Demographic attributes influence on health and safety practices within small and medium construction enterprises

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Abstract

The purpose of this study was to investigate the influence of demographic attributes on the health and safety (H&S) practices within small and medium construction enterprises (SMEs) in South Africa. A mixed method approach was used i.e. Delphi and questionnaire survey. A structured questionnaire consisting of 31 H&S practices categorized in five major H&S practices was developed from extensive review and the participation of 20 purposively sampled H&S experts. Questionnaires were then distributed to a total of 1,450 conveniently sampled SMEs. 228 questionnaires were returned of which 216 responses were usable. The findings suggest that upper management commitment and involvement in H&S, employee involvement and empowerment in H&S, project supervision, project H&S planning and communication in H&S and H&S resources and training were retained as reliable and valid H&S practices. Multiple linear regression analysis established demographic attributes i.e. experience in the construction industry, education level and the number of employees in the organization was not good predicators of the H&S practices.

Keywords: demographic attributes, health and safety practices, influence, small and medium

Introduction

The South African small and medium construction enterprises (SME) sector is described as largely underdeveloped and lacking the managerial and technical skills and sophistication enjoyed by larger well established contractors. The SMEs are left on the periphery of the mainstream economy and do not participate fully in the economy (Department of Public Works, 1999). Martin (2010) opined that lack of knowledge including knowledge of pricing procedures, contractual rights and obligations; law, management techniques and principles as well as technology were a challenge to SMEs. Despite these general challenges faced by SMEs, the CIDB report 2008 highlighted specific challenges faced by small contractors in managing H&S. Anecdotally the report indicated that medium to large contractors and subcontractors working with large contractors tend to address H&S to greater degrees than small contractors, emerging contractors, as well as the majority of housing contractors (Construction Industry Development Board, (CIDB, 2008).

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Construction sites in South Africa continue to be dangerous workplace in the economy (CIDB, 2004). The Department of Labour (DoL, 2012) indicated that in the period 2007 to 2010 the construction industry incurred 171 fatalities and 755 injuries. The industry further paid more than R287 million for occupational injuries in 2010/2011.These statistics are inclusive of SMEs.

The continuing poor H&S performance of the construction industry in terms of fatalities, injuries, and diseases, the number of large-scale construction accidents, and the general non-participation by key project stakeholders such as clients and designers, provided the catalyst for a new approach to construction H&S in the form of consolidated construction H&S legislation such as the Construction Regulations of 2003. This framework required new multi-stakeholder interventions (Smallwood and Haupt, 2005). However, according to the CIDB there was very limited commitment to complying with basic requirements, let alone promoting a culture of H&S. SMEs could barely maintain their tools and equipment and regarded H&S interventions as luxury items. Even where protective clothing and equipment were provided, workers often avoided their use (CIDB, 2004). This poor H&S performance has therefore driven H&S stakeholders especially the South African government to take H&S seriously. Arguably, the poor performance could inevitably be helped by continuous monitoring and review of the H&S practices.

Previous H&S performance improvement models

Teo and Ling, (2006) developed a model to measure the effectiveness of H&S management of construction sites. The model was based on 3P + I, namely policy, process, personnel and incentive factors. These core factors were measured by 590 attributes. The large number of attributes might not be practical in the context of SMEs.

Fernandez-Muniz *et al.*, (2007) developed a positive H&S culture model that consisted of management commitment, employee involvement and H&S management system (SMS). The SMS included H&S policy, incentives, training, communication, planning and control. The model could be applied to more than one type of industry of different sizes.

Chinda and Mohamed, (2008) developed H&S culture model adapted from the European Foundation Quality Model (EFQM). The enablers that were identified were leadership, policy and strategy, partnerships and resources, and processes and H&S outcome or goals. The model was validated using large contractors in Thailand. It might be possible to test this model or a modified model within SMEs.

Molenaar *et al.*, (2009) established that for H&S performance to improve that is reduction of accidents. The corporate H&S culture should comprise of: H&S commitment, H&S incentives, subcontractor involvement, H&S accountability and disincentives.

