve environmental outcomes. However, the authors fail to identify the drivers of environmental proactivity, and the role played by the organisation to sustain this action, is not mentioned.

Hamdoun and Zouaoui (2017) stated that in order to facilitate and sustain an environmental culture and commitment there needs to be collaboration between departments of an organisation, where all employees need to work together and participate in environmental practises to achieve a shared goal which is part of the organisational culture as working in teams encourages friendly competition and the sharing of tacit knowledge (Valmohammadi & Roshanzamir 2015; Hanna, Rocky Newman & Johnson 2000).

2.1.2 Importance of leadership in an organisational culture

Organisational leaders have the position, power and the status; therefore, they are seen as role models by their subordinates. Leaders, who continuously display characteristics of pro-environmental behaviour, send a signal to the employees that such behaviour is the norm and is valued in the organisation.

Environmental activities rely on a large extent on the motivation, commitment and leadership of top management who are in a role to implement policies and procedures (Robertson & Barling; Graves, Sarkis & Zhu 2013; Boiral, Baron & Gunnlaugson 2014). Environmental leadership has been described as "the ability to influence individuals and mobilize organisations to realize a vision of long-term ecological sustainability" (Boiral *et al.* 2014:3).

The function of an environmental leader has been described as the facilitator of the development of environmental initiatives to facilitate change and implement programs towards environmental sustainability. Such programs usually consist of training, strategies for pollution prevention and environmental management for the mitigation of adverse impacts of the business (Boiral *et al.* 2014). Leadership plays a significant role in establishing a pro-environmental culture (Robertson & Barling 2013). According to Graves *et al.* (2013), pro-environmental behaviour traits are influenced by their leaders or manager's transformational leadership style which motivates employees independently and externally.

Guerrero *et al.* (2013) confirm that research into the type of factors that contribute to the waste management transgressions are predominately in the form of the lack of leadership from management and the lack of knowledge. The lack of leadership interested in environmental issues leads to the halt of good environmental practices. In a study by Robertson and Barling (2013), a test model that correlates transformational leadership to pro-environmental passion and behaviours of employees was developed. From the above the following hypothesis is proposed:

H1: Organisational culture has a positive effect on an organisation's environmental performance.

2.3 Environmental Management

2.3.1 Role of environmental management

Environmental Management plays a significant role in sustaining a culture towards creating an excellent rate of environmental performance, profitability and a competitive advantage. Hamdoun and Zouaoui (2017:78) define Environmental Management as "technical and organisational activities aimed at reducing environmental impact caused by an organisations business operation". Environmental management consists of programs, policies and procedures to enhance and improve environmental performance in the form of recycling, waste management, eco-design, prevention of pollution and promoting sound environmental attitude and behaviour (Hamdoun & Zouaoui 2017).

Hamdoun and Zouaoui (2017) further state that research has not provided concrete evidence pertaining to the relationship between environmental management, a competitive advantage, organisational culture and environmental performance. However, other authors dictate otherwise in terms of the relationship between environmental management and a competitive advantage towards future profitability, there has been research which confirms the correlation between environmental management and a competitive advantage. Examples of such research is that conducted by Lopez-Gamero, Molina-Azorin, and Claver-Cortes (2010) where the authors concluded that environmental management contributes to a competitive advantage in terms of cost. The empirical study was conducted on 124 Taiwanese's firms, which showed that environmental management improves a competitive advantage as a result of a value creating strategy that is not carried out by other competitors. Another study by Molina-Azorin, Tari, Pereira-Moliner, Lopez-Gamero and Pertusa-Ortega (2015) on Spanish hotels also showed that environmental management has a positive impact on a competitive advantage as well as cost and environmental performance.

2.3.2 ISO 14001

An environmental management system (EMS) is a global tool utilised for the mitigation of environmental impacts of the activities of a business and continuous improvement

concerning environmental performance of an organisation and the mitigation of environmental degradation (Testa, Rizzi, Daddi, Gusmerotti, Frey & Iraldo 2014; Nguyen & Hens 2015). There are two leading standards which set requirements for an EMS, namely the ISO 14001 and Eco-management & Audit Scheme (EMAS) (Testa *et al.* 2014). South Africa adopts the requirements of the ISO 14001, in the form of South African National Standard (SANS) 14001.

ISO 14001 forms part of a set of standards aimed at environmental management systems called the ISO 14000 family. (Gavronski, Paiva, Teixeira & De Andrade 2013). The EMS consists of a framework to ensure the protection of the environment, responding to client demands and to changing and challenging environmental conditions. An EMS provides top management with an approach to continuously improve sustainable development by policies, procedures and work instructions. These actions assist the organisation in ensuring compliance with applicable legislation, efficiency improvement, and by protecting the environment (SANS 2015; Nguyen & Hens 2015; Prajogo, Tang & Lai 2012; Gavronski *et al.* 2013).

