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The image of the construction industry and its employment attractiveness

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Abstract

As the construction industry does not seem to enjoy a positive image, it is not necessarily the career of choice when compared with other industries. This study examines the image of the industry in order to establish what the perception of the industry is, the effects of that perception, and how the image of the sector could be improved. A mixed approach is used that involves a questionnaire survey of a purposive sample of high-school students, employers and employees in the Greater Durban area of KwaZulu-Natal province as well as a focus group of employers. The findings of the study are important if the image of the construction industry is to be improved so that it can become the career of choice for larger numbers of high-school students and other potential new entrants. The study is confined to the KwaZulu-Natal province and high schools in the western suburbs of Durban.

Keywords: Image; career choice, school leavers, employers

Abstrak

Dit blyk dat die konstruksiebedryf se beeld tans negatief is. Dit het tot gevolg dat minder mense hierdie beroep betree of dit as 'n aanvaarbare beroepskeuse beskou. Hierdie studie ondersoek die beeld van die bedryf ten einde vas te stel wat die persepsie van die bedryf is, die gevolge van daardie persepsie en hoe om die beeld van die sektor te verbeter. 'n Gemengde benadering is gebruik om 'n vraelysopname van 'n doelgerigte steekproef onder hoërskoolleerlinge, werkgewers en werknemers in die groter Durban-area van die KwaZulu-Natal provinsie, asook 'n fokusgroep van werkgewers te doen. Die bevindinge van die studie is belangrik om die beeld van die konstruksiebedryf te verbeter sodat dit die

loopbaankeuse vir meer hoërskoolleerlinge en ander potensiële nuwe toetreders kan word. Die studie is slegs gedoen in die KwaZulu-Natal provinsie en hoërskole in die westelike voorstede van Durban.

Sleutelwoorde: Beeld, loopbaankeuse, skoolverlaters, werkgewers

1. Introduction

The construction industry is an economically important industry in any country. According to Wibowo (2009: 1), it contributes by supplying the infrastructure and physical structures of a country to house other industries; by creating jobs; by contributing to a country's Gross Domestic Product (GDP), and by providing basic needs such as housing, for example, to the population.

The construction industry contributes significantly to the South African economy (Cumberlege, 2008: 50). In 2012, the construction industry contributed R59,422m to the GDP at 2005 price levels, an amount of R112,631m at current prices. This figure was translated into 3.5% of the South African GDP (Stats SA, 2013: 8). In September 2012, the construction industry employed an estimated 433,000 employees, roughly 5.1% of the South African workforce (Stats SA, 2012: 11). The South African government has declared the industry a strategic national asset and it was convinced that the construction industry could be used to achieve economic growth and improve the quality of life of the population (Didiza, 2008: 4). It was, therefore, important that the industry was growing and attracting new entrants.

Despite the industry's importance, it was noted globally that the construction industry had been suffering from a poor image for a long time (ILO, 2001: 1; Pearce, 2003: ix; Rameezdeen, 2007: 76; Makhene & Twala, 2009: 130; Clarke & Boyd, 2011: 1; Chan & Connolly, 2006: 2). According to Rameezdeen (2007: 77), the construction industry has become synonymous with low-quality work, high cost as well as poor health and safety statistics. Recently, many spectacular accidents involving loss of life, limb and property have occurred on construction sites in South Africa and have been popularised by the media. These have created negative impressions of the industry.

In their study, Amaratunga, Haigh, Lee, Shanmugam and Elvitigala (2006) cited the image of the construction industry as one of the main barriers that prohibited women from choosing a career in construction. The image problem could, therefore, be extrapolated to include both genders, as it was a barrier that affected the career choice of the young adult population. According to the ILO (2001: 58), the construction industry's workforce and potential workforce also had negative perceptions of the industry. The poor image was due

to the nature of the work being physically demanding, dirty and dangerous. People only applied for a job in construction as a last resort (DG Enterprise, 2000: 6).

In a study, the majority of the respondents, who had personal experience with the construction sector, were the most negative about the image of the industry. This personal experience had a greater impact on the public's perception than the media had (Rameezdeen, 2007: 80). In an earlier study, Skitmore (1991: 3) found that the respondents' personal experiences, or a close relative's experiences with the construction sector had influenced their perception of the industry the greatest.

Given the poor image of the construction industry, it is infrequently the career of choice when compared with other industries, which arguably had more positive images. Without addressing this negativity, the industry will continue to struggle to attract new entrants, especially considering the continuing chronic skills shortage in the industry. This article reports the results of a study done to

- Establish the image of the industry from the perspective of high-school students, employers and employees;
- Compare the perceptions of high-school students, employers and employees, and
- Recommend actions that might help improve the image of the industry.

2. Image of the construction sector

Several factors or perceptions influence the image of the construction sector.