Health and safety practices

Upper management commitment and involvement in H&S as a practice to improve H&S performance has been studied by several researchers such as (Fernandez-Muniz *et al.,* 2007; Aksorn & Hadisukumo, 2008; Agumba & Haupt 2008; Agumba, 2013).

Furthermore, employee involvement and empowerment has also been identified as important H&S practice that is influential in enhancing H&S performance improvement (Fernandez-Muniz *et al.,* 2007; Aksorn & Hadisukumo, 2008; Agumba, 2013). It is important for employees to be empowered and be involved in H&S, for example, being able to refuse to do dangerous and unsafe work, (Teo, *et al.,* 2008; Agumba & Haupt, 2008). Workers should further be involved in developing H&S policy, providing written suggestions on H&S, being kept informed of the provisions of H&S plans, being involved in H&S inspections, being consulted when the H&S plan is compiled, and being involved in the development of H&S rules and safe work procedures (Teo, *et al.,* 2008; Agumba & Haupt, 2008).

For SMEs to further improve their H&S performance, owners and their workers need to adhere to the proper implementation of occupational H&S management systems (OHSMS). Eight core H&S practices were identified from the literature that would constitute the OHSMS, namely;

- *Appointment of H&S staff* has been found to be important, to influence H&S performance (Sawacha, *et al.,* 1999; Findley, et al., 2004). The employment of staff member with H&S training on each project was advocated (Ng, *et al.,* 2005).
- *Formal and informal written communication* in the form of, for example, written circulars or brochures that inform workers about the risks associated with their work and the preventive measures to reduce risk is necessary to improve H&S performance (Sawacha, *et al.,* 1999).
- *Formal and informal verbal (oral) communication* is important to improve H&S performance (Fernandez-Muniz *et al.,* 2007). Various forms of this type of communication include providing clear verbal instructions to both literate and illiterate employees about H&S, H&S information verbally communicated to workers before changes are made to the way their work activities are executed, organizing regular meetings to verbally inform workers about the risks associated with their work and organizing regular meetings to verbally inform workers about the preventive H&S measures of risky work.
- *H&S resources* are important in improving H&S performance in construction sites (Abudayyeh, *et al.,* 2006; Fernandez-Muniz *et al.,* 2007). The allocation of resources will include human, financial and personal protective equipment.
- *Project planning of H&S* has been found to improve H&S performance and involves procedures to evaluate risks and establish necessary H&S measures to avoid accidents and includes organized planning in case of emergencies (Sawacha, et al., 1999; Fernandez-Muniz *et al.,* 2007).

- *Project supervision* is an internal concept that verifies the extent to which goals have been fulfilled, as well as compliance with internal norms or work procedures (Fernandez-Muniz *et al.*, 2007; Aksorn & Hadisukumo, 2008).
- *Training in H&S* is fundamental to any organization that is eager to improve H&S performance (Ng *et al.*, 2005).
- *H&S policy* is necessary that includes a proper implementation of H&S management system, written in-house H&S rules and regulations for all workers reflecting management concern for H&S, principles of actions to achieve H&S and objectives to be achieved (Fernandez-Muniz *et al.*, 2007).

Health and safety practices are found to vary among different groups in organizations (Vinodkumar & Bhasi, 2009); this could influence the H&S practice implementation. It was therefore decided to collect demographic data of the respondents to determine their influence on the H&S practices.

It is evident from previous research that no consensus has been reached on the required H&S practices that constitute the H&S models. Moreover, demographic attributes that influence H&S practices have been scantily researched especially within the construction industry SMEs in South Africa, where the labour force is in abundance and the importance of H&S gained attention after the promulgation of the Construction Regulation 2003. Therefore, this study suggests two specific objectives, namely:

- To determine the reliability and validity of the determined H&S practices; and
- To investigate the influence of demographic attributes on the H&S practices.

Research methods

The research philosophy used for this study was pragmatic i.e. involving mixed method approach. It used a Delphi survey for H&S experts and a questionnaire survey for the contractors. Delphi method straddles between qualitative and quantitative research methods. A questionnaire survey was developed from relevant literature and four rounds of Delphi survey were undertaken. Twenty H&S experts were purposively sampled of which 16 experts finished all the four rounds of Delphi. The H&S experts indicated that 31 H&S practices were very important and considered to have major impact to improve H&S performance at SMEs project level. These H&S practices comprised the final questionnaire presented to the SMEs in the South African construction industry. The 31 practices addressed five H&S core practice areas. The respondents were required to indicate their level of agreement with the practices. The statements were rated on a five point Likert scale, where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree. Other parts of the questionnaire were designed to profile the participants' demographic attributes and their organisation.