2.3.3 Environmental management system and environmental performance

Wiengarten and Pagell (2012), Testa *et al.* (2014) and Valmohammadi and Roshanzamir (2015) have confirmed a positive relationship between EMS and environmental performance. The researchers acknowledged that a formal EMS, such as the ISO 14001, significantly improves overall organisational performance, and through an EMS a firm reduces or mitigates the generation of waste and the risk associated with the activities of the business which ultimately has an impact on a firm's financial bottom line. Wiengarten and Pagell (2012) analysed the impact of environmental performance on the market value of organisations, the authors identified that environmental values and rewards have had a positive impact on organisational performance. Massoud, Tabcharani, Nakkash and Jamali (2012) have suggested that ISO 14001 certified firms experience a significant reduction in pollution when compared to non-certified companies. From the above the following hypothesis is proposed:

H2: Environmental management has a positive effect on an organisation's environmental performance.

2.4 Pro-Environmental behaviour

Sanyal and Pal (2017:61) define pro-environmental behaviour as "a kind of behaviour that consciously seeks to minimise the negative impact of one's action on the natural and built environment". Since employees spend at least 8 hours a day at work, it is envisioned that pro-environmental behaviour will contribute significantly to reduce and mitigate and mitigating the risk of pollution and detrimental environmental activities (Bronfman, Cisternas, Lopez-Vazquez, Maza & Oyandeel 2015).

There has been a significant amount of research on the actions of employees with regard to the mitigation of environmental degradation from their behaviour. However very few studies have confirmed as to how does this relates to environmental performance is unclear (Paillé *et al.* 2014). The argument by Paillé *et al.* (2014) is further supported by Young *et al.* (2015), who suggested that in recent years, there has been a number of corporate social responsibility and organisational sustainability strategies prone to environmental performance amongst employees. Numerous research has focused on methodologies and tools of altering behavioural patterns towards environmental performance, however, limited research has been conducted, where the focus has been on the actual environmental performance results of such methods or tools implemented, making it very difficult to interpret the effectiveness of such a program in an organisation (Young *et al.* 2015; Paillé *et al.* 2014).

Young *et al.* (2015) presents a baseline framework to depict the critical antecedents of a maintainable environmental behaviour demonstrated by staff in the waste management sector of the organisation. The framework encompasses specific factors which have been widely researched on the influence of employee behaviour change at the employee level and company level, as well as the fact that it was theorized as a result of studies determining the actual impact of changes in environmental performance. The framework assists in determining which aspects of employee behaviour change had the most significant impact regarding environmental performance (Paillé *et al.* 2014).

2.4.1 Individual and group factors

Employees' behaviour towards the environment is a critical component of the framework which comprises of feedback, financial incentives, environmental awareness, beliefs, attitudes and environmental attitudes.

2.4.1.1 Beliefs and attitudes

Young *et al.* (2015) suggest that in order to enhance employee motivation, organisations need to ensure that there is a balance between employee and organisational values. The author states that environmental attitudes were a high concept for behaviour change. Begum, Siwar, Pereira and Jaafar (2009) stated that behavioural changes are firmly based on attitudes, which leads to performance in environmental waste management issues. Attitudes towards waste reduction and minimization are the reasons for the issues with regard to waste management in the construction sector and a definite factor of attitude change is learning and knowledge. Research by Begum *et al.* (2009) revealed that waste contractors in the cement industry who had a better attitude towards waste management practices had excelled in environmental performance. The concern for the environment, which stems from the individual's personal life, and which is referred to as organisational citizenship behaviour for the environment (OCBE) has currently developed amongst environmental literature and appears to be a growing paradigm to ensuring pro-environmental behaviour at work (Boiral & Paillé 2012).

2.4.1.2 Environmental awareness

Training is seen as a vital point in sustaining a conscious environmental culture, and in ensuring that staff is aware of the environmental impact of the organisation's activities (Renwick, Redman & Maguire 2013). Young *et al.* (2015) suggest that knowledge of environmental legislation and environmental processes, such as recycling or best environmental practices, have had a positive influence on employee behaviour. The authors further state that staff who were conscious of their companies practises pertaining to waste management were more accustomed to engage in best environmental practices. A case study by Jones, Jackson, Tudor and Bates (2012), revealed that employees in the construction industry who were given the opportunity of training had a high performance with regards to recycling. Research conducted by Boiral *et al.* (2014) on operators in the Canadian chemical industry, found that environmental performance was improved by informing the employees of their environmental duties. The paradigm of environmental awareness and training is also supported by the research undertaken by Begum *et al.* (2009) and Paillé *et al.* (2014).

2.4.1.3 Level feedback

Young *et al.* (2015) suggested that by continually providing feedback to employees improves the efforts to enhance their behaviour. The author cites a case study by Lingard, Gilbert and Graham (2001) who reported on the research conducted on the efficiency of goal establishment and communication with employees and how these variables impact the improvement of waste operations in the construction industry. The study concluded that the establishment of goals and communication through feedback have been used effectively to improve waste management programs. Green performance appraisals provide a platform to continually point out the employee's wrongdoing or downfall with regards to environmental practices which will enhance continuous improvement (Renwick *et al.* 2013).