2.1 Less prestigious than other industries

Construction workers were viewed as blue-collar workers synonymous with low-status jobs (ILO, 2001: 13). Young people viewed any career that involved manual labour as a low-status career due to the low wages in comparison with other industries, and the lack of clear career paths (Tucker, Haas, Glover, Alemany, Carley, Rodriguez & Shields, 1999: 1). Young people viewed the status of a career as an important factor in deciding on a career path. According to Schella (2010: 3), parents and teachers saw a job in construction as a last resort when a job could not be found elsewhere.

2.2 Few career-advancement opportunities

Career-advancement opportunities in the construction industry are unclear. Makhene and Twala (2009: 130) stated that there was a lack of well-defined career paths in construction. In an earlier study, young people were of the opinion that it was not possible to make a career out of construction; they generally did not know about the career opportunities that were available (Tucker *et al*., 1999: 25).

2.3 Construction jobs do not pay as well as other industries

The potential salary and overall income package are important to young people when choosing a career (Chileshe & Haupt, 2007: 8). Makhene and Twala (2009: 130) stated that it was a general opinion that jobs in construction were paying less than jobs in other industries. Labourers in the manufacturing industry were paid more than construction labourers, resulting in young people preferring careers outside of construction (DG Enterprise, 2000: 5).

2.4 Poor health and safety records

Despite the recent efforts to improve the health and safety performance of the industry, there are still alarming numbers of site accidents and work-related deaths (Pearce, 2003: 37). The CIDB (2002: 16) stated that the prominent number of site accidents was largely due to lack of training and unregulated practices. The construction industry had the highest total amount of fatalities when compared with other industrial sectors. Furthermore, the industry caused a significant amount of non-fatal injuries (Pearce, 2003: 37). Young people were less likely to enter an industry that endangers their lives.

2.5 Fraud and corruption

It was generally known that fraud and corruption occurred within the construction industry (Pearl, Bowen, Makanjee, Akintoye & Evans, 2005: 4; Vee & Skitmore, 2003: 118). Construction companies formed cartels in order to monopolise a sector or geographical area. These cartels increased the tender prices submitted. The Competition Commission, a statutory body founded by the Competition Act No. 89 of 1998 (RSA, 1998: 2) who controls and exercises fair competition and business practices, and the Hawks, the Directorate of Priority Crime Investigation who investigates serious charges of commercial crime and corruption, are currently investigating alleged corruption during the procurement stages of the 2010 FIFA World Cup stadia and related infrastructure. Several of South Africa's largest construction

companies have admitted guilt, while others are currently claiming innocence (Visser, 2013). According to CIDB (2011: ii), the barriers to quality in construction were "corruption, political interference and institutional barriers". These barriers were becoming more apparent in South Africa. The CIDB was adamant that fraudulent behaviour and corruption were some of the main factors contributing to poor construction quality (CIDB, 2011: 19).

2.6 Sensitivity to economic conditions

According to Mukucha, Mphethi and Maluleke (2010: 39), the construction cycle changed more slowly than the ordinary business cycle. The impact of the recent recession was experienced by the construction industry later than it affected other industries. However, in order to survive or reduce costs, construction companies had retrenched some of their permanent labour force, and opted for employing cheaper unskilled immigrant labour (Mukucha *et al.*, 2010: 20). Snyman (2009: 121) stated that the cycle in construction was more pronounced than in other industries. The construction industry was slow to recover from the recent recession, as the current business confidence level had deteriorated to 36 in the fourth quarter of 2012 (CIDB, 2012: 3). This figure was indicative of 36% of the respondents who were of the opinion that current business conditions were "satisfactory" (CIDB, 2012: 1).

2.7 Little being done to promote the construction industry

Steps had to be taken to encourage construction companies to promote the industry at school level (Chan & Connolly, 2012: 9). Rameezdeen (2007: 80) stated that the industry's image could be improved by promoting Corporate Social Responsibility (CSR). The concept of CSR refers to professionals conducting business in an ethical manner, with special reference to socio-economic sustainable practices. Companies were encouraged to consider the community and the quality of life of their workforce. The image of construction could also be improved by promoting "quality of products, time cost and safety management, and education and training programmes" (Rameezdeen, 2007: 84). CSR could be used as a tool to counter negative publicity (Vanhamme & Grobben, 2009: 275). DG Enterprise (2000: 7) stated that young people needed to be attracted to a career in construction by promoting the industry. A positive image was needed to attract employees and investors to firms. If there was a perception that the firm, or industry, was operating unethically, it would not attract any employees, investors or customers. Firms often used public relations to dispel any negative

perceptions about them (Friedman, 2012). There was a general lack of promotion done by the various councils and associations in the built environment. People outside of the industry were not subjected to these governing bodies. The CIDB was mandated in terms of the Construction Industry Development Board Act with promoting an efficient and stable industry, and its contribution to meeting economic strategies (RSA 2000: 2).