The questionnaire was piloted with eight SMEs upper management personnel and those knowledgeable of H&S practices at their project level. The final version was presented to 1,450 conveniently sampled SMEs. Participants indicated on the questionnaire that by agreeing to complete it, they consented to participate in the study. Their participation was voluntary. No personal identifiers were required of them; this

ensured their anonymity and confidentiality. The study was approved by the Faculty of Engineering and Built Environment Research Committee.

The statistical package for social science (SPSS) version 20 was used to conduct descriptive statistical analysis of the data computing the frequencies, mean scores and standard deviation. The SPSS was further used to determine the factor analysability of the H&S practices. Similarly, exploratory factor analysis (EFA) was used to determine the unidimensionality and reliability of the H&S practices. Reliability was tested using Cronbach alpha with a cut-off value of 0.70 recommended by Hair *et al.,* (2006).

Confirmatory factor analysis determined the acceptability of the H&S constructs. The acceptability of the H&S constructs were determined using Confirmatory Factor Analysis (CFI), Tucker Lewis Index (TLI) which should be greater than 0.90; Root mean square error of approximation (RMSEA) and Standardized root mean squared residuals (SRMR) less than 0.08; *p*-value less than 0.05 and normed chi-squared (x^2/df) less than 5. Finally, multiple linear regressions were carried out on a selected number of demographic variables namely; experience in the construction industry, education level and number of employees in the organization on their influence on H&S practices.

Results and discussions

The data was collected using email and drop and collect method of which 228 questionnaires were returned representing 15.72% response rate. This low response rate concurs with findings of Kongtip *et al.,* (2008).It is noted that 216 questionnaires were deemed eligible for analysis. However, the low response rate is a limitation of this study. Hence, a further study is suggested to validate the current findings.

Descriptive statistics on demographics

The result indicated that 28% of the respondents had matric and 58% of respondents had post-secondary school qualification. 32% had 6-10 years of experience in the construction industry and only 4% of respondents had over 36 years of construction industry experience. The result also indicates that 19% of the respondents had less than 6 years of construction experience. The results further indicated that 84% of the respondents had less than 50 permanently employed employees in there companies, of which 56% employed less than 20 permanent employees.

Validity and reliability

Exploratory factor analysis (EFA) was conducted to assess the unidimensionality and reliability of the five H&S practices established during the Delphi survey and literature review. Maximum Likelihood with Promax Rotation was selected as the extraction and rotation methods to determine the H&S practices reliability and validity.

EFA for upper management involvement and commitment in H&S

The result in Table 1 indicates Cronbach alpha of upper management and involvement was greater than 0.70 at 0.868, indicating acceptable internal reliability as recommended by Hair *et al.,* (2006). The Kaiser-Meyer-Olkin (KMO) of 0.890 with

Bartlett's Test of Sphericity of $p<0.000$ were also obtained. Indicating consistency with the recommended KMO cut off value of 0.60 and Bartlett's Test of Sphericity of $p<0.05$ as suggested by Pallant, (2007). These results suggest that factor analysis could be conducted with the data. All the eleven practices expected to measure upper management commitment and involvement in H&S loaded together on this factor. The factor loadings for all practices were greater than 0.452, which were greater than the recommended value of 0.40 as suggested by Field (2005) and Hair *et al.,* (2006). An Eigenvalue greater than 5.107 were established which explained 46.427% of the variance in the data. Therefore, sufficient evidence of convergent validity was provided for this construct. This finding was in line with the study of Fernandez-Muniz *et al.,* (2007) and Findley *et al.,* (2004).