Melnyk, Sroufe & Calantone (2014) states that performance management is pivotal to successfully achieving effective management for any organisation, and that change in the business environment are constantly evolving and ever-changing. If organisation's change with regards to their strategies and they do not change the metrics in which performance is measured, a case will arise whereby what the organisation wants to achieve and what the firm measures are not aligned which will result in inefficiencies of the organisation.

2.4.1.4 Financial incentives

Young *et al.* (2015), Raj and Seetharaman (2013), Paillé *et al.* (2014) and Renwick *et al.* (2013) suggest that financial incentives or competency-based rewards schemes for being environmentally conscious, and applying environmental practices have been proven to motivate employees who will improve and encourage their behaviour as well as establishing an environmentally sustainable related behaviour. Incentives are seen to assist companies in mitigating illegal activities and environmental degradation and are seen to have a significant impact on employee eagerness to apply eco-initiatives. Examples of reward incentives include paid holidays, time off, gift cards, companywide public recognition, and monetary value.

Early research findings suggest that chief executive officer's (CEO's) are not stimulated by incentive programs for environmental performance. However, in recent research, there has been an active link between environmental performance and executive compensation, and there has been research which suggests that paying for environmental performance from companies who reward senior managers have a higher environmental performance than

those managers in companies who have fixed salaries (Renwick *et al.* 2013; Young *et al.* 2015; Paille *et al.* 2014). Tam and Tam (2008) assessed an incentive program in Hong Kong, where an incentive was given for the amount of waste diverted from landfill. The results of the study showed an increased improvement in the amount of waste being disposed of in landfill sites.

2.4.1.5 Management support

Support by top management and line managers form a critical component of behavioural change, and if management has values and beliefs towards environmental sustainability, this sets an example for the employees to follow. Leaders shape their companies practises to mitigate deteriorating environmental circumstances and managers norms are influential factors for an active culture toward environmental management (Renwick *et al.* 2013). Employee creativity, is a vital tool for environmental management, which should be supported by managerial supervision and commitment, managerial support of environmental management is a key driver to send a message to employees that environmental management is important (Ramus 2002). From the above, the following hypothesis is proposed:

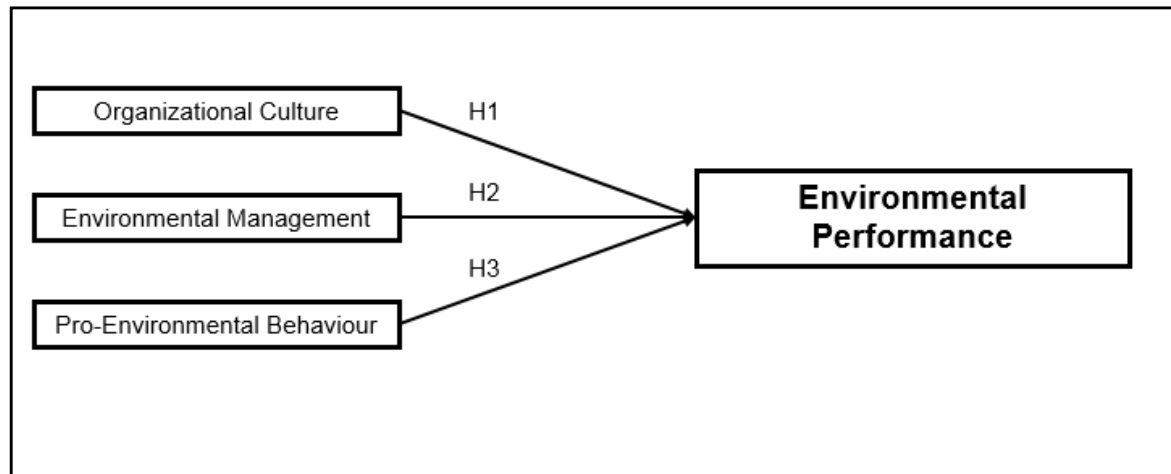
H3: Pro-environmental behaviour of employees has a positive effect on an organisation's environmental performance.

H4: There is a significant difference in the perceptions of male and female employees regarding the key dimensions (organisational culture, environmental management and pro-environmental behaviour) having the potential to affect environmental performance.

2.5 Conceptual framework

Figure 1 depicts the conceptual framework which was derived from the literature review; the conceptual framework is based on the positive effect on environmental performance by the three factors, namely, organisational culture, environmental management and pro-environmental behaviour. A correlation between the three factors has a greater influence on environmental performance.

Figure 1: Conceptual framework



Source: Derived from theoretical framework in the study

3. METHODOLOGY AND RESEARCH DESIGN

An explanatory, descriptive, quantitative research methodology has been utilized in this study. The relationship between the independent variables (which are organisational culture, environmental management and pro-environmental behaviour) and the dependent variable (which is environmental performance) was tested and analysed utilising statistical techniques.

Four waste management companies were included in the sample; each company had a significant role in the waste management sector. The four sectors of focus consisted of recycling, landfill management, waste transportation and environmental consulting. These four sectors provided a holistic approach to the waste management industry.

The population included personnel (10 from management and 38 from the workforce) across each division of the private sector in the waste management industry from the departments: (5) sales, (12) technical, (4) finance, (6) safety, health, environmental and quality (SHEQ), (4) admin, (3) human resources, (10) operations and (4) transport. Respondents were between the ages of 25 to 55 years old, from all ethnic groups. A self-completed questionnaire had been administered to research respondents through email, delivery and collection. The sample size consisted of 80 personnel; an appropriate sample size had been calculated, in order to achieve a 95% confidence level with a 5% margin of error (Saunders,

Lewis and Thornhill 2016:281). A target population of 100 yielded a minimum sample size of 80. 48 questionnaires had been received; therefore a response rate of 60% was achieved.

Once, all the questionnaires were received from the respondents, the data was captured into a Microsoft excel sheet, and thereafter the SPSS 23 was utilized to determine the statistical analysis. The data analysis consisted of an ANOVA, T-Test and Spearman rho correlation statistical measures.

4. RESEARCH RESULTS AND ANALYSIS

4.1 Validity and reliability

Table 1 illustrates the Cronbach Coefficient Alpha result which was the instrument utilized to calculate the reliability of the study. A total of 56 items were tested, which yielded a Cronbach Alpha of 0.932. Hence the research instrument, namely the questionnaire, has a high degree of reliability and an acceptable level of inter item consistency.

TABLE 1: Cronbach Coefficient Alpha

Reliability statistics	
Cronbach's Alpha	N of Items
0.932	56

Due to the types of Likert scales that were used in the instrument, a successful factor analysis could not be undertaken to measure the validity of the study, however validity was measured utilizing, face, content and predictive validity. The study had face validity in that statements in the questionnaire were derived and linked to the objectives of the study. The study had content validity in that the entire range of the issues was measured and the study had predictive validity in that the statements in the questionnaire could forecast an outcome.

4.2 Data analysis

Table 3 illustrates the ANOVA analysis. For the analysis of data, analysis of variance (ANOVA) was utilized. ANOVA can be described as a hypothesis testing procedure used in determining whether mean differences exists for two or more sample treatments.

Table 2: ANOVA: Biographical variables and factors affecting environmental performance

ANOVA: BIOGRAPHICAL VARIABLES AND FACTORS AFFECTING ENVIRONMENTAL PERFORMANCE										
Factors	Age		Qualification		Department		Job Title		Years of service	
	F	p	F	p	F	p	F	p	F	p
Organisational Culture	4.201	0.06*	2.904	0.024*	1.718	0.132	8.887	0.05*	2.851	0.035*
Environmental Management	3.913	0.09*	3.43	0.11	3.506	0.05*	4.833	0.33	1.812	0.133
Pro-Environmental Behaviour	1.923	0.124	3.68	0.07*	2.954	0.14	4.774	0.34	1.876	0.126

* p < 0.05

Table 2 depicts that there is a significant difference in the perceptions of employees varying in age, qualification, job title, years of service and organisational culture, environmental management and pro-environmental behaviour at the 5% level of significance, however not all the biographical variables have proven to influence the factors, hence the following hypothesis are partially accepted:

H1: Organisational culture has a positive effect on an organisation's environmental performance.

H2: Environmental management has a positive effect on an organisation's environmental performance.

H3: Pro-environmental behaviour of employees has a positive effect on an organisation's environmental performance.

Table 3 illustrates the T-Test analysis which was utilised to determine if there are any significant differences in the means for two groups in the variable of interest namely male and female.

Table 3: T -Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Organisational Culture	Equal variances assumed	3.394	.072	-2.267	46	.028*	-.51111	.22548	-.96499	-.05724
	Equal variances not assumed			-2.148	30.216	.040	-.51111	.23792	-.99687	-.02536
Environmental Management	Equal variances assumed	2.258	.140	-2.237	46	.030*	-.61111	.27315	-.116093	-.06129
	Equal variances not assumed			-2.298	38.954	.027	-.61111	.26598	-.114912	-.07310
Pro-Environmental Behaviour	Equal variances assumed	18.943	.000	-1.948	46	.058	-.35556	.18254	-.72300	-.01189
	Equal variances not assumed			-2.315	43.184	.025*	-.35556	.15358	-.66525	-.04587

* p < 0.05

Table 3 depicts that there is a significant difference in male and female employee's perceptions of organisational culture, environmental management and pro-environmental behaviour to positively affect environmental performance, at the 5% level of significance, hence hypothesis 4 namely, there is a significant difference in the perceptions of male and female employees regarding the key dimensions (organisational culture, environmental

management and pro-environmental behaviour) having the potential to affect environmental performance is accepted.

Table 4 illustrates the Spearman's rho correlation which measured the magnitude and direction of association between variables. The magnitude of association is measured by the correlation coefficient, where any value closer to 1 indicates stronger association between variables.