Table 1: Upper management commitment and involvement in H&S

Eigen value 5.107 **% of variance 46.427**	**Cronbach alpha 0.868**		
Item/practice	Cronbach alpha	Factor loading	Rank
I/We communicate regularly with workers about H&S	0.847	0.786	1
I/We actively monitor the H&S performance of the projects and workers.	0.844	0.778	2
I/We encourage discussions on H&S with employees	0.849	0.728	3
I/We regularly visit workplaces to check work conditions or communicate with workers about H&S	0.850	0.717	4
I/We actively and visibly lead in H&S matters by e.g. walk through the site.	0.855	0.672	5
I/We take responsibility for H&S by e.g. stopping dangerous work on site etc.	0.854	0.667	6
I/We ensure that the H&S equipment is bought e.g. hardhats, overall etc.	0.857	0.618	7
I/We conduct toolbox talks with the workers regularly	0.857	0.604	8
I/We accord workers H&S training when there is less work in the project.	0.865	0.491	9
I/We reward workers who make extra effort to do work in a safe manner.	0.873	0.465	10
I/We encourage and support worker participation, commitment and involvement in H&S activities.	0.867	0.452	11

EFA for employee involvement and empowerment in H&S

Table 2 indicate that the Cronbach alpha was greater than 0.70 at 0.842 indicating acceptable internal reliability as recommended by Hair *et al.,* (2006). The Kaiser-Meyer-Olkin (KMO) of 0.819 with Bartlett's Test of Sphericity of $p<0.000$ were also obtained. Indicating consistency with the recommended KMO cut off value of 0.60 and Bartlett's Test of Sphericity of $p<0.05$ as suggested by Pallant, (2007). These results

suggest that factor analysis could be conducted with the data. The factor loadings for all items were greater than 0.458 reported in Table 2, which were greater than the recommended value of 0.40 as suggested by Field (2005) and Hair *et al.,* (2006). An Eigenvalue greater than 3.079 was established in this factor which explained 61.557% of the variance in the data. Therefore, sufficient evidence of convergent validity was provided for this construct. This finding concurs with the study of Fernandez-Muniz *et al.,* (2007) and Agumba *et al.,* (2008).

Table 2: Employee involvement and empowerment in H&S

Eigen value 3.079 **% of variance 61.577**	**Cronbach alpha 0.842**		
Item/practice	Cronbach alpha	Factor loading	Rank
Our workers are involved in the production of H&S policy	0.778	0.863	1
Our workers help in developing of H&S rules and safe work procedures.	0.776	0.839	2
Our workers are consulted when the H&S plan is compiled	0.791	0.814	3
Our workers are involved in H&S inspections.	0.832	0.598	4
Our workers can refuse to work in potentially unsafe, unhealthy conditions.	0.857	0.458	5

EFA for project H&S planning and communication

The result in Table 3 indicates that the Cronbach alpha was greater than 0.70 at 0.852 indicating acceptable internal reliability as indicated by Hair *et al.,* (2006). The Kaiser-Meyer-Olkin (KMO) of 0.764 with Bartlett's Test of Sphericity of $p<0.000$ were obtained. Indicating consistency with the recommended KMO cut off value of 0.60 and Bartlett's Test of Sphericity of $p<0.05$ as suggested by Pallant, (2007). These results suggest that factor analysis could be conducted with the data. The factor loadings for all the four items were greater than 0.665 reported in Table 3, which were greater than the recommended value of 0.40 as suggested by Field (2005) and Hair *et al.,* (2006). An Eigenvalue greater than 2.786 was established in this factor which explained 69.644% of the variance in the data. Therefore, sufficient evidence of convergent validity was provided for this construct.

Table 3: Project health and safety planning and communication

Eigen value 2.786 **% of variance 69.644**	**Cronbach alpha 0.852**		
Item/practice	Cronbach alpha	Factor loading	Rank
Our firm uses procedures to identify possible H&S dangers on site	0.788	0.833	1
I/We include H&S in our projects program	0.784	0.822	2
I/We consider H&S when layout of site is done	0.823	0.769	3
I/We organize regular meetings to verbally inform workers about the risks and preventive measures of their work.	0.850	0.665	4