TABLE 4: Correlation Table

Correlations					
			Organisational Culture	Environmental Management (EM)	Pro-Environmental Behaviour
Spearman's rho	Organisational Culture	Correlation Coefficient	1.000		
		p-value			
		N			
	Environmental Management (EM)	Correlation Coefficient	.450**	1.000	
		p-value	.001		
		N	48		
	Pro-Environmental Behaviour	Correlation Coefficient	.775**	.613**	1.000
		p-value	.000	.000	
		N	48	48	
**. Correlation is significant at the 0.01 level (2-tailed).					

Table 4 indicates that there exist significant intercorrelations amongst the key dimensions organisational culture, environmental management and pro-environmental behaviour having the potential to effect environmental performance. Table 4 indicates that whilst the majority of the relationships are moderate, the strongest relationship is between organisational culture and pro-environmental behaviour. Hence the conceptual model was validated.

5. DISCUSSIONS

Several insights can be drawn from the research findings.

5.1 Biographical data

Distributions of respondents in terms of gender revealed that majority of the respondents were female (62.5%), male respondents accumulated to 37.5%.

Majority (51.4%) of the respondents were in the age group of between 18-35, which reveals that the age of staff in the waste management are within an age of growth and are not of the age of experience and knowledge. According to Kooij, De Lange, Jansen, Kanfer, and Dijkers (2011:6), employees between the age group of 21-30 are more flexible, multitask oriented and technologically advanced. On the other hand, according to Maurer and Barbeite (2011), the decline in the ability of personnel between the age group between 41-60, is counter acted by their knowledge and experience.

Collectively 60.4% of respondents are in possession of a tertiary education, this is satisfactory as education serves as a significant factor in the way an individual conducts their activities and their mind-sets towards their work (Silman 2011). A good representation of the various departments sampled in the study was achieved, majority of which comprised of technical (25%) and operations (20.8%). Majority (79.2%) of the respondents comprised of the frontline employees and 20.8% stemmed from management. A relatively low retention period was observed amongst the respondents as the majority (58.3%) had a length of service in the company between 1-4 years and 33.3% between 5-8 years.

5.2 Organisational Culture

Collectively 71% of respondents agree that their companies' culture is geared towards enhancing environmental performance, and collectively 75.1% agree that because the culture of the company is prone to environmental sustainability, the environmental performance is good. Sanyal and Pal (2017) believed that an organisational culture has a purpose of ensuring enthusiasm amongst employees and motivates employees to enhance the organisations efficiency. Ogbonna and Harris (2000) stated that an organisational culture has a direct impact on the organisation's performance. It is evident that the employees in the study believe that the organisation in which they are employed in have established a culture

which puts measures in place to influence the behaviour of employees towards environmental sustainability; hence, environmental performance is achieved.

According to Zsoka (2007), management values are strongly associated with the organisation and the value and beliefs of managers can either have a positive or negative effect on the organisations depending on their environmental orientation and considerations. The managers' value and beliefs have a strong influence on the environmental performance of the organisation. The study revealed that collectively 72.9% and 83.3% of respondents agree that the management of the respective companies have values which are in the best interest of the environment and apply their focus on managing environmental problems.

5.3 Environmental Management

All of the respondents agreed that environmental management greatly assists their company in ensuring the mitigation of risk to the environment by their business. According to Raj and Seetharaman (2013), environmental management ensures the management of the operations of the business towards the environment, and it enhances the companies' environmental performance as well as its long-run financial performance.

A significant 95.8% of respondents collectively agree that environmental management positively influences the environmental performance of their companies. According to Jabbour, De Sousa Jabbour, Govindan, Teixeira and De souza Freitas (2013), there is a consensus among various literature that the adoption of environmental management increases environmental performance which is indicative of various indicators. Jabbour *et al.* (2013) also suggested that environmental management should be with behavioural and human aspects.

5.4 Pro-environmental behaviour

Numerous research has been conducted on pro-environmental behaviour, and there have been some antecedents which have been researched which encourage a pro-environmental behaviour amongst employees such as performance management, incentive rewards, recruitment process, and training programs (Razab, Udin, & Osman, 2015; Steg, Bolderdijk, Keizer and Perlaviciute 2014; Young *et al.* 2015). Collectively, 64.6% of respondents agree that they receive appropriate feedback about their environmental aspect of their work. Performance management plays a key role in motivating pro-environmental behaviour, and

50% of the respondents agreed that their companies undertook performance appraisal seriously while, 18.8% disagreed and 31.3% remained neutral. This is a cause for concern and something that needs to be addressed.

Collectively 58.3% of respondents believe that their companies do consider environmental attributes during recruitment of staff. According to Razab *et al.* (2015), the environmental culture of the company should be incorporated into the recruitment process, and the personnel to be selected should match the attribute and character required for environmental competencies. Jabbour and Santos (2008) suggested that human resource management plays a pivotal role in achieving environmental objectives, and if the human resources practices are efficient, they are in a position to understand the companies' environmental objects and can assist in achieving them.

Training is a critical component of establishing and sharing knowledge. Collectively 70.9% of respondents agree that their company values training and awareness programs which are offered to employees. In a study by Kulatunga, Amaratunga, Haigh and Rameezdeen (2006) as cited in Raj and Seetharaman (2013), the authors noticed that through education and training the perception and attitude of the workforce influenced positive waste management strategies. In order to improve environmental performance, the workforce has to be educated through training (Raj & Seetharaman 2013). The importance of training is evident in the fact that collectively 68.8% are in agreement that training improves the attitude and knowledge of employees. In the waste management industry, this is critical, as employees are often exposed to new legislation and new means to constantly practice sustainable environmental actions. In a study by Sarkis, Gonzalez-Torre & Adenso-Diaz (2010) as cited in Jabbour and Santos (2008), environmental training had been concluded to be the mediating variable for the success of environmental practices.

Rewards and incentives are a vital component of motivation and encouraging pro-environmental behaviour. However, this seems to be the failure of companies in the waste management industry as only 39.6% collectively agrees that they do receive rewards or recognition, whilst 31.3% disagree and 25% remain neutral. Kulatunga *et al.* (2006) and Tam and Tam (2008) suggested that rewarding the employees in the form of bonuses or allowances changes the attitude of employees towards good practices and without some reward system employees become careless with regards to their activities.

Collectively 85.5% of respondents are in agreement that pro-environmental behaviour amongst employees enhances environmental performance. There have been a large number of pollution cases lately, and Steg *et al.* (2014) stated that by managing and changing human behaviour, an organisation can resolve and promote environmental quality. According to Begum *et al.* (2009), human factors play a significant role in the minimization of waste and waste activities can be improved by changing attitudes.

6. MANAGERIAL IMPLICATIONS

These results have implications for the management of waste management firms who are seeking on ways to improve their environmental performance and for companies who are looking for a competitive advantage in the waste industry. There is a need to establish a culture which focuses on the protection of the environment and legal compliance, and this should form part of the vision and mission of the company so that all employees, whether it be old or new, are motivated by the company culture to engage in their work activities in an environmental safe manner.

Management need to ensure that an environmental management system is in place to ensure that there are policies, procedures and work instructions to actively engage employees towards a process for increasing improving environmental performance. Further to this, management need to constantly communicate and provide employees with a platform to regularly improve pro environmental behaviour of employees, training initiatives and incentive reward programs and motivation from management needs to be the primary focus to ensure that employees think about the environment before they conduct their daily duties.

7. LIMITATIONS, RECOMMENDATIONS AND FUTURE RESEARCH DIRECTIONS

Due to time constraints, only a few companies were chosen to be included in the target population, and the sample size was limited. The sampling period spanned between September and October 2017, a more longitudinal study would have been preferred. CEO's of companies did not partake in the study; input from the leader of the company would have further enhanced the investigation.

Further research should be conducted on other factors that affect environmental performance which could be adopted by organisations in the waste sector. In collaboration with this, environmental performance indicators and quantification thereof should be investigated further, as it is not featured in this study. As this will measure as to how the factors investigated improve environmental performance.

The sample population should include employees who have been employed in companies that have been non-compliant in terms of environmental compliance, to ascertain the traits the attributes which have contributed to the downfall as compared to those companies who have excelled in improving their environmental performance. The sample population should also include all sectors of the waste industry to provide a holistic approach; only four were utilized in this study. Further to this, research should be conducted on the comparison between companies who have an environmental management system and companies who do not implement environmental management activities and programs.

The adequacy of the South African legislative framework and the monitoring thereof by the national departmental compliance affiliates should be researched further, the research should aim to ascertain the effectiveness of the variables mentioned above and the impact it has on environmental noncompliance transgressions and waste management companies.

8. CONCLUSION

Due to globalisation and a rapid economic and technological development of industries, there has been a vast increase in the amount of waste generated. Waste has become a nationwide focus due to handling, storage, transport, treatment and disposal of waste.

In recent times there has been a spate of environmental transgressions in the waste management sector. In light of this, the objective of the study was to investigate the factors that affect environmental performance in the waste management industry in Kwa-Zulu Natal (KZN). In particular, the factors which were investigated were as follows: organisational culture, environmental management and the pro-environmental behaviour of employees. The study concludes that there is a definite association amongst an organisational culture, environmental awareness and pro-environmental behaviour.

The results of the study reveal that the hypothesis H1, H2 and H3 have been partially accepted and H4 completely accepted and statistically valid for those companies analysed in

the waste management industry in this study. Management in the waste management sector need to pay particular attention to the organisational culture of their organisation in order to continually encourage an environmental mind-set of employees to protect the environment. Environmental management programs should be initiated in order to ensure the mitigation of adverse impact of the activities of the business. Human capital forms the heart of the business and the pro-environmental behaviour of employees is essential in ensuring that their actions from their activities are in line with the protection of the environment.