EFA for project supervision

The result in Table 4 indicates that the Cronbach alpha was greater than 0.70 at 0.868 indicating acceptable internal reliability (Hair *et al.,* 2006). The Kaiser-Meyer-Olkin (KMO) of 0.868 with Bartlett's Test of Sphericity of $p<0.000$ were also obtained, indicating consistency with the recommended KMO cut off value of 0.60 and Bartlett's Test of Sphericity of $p<0.05$ as suggested by Pallant, (2007). These results suggest that factor analysis could be conducted with the data. All six items expected to measure the factor project supervision loaded together on this factor. The factor loadings for all items were greater than 0.666 reported in Table 4, which was greater than the recommended value of 0.40 as suggested by Field (2005) and Hair *et al.,* (2006). An Eigenvalue greater than 3.640 was established in this factor which explained 60.662% of the variance in the data. Therefore, sufficient evidence of convergent validity was provided for this construct. This finding was in line with the study of Fernandez-Muniz *et al.,* (2007).

Table 4: Project supervision

Eigen value 3.640 **% of variance 60.662**	**Cronbach alpha 0.868**		
Item/practice	Cronbach alpha	Loading factor	Rank
I/we allow supervision of work by staff trained in H&S.	0.837	0.786	1
I/we undertake informal H&S inspection of the work place daily.	0.837	0.781	2
One of our employees trained in H&S identifies dangerous activities.	0.848	0.718	3
I/we undertake formal H&S inspection of the work place daily.	0.850	0.714	4
I/We allow local authorities and H&S enforcement agencies to visit sites for inspection.	0.850	0.693	5
I/we regularly undertake H&S audits of projects	0.854	0.666	6

EFA for H&S resources and training

The result in Table 5 indicates that the Cronbach alpha was greater than 0.70 at 0.864 indicating acceptable internal reliability as suggested by Hair *et al.,* (2006). The Kaiser-Meyer-Olkin (KMO) of 0.801 with Bartlett's Test of Sphericity of $p<0.000$ were also obtained. Indicating consistency with the recommended KMO cut off value of 0.60 and Bartlett's Test of Sphericity of $p<0.05$ recommended by Pallant, (2007). These results suggest that factor analysis could be conducted with the data. All five items expected to measure H&S resources and training loaded together on this factor. The factor loadings for all items were greater than 0.708 reported in Table 5, which were greater than the recommended value of 0.40 as suggested by Field (2005) and

Hair *et al.,* (2006). An Eigenvalue greater than 3.281 was established in this factor which explained 65.628% of the variance in the data. Therefore, sufficient evidence of convergent validity was provided for this construct. This finding was supported by Choudhry *et al.,* (2007) and Agumba *et al.,* (2008).

Table 5: H&S resources and training

Eigen value 3.281 **% of variance 65.628**	**Cronbach alpha 0.864**		
Item/practice	Cronbach alpha	Factor loading	Rank
I/we provide correct tools, equipment to execute construction work.	0.832	0.782	1
I/we ensure that workers are trained to do the work safely	0.830	0.771	2
I/We ensure our workers are properly trained to take care and use personal protective equipment	0.834	0.763	3
I/we conduct induction of all workers on H&S before commencing work on a particular site	0.835	0.751	4
I/We buy hardhats, gloves, overall etc. for workers	0.847	0.708	5

Confirmatory factor analysis

The results in Table 6 indicate that the H&S constructs were acceptable measures of H&S practice at project level of SMEs. However, four of the five constructs tested were not fitting in some of the proposed indices and they were re-specified. The re-specified H&S practices were management commitment & involvement, project supervision, project H&S planning and communication, H&S resources and training. It should be noted that majority of the H&S constructs *p*-value were not acceptable. This was because of the large number of data analysed which tends to produce significant results. It has therefore been argued that *p*-value cannot be used as a solitary measure to determine the acceptability fit of constructs.

The fit indices for management commitment and involvement were fitting after the re-specification of the construct, apart from the *p*-value. The *p*-value indicated significant result greater than 0.05. The normed chi-square was less than 5 that is 1.37 indicating good fitting construct. The CFI and TLI were greater than 0.90 indicating a good fit construct. The RMSEA and SRMR shows values of 0.041 and 0.043 respectively indicating the construct had a good fit. This result concurs with the finding of Fernandez-Muniz *et al.,* (2007).