REFERENCES

- AWADH AM & ALYAHYA MS.** 2013. Impact of organisational culture on employee performance. *International Review of Management and Business Research* (2):168.
- BEGUM RA, SIWAR C PEREIRA JJ & JAAFAR AH.** 2009. Attitude and behavioural factors in waste management in the construction industry of Malaysia. *Resources, Conservation and Recycling* 53:321-328.
- BELAL AR, COOPER SM & KHAN, NA.** 2015. Corporate environmental responsibility and accountability: What chance in vulnerable Bangladesh? *Critical Perspectives on Accounting* 33:44-58.
- BOIRAL O, BARON C & GUNNLAUGSON O.** 2014. Environmental leadership and consciousness development: A case study among Canadian SMEs. *Journal of Business Ethics* 123:363-383.
- BOIRAL O & PAILLÉ P.** 2012. Organizational citizenship behaviour for the environment: Measurement and validation. *Journal of business ethics* 109:431-445.
- BRONFMAN NC, CISTERNAS PC, LOPEZ-VAZQUEZ E, MAZA CDL & OYANDEEL JC.** 2015. Understanding attitudes and pro-environmental behaviours in a Chilean community. *Sustainability* 7(10):14133-14152.
- CSUTORA M.** 2012. One more awareness gap? The behaviour-impact gap problem. *Journal of consumer policy* 35:145-163.
- GAVRONSKI I, PAIVA EL, TEIXEIRA R & DE ANDRADE MCF.** 2013. ISO 14001 certified plants in Brazil-taxonomy and practices. *Journal of Cleaner Production* 39:32-41.
- GODFREY L & OELOFSE S.** 2017. Historical review of waste management and recycling in South Africa. *Resources* 6(4):57.
- GODFREY L, SCOTT D & TROIS C.** 2013. Caught between the global economy and local bureaucracy: the barriers to good waste management practice in South Africa. *Waste Management & Research* 31:295-305.
- GRAVES LM, SARKIS J & ZHU Q.** 2013. How transformational leadership and employee motivation combine to predict employee pro environmental behaviours in China. *Journal of Environmental Psychology* 35:81-91.
- GUERRERO LA, MAAS G & HOGGLAND W.** 2013. Solid waste management challenges for cities in developing countries. *Waste management* 33:220-232.
- HAMDOUN M & ZOUAOUI M.** 2017. Impact of Environmental Management on Competitive Advantage of Tunisian Companies: The Mediator Role of Organisational Culture. *International Review of Management and Marketing* 7:76-82.

- HANNA MD, ROCKY NEWMAN W & JOHNSON P. 2000. Linking operational and environmental improvement through employee involvement. *International journal of operations & production management* 20:148-165.
- HOGAN SJ & COOTE LV. 2014. Organisational culture, innovation, and performance: A test of Schein's model. *Journal of Business Research* 67:1609-1621.
- JABBOUR CJC, DE SOUSA JABBOUR ABL, GOVINDAN K, TEIXEIRA A & DE SOUZA FREITAS WR. 2013a. Environmental management and operational performance in automotive companies in Brazil: the role of human resource management and lean manufacturing. *Journal of Cleaner Production* 47:129-140.
- JONES J, JACKSON J, TUDOR T & BATES M. 2012. Strategies to enhance waste minimization and energy conservation within organisations: a case study from the UK construction sector. *Waste Management and Research* 30(9):981-990.
- KULATUNGA U, AMARATUNGA D, HAIGH R & RAMEEZDEEN R. 2006. Attitudes and perceptions of construction workforce on construction waste in Sri Lanka. *Management of Environmental Quality: An International Journal* 17(1):57-72.
- KOOIJ DT, DE LANGE AH, JANSEN PG, KANFER R & DIKKERS JS. 2011. Age and work-related motives: Results of a meta-analysis. *Journal of Organisational Behavior* 32:197-225.
- LOPEZ-GAMERO, MD, MOLINA-AZORIN JF & CLAVER-CORTES E. 2010. The potential of environmental regulation to change managerial perception, environmental management, competitiveness and financial performance. *Journal of Cleaner Production* 18:963-974.
- MASSOUD M, TABCHARANI R, NAKKASH R & JAMALI D. 2012. Environmental performance improvement and ISO 14001: case of Lebanon. Environmental Impact. WIT Press: Southampton, UK.
- MAURER T & BARBEITE F. 2011. Job Performance and Age. *Journal of Organisational Behaviour*: 248-263.
- MELNYK SA, SROUFE RP & CALANTONE R. 2003. Assessing the impact of environmental management systems on corporate and environmental performance. *Journal of Operations Management* 21:329-351.
- MOLINA-AZORIN JF, TARI JJ, PEREIRA-MOLINER J, LOPEZ-GAMERO MD & PERTUSA-ORTEGA EM. 2015. The effects of quality and environmental management on competitive advantage: A mixed methods study in the hotel industry. *Tourism Management* 50:41-54.
- MUNGADZE S. 2014. Imported waste from Japan and has been illegally dumped in South Africa. [Internet: <http://www.bdlive.co.za/business/industrials/2014/05/26/interwaste-probe-reaches-across-borders>; downloaded on 11 February 2018.]
- NGUYEN A & HENS L. 2015. Environmental performance of the cement industry in Vietnam: the influence of ISO 14001 certification. *Journal of Cleaner Production* 96:362-378.
- NTULI N. 2016. Toxic cocktail suspected in stink pollutions busters roped in Campbell's book gets global face. [Internet:<http://sundaytribune.newspaperdirect.com/epaper/viewer.aspx>; downloaded on 12 February 2018.]
- OGBONNA E & HARRIS LC. 2000. Leadership style, organisational culture and performance: empirical evidence from UK companies. *International Journal of Human Resource Management* 11:766-788.
- PAILLÉ P, CHEN Y, BOIRAL O & JIN J. 2014. The impact of human resource management on environmental performance: An employee-level study. *Journal of Business Ethics* 121:451-466.
- PIETERSE C. 2015. Illegal Dump a Hazard. [Internet:<http://www.news24.com/SouthAfrica/News/Illegal-dump-a-health-hazard-20150629>; downloaded on 02 August 2017.]
-

- PRAJOGO D, TANG AK & LAI KH.** 2012. Do firms get what they want from ISO 14001 adoption? An Australian perspective. *Journal of Cleaner Production* 33:117-126.
- RAJ JR & SEETHARAMAN A.** 2013. Role of waste and performance management in the construction industry. *Journal of Environmental Science and Technology* 6:119.
- RAMUS CA.** 2002. Encouraging innovative environmental actions: What companies and managers must do. *Journal of world business* 37:151-164.
- RAZAB M, UDIN ZM & OSMAN WN.** 2015. Understanding the role of GHRM towards environmental performance. *Journal of Global Business and Social entrepreneurship (GBSE)* 1:118-125.
- RENWICK DW, REDMAN T & MAGUIRE S.** 2013. Green human resource management: A review and research agenda. *International Journal of Management Reviews* 15:1-14.
- ROBERTSON JL & BARLING J.** 2013. Greening organisations through leaders' influence on employees' pro-environmental behaviors. *Journal of Organisational Behavior* 34:176-194.
- SARKIS, J GONZALEZ-TORRE P & ADENSO-DIAZ B.** 2010. Stakeholder pressure and the adoption of environmental practices: The mediating effect of training. *Journal of Operations Management* 28(2):163-176.
- SANYAL U & PAL D.** 2017. Effect of organisational culture in environmental awareness on pro-environmental behaviour at workplace: A new perspective on organisational sustainability. *International Journal of Commerce and Management Research* 2(1):60-65.
- SAUNDERS M, LEWIS P & THORNHILL A.** 2016. *Research Methods for Business Students: Lecturers' Guide.* 7th Edition. England: FT Prentice Hall.
- SILMAN J.** 2011. Do Employers Really Value Education? Top Skills Employers Seek from Applicants. [Internet: http://www.meador.com/upload/doemployersvalueeducation_65350.pdf; downloaded on 21 March 2018.]
- SINGH M, BRUECKNER M & PADHY PK.** 2015. Environmental management system ISO 14001: effective waste minimisation in small and medium enterprises in India. *Journal of Cleaner Production* 102:285-301.
- SONG Q, Li J & ZENG X.** 2015. Minimizing the increasing solid waste through zero waste strategy. *Journal of Cleaner Production* 104:199-210.
- SOUTH AFRICAN NATIONAL STANDARD (SANS).** 2015. Environmental management system- requirements with guidance for use: SANS 14001:2015. South African National Standard: Pretoria.
- STEG L, BOLDERDIJK JW, KEIZER K & PERLAVICIUTE G.** 2014. An integrated framework for encouraging pro-environmental behaviour: The role of values, situational factors and goals. *Journal of Environmental Psychology* 38:104-115.
- TAM VW & TAM CM.** 2008. Waste reduction through incentives: a case study. *Building Research and Information* 36(1):37-43.
- TESTA F, RIZZI F, DADDI T, GUSMEROTTI NM, FREY M & IRALDO F.** 2014. EMAS and ISO 14001: the differences in effectively improving environmental performance. *Journal of Cleaner Production* 68:165-173.
- VALMOHAMMADI C & ROSHANZAMIR S.** 2015. The guidelines of improvement: Relations among organisational culture, TQM and performance. *International Journal of Production Economics* 164:167-178.
- WIENGARTEN F & PAGELL M.** 2012. The importance of quality management for the success of environmental management initiatives. *International Journal of Production Economics* 14(2):407-415.

YOUNG W, DAVIS M, MCNEILL IM, MALHOTRA B, RUSSELL S, UNSWORTH K & CLEGG CW. 2015. Changing behaviour: successful environmental programmes in the workplace. *Business Strategy and the Environment* 24:689-703.

ZSOKA ÁN. 2007. The role of organisational culture in the environmental awareness of companies. *Journal for East European Management Studies* 15(3):109-131.