The fit indices for employee involvement and empowerment were fitting, apart from the *p*-value. The *p*-value indicated significant result greater than 0.05. Furthermore this construct was not re-specified. The normed chi-square was less than 5 that is 1.80 indicating good fitting construct. The CFI and TLI were greater than 0.90 indicating a good fit construct. The RMSEA and SRMR shows values of 0.061 and 0.033

respectively indicating the construct had a good fit. This result concurs with the finding of Fernandez-Muniz *et al.,* (2007).

The fit indices for project supervision and project H&S planning and communication were fitting after the re-specification of the construct, apart from the *p*-value. The *p*-value indicated significant result greater than 0.05. The normed chi-square was less than 5 indicating good fitting construct. The CFI and TLI were greater than 0.90 indicating a good fit construct. The RMSEA and SRMR indicated the construct had a good fit as the values were less than 0.08.

The fit indices for H&S resources and training were fitting after the re-specification of the construct, apart from the TLI. The *p*-value indicated non-significant result less than 0.05. The normed chi-square was less than 5 indicating good fitting construct. The CFI was greater than 0.90, whereas TLI was less than 0.088 indicating weak fit construct. The RMSEA indicated a close fit with a value of 0.088 and SRMR indicated a good fit with a value of less than 0.08.

Table 6: Confirmatory factor analysis

Construct	**No. of Items**	***x²***	***Df***	***x²/df***	***p-value***	**RMSEA**	**CFI**	**TLI**	**SRMR**
Management commitment & involvement	11	58.980	43	1.37	0.053	0.041	0.965	0.956	0.043
Employee involvement & empowerment	5	9.00	5	1.80	0.1091	0.061	0.982	0.964	0.033
Project supervision	4	12.506	8	1.563	0.1300	0.051	0.982	0.966	0.033
Project H&S planning & communication	6	2.227	1	2.227	0.1356	0.075	0.993	0.961	0.011
H&S resources & training	5	10.699	4	2.68	0.0302	0.088	0.941	0.853	0.040

Results of Multiple Linear Regression (MLR) analysis

Multiple Linear Regression analysis was carried out to determine if the selected demographic attributes i.e. experience in the construction industry, education level and number of employees in the organization had significant influence on the valid and reliable H&S practices. Different null hypotheses were postulated;

Hº1 There is no relationship between the demographic variables and the perceived upper management commitment and involvement in H&S.

The result in Table 7 indicates, the demographic variables explained 3.90% of the variance in the upper management commitment and involvement in H&S at project level of SMEs. This suggests that the demographic variables were not good predicators of upper management commitment and involvement in H&S because of the low R^2

value achieved as indicated in Table 7. The results also illustrated significant negative linear relationship (-2.45; $p< 0.05$) between the education level and upper management commitment and involvement in H&S. However, the result further indicated that the model tested was not significant as the significance level was slightly greater than 0.05 at 0.059. Therefore, the finding that education level predicts upper management commitment and involvement in H&S was therefore not supported.

Table 7: Demographics influence on management commitment & involvement

Dependent variable: Upper management commitment and involvement in H&S			**R-square = 0.039**	**Model Sig.(*p*)**
Independent variables (demographics)	SC. Beta	t-value	Sig.(*p*)	0.059
Constant		27.67	0.000	
Experience in the construction industry	0.018	0.255	0.799	
Education level	-0.177	-2.447	0.015	
Number of employees	-0.093	-1.292	0.198	

Hº2 There is no relationship between the demographic variables and the perceived worker involvement and empowerment in H&S.

As indicated in Table 8, the demographic variables explained 1.20% of the variance in the workers involvement and empowerment in H&S at project level of SMEs. This suggests that the independent variables were not good predicators of worker involvement and empowerment in H&S, because of the low R^2 value achieved as indicated in Table 8. The results further indicated no significant linear relationship that emerged between the independent variable and worker involvement and empowerment in H&S. In other words, the respondents, years' of experience in the construction industry, the education level and number of employees in the organization, have no significant influence on whether workers are involved and empowered in H&S within SMEs. Furthermore, the result indicated that the model was not significant as it was greater than 0.05, significance level at 0.478.

Table 8: Demographics influence on worker involvement & empowerment

Dependent variable: Worker involvement and empowerment in H&S R-square = 0.012				**Model Sig.(*p*)**
Independent variables (demographics)	SC. Beta	t-value	Sig.(*p*)	0.478
Constant		15.344	0.000	
Experience in the construction industry	0.077	1.089	0.277	
Education level	0.026	0.372	0.710	
Number of employees	-0.071	-1.002	0.317	

Hº3 There is no relationship between the demographic variables and the perceived project H&S planning and communication.

Table 9 indicates that, the demographic variables explained 2.20% of the variance in the project H&S planning and communication at project level of SMEs. This suggests that the independent variables were not good predicators of project H&S planning and communication because of the low R^2 value achieved as indicated in Table 9. The results further indicated no significant linear relationships that emerged between the independent variables and project H&S planning and communication. In other words, the respondents, years' of experience in the construction industry, the education level and number of employees in the organization, have no significant influence on whether project H&S planning and communication is practiced within SMEs. Furthermore, the result indicated that the model was not significant as the model significance level was greater than 0.05 at 0.219.

Table 9: Demographics influence on project H&S planning and communication

Dependent variable: Project H&S planning and communication R-square = 0.022				**Model Sig.(*p*)**
Independent variables (demographics)	SC. Beta	t-value	Sig.(*p*)	0.219
Constant		20.623	0.000	
Experience in the construction industry	0.094	-1.333	0.184	
Education level	-0.098	-1.399	0.163	
Number of employees	-0.081	-1.155	0.249	

Hº4 There is no relationship between the demographic variables and the perceived project supervision.

According to Table 10, the demographic variables explained 0.5% of the variance in the project supervision project level of SMEs. This suggests that the independent variables were not good predicators of project supervision because of the low R^2 value achieved as indicated in Table 10. The results further indicated no significant linear relationships that emerged between the independent variable and project supervision in other words, the respondents, years' of experience in the construction industry, the education level and number of employees in the organization, have no significant influence on whether project supervision is practiced within SMEs projects. Furthermore, the result indicated that the model was not significant as the significance level was greater than 0.05 at 0.792.

Table 10: Demographics influence on project supervision

Dependent variable: Project supervision R-square = 0.005				**Model Sig.(*p*)**
Independent variables (demographics)	SC. Beta	t-value	Sig.(*p*)	0.792
Constant		19.646	0.000	
Experience in the construction industry	0.066	-0.928	0.355	
Education level	-0.021	-0.287	0.774	

Number of employees	-0.031	-0.436	0.664	

H°5 There is no relationship between the demographic variables and the perceived H&S resources and training.

According to Table 11, the demographic variables explained 2.90% of the variance in the H&S resources and training at project level of SMEs. This suggests that the independent variables are not good predicators of H&S resources and training because of the low R^2 value achieved as indicated in Table 11. The results also indicated a negative linear relationship (-2.26; $p<0.05$) between the education level and H&S resources and training. However, a further result indicated that the model was not significant as the significance level was greater than 0.05 at 0.106. Therefore, the finding that education level predicts H&S resources and training was therefore not supported.

Table 11: Demographic influence on H&S resources and training

Dependent variable: H&S resources and training **R-square = 0.029**				**Model Sig.(*p*)**
Independent variables (demographics)	SC. Beta	t-value	Sig.(*p*)	0.106
Constant		26.328	0.000	
Experience in the construction industry	-0.059	-0.845	0.399	
Education level	-0.156	-2.258	0.025	
Number of employees	-0.067	-0.973	0.332	

Conclusion

The H&S practices were valid and reliable and could therefore inform SMEs of their H&S performance and reflect their H&S culture at project level. However, the demographic attributes namely; experience in the construction industry, education level and number of employees in the organization were poor predictors of the implementation of the H&S practices. It can therefore be concluded that, the findings of this study advances the area of H&S knowledge in the South African construction industry, which has been scantly researched within construction SMEs.

Contribution of the study

The managerial contributions from this study are that the H&S practices determined are valid and reliable measures for H&S at project level of SMEs. However, the years of experience, the number of employees in the organization and educational level are not good predictors of H&S practices implementation in the construction SMEs organisation. These results could assist construction SMEs in Africa and developing countries when choosing their H&S practices for their projects.

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