3. Research methodology

The research approach adopted for this study included both quantitative and qualitative methods. The data for the study were collected using samples of employers, employees and high-school students as well as a focus group of industry practitioners. It is well known that, when using a questionnaire survey, the nature of the research questions determines the research design. To be effective, the survey approach should include appropriate questions to respondents in order to gain information, a well-systematised data-collection technique, and results that are generalisable to the larger population. In the case of this study, they had to be easy to understand by high-school students, employers and employees; ensure a good and reliable response level, and be quick to complete.

The high-school student survey aimed to determine the students' perception of the industry and whether they thought a career in construction was a viable career choice. The employer and employee surveys sought to establish their views on the industry.

The survey instruments contained attitudinal Likert scales, sometimes referred to as semantic scales. Likert scales are popular scoring schemes for attempting to quantify the opinions of respondents on different issues (Bishop & Herron, 2015: 297). In the minds of respondents where the number of items making up the scale is odd instead of equal, there would be a balance with equidistant response options to the left or right of the central neutral value (Bishop & Herron, 2015: 298). The Likert scale, which can have a variety of items ranging from four to seven, for example, allowed the researcher to calculate central measures of tendency (Boone & Boone, 2012; Hartley, 2013: 84). The points on the scale were equidistantly spaced as a prerequisite for an accurate measurement.

When using Likert-type scales, the most widely and frequently used Cronbach's alpha coefficient for internal consistency reliability for any scales or subscales was used (Gadermann, Guhn & Zumbo, 2012: 1). Using Cronbach's alpha under circumstances that violate

its assumptions or prerequisites might lead to deflated reliability estimates (Gadermann *et al.*, 2012: 1) that might entail some misinformed inferences. Reliability is the extent to which a measuring instrument is repeatable and consistent. For this particular article, the internal reliability of variables was tested using Cronbach's alpha coefficient of reliability. The number of items in the scale is not prescribed and is arbitrary (Boone & Boone, 2012; Hartley, 2013: 84). A 5-point Likert scale was used in all survey instruments.

A number of employers were involved in a focus group about their perceptions of the construction industry. The key findings are reported after content analysis.

3.1 Data collection

The student instrument was piloted among high-school students in Grades 10 to 12 at a career day held by the KwaZulu-Natal branch of the Master Builders Association South Africa (MBASA). These students were typically between the ages of 15 and 18 years when they gather information and make decisions about their post-school careers. The pilot instrument became the final instrument, because there were no changes necessary. The responses from the pilot study were, therefore, included in the final data set of responses from 179 students.

Convenience sampling techniques were used in the case of the employer and employee samples. Personal contacts as well as a list of companies made available on the MBA website were utilised in order to boost responses. The researcher contacted 116 construction companies located in the Greater Durban area in KwaZulu-Natal. Of the 116 companies, 36 responses were collected from the construction companies, showing a response rate of 31%. A sample of 24 employees was surveyed. The views of a focus group of four industry practitioners was held, their responses were recorded and transcribed. Selected responses are included in this paper.

3.2 Interpretation of findings

Table 1 shows the Cronbach's alpha coefficient for the scaled responses of each of the samples. There is an acceptable degree of internal consistency for the scales used for all the constructs, namely a Cronbach alpha statistic that is greater than the rule-of-thumb 0.700 for acceptable internal scale consistency, except for the students' attitude to the industry at slightly less than 0.700. Therefore there is between 72.0% and 64.0% probability that each of the constructs measures a single underlying concept with an error of at most 5%.

The scales used to measure the two selected areas of image of the industry are, therefore, acceptable in their measure of the reliability of the constructs.

Table 1: Reliability statistics

Construct	*Students (n=179)*	*Employers (n=36)*	*Employees (n=24)*
Attitude to industry	0.640 (11 items)	0.736 (25 items)	0.707 (15 items)
Knowledge of industry	0.720 (6 items)		

4. Findings

4.1 Student survey

Table 2: Profile of student sample (n=179)

		n	*%*
Grade	Grade 10	61	34.1
	Grade 11	69	38.5
	Grade 12	49	27.4
Gender	Male	83	46.4
	Female	96	53.6
Knowing someone in construction	Parent	25	22.9
	Sibling	11	10.1
	Uncle	19	17.4
	Friend	27	24.8
	Other	27	24.8

Table 2 shows the profile of the high-school student sample, which was drawn from nine schools in the Greater Durban area. The majority of the students were in Grade 11 (38.5%), female (53.6%) and knew someone in the industry (75.2%).

Table 3: View of the industry (n=179; n_m=83; n_f=96[1])

	1 %	*2 %*	*3 %*	*4 %*	*5 %*	*Mean*	*Std Dev.*
All students	**1.1**	**1.1**	**41.3**	**41.3**	**15.1**	**3.68**	**0.78**
Males	*1.2*	-	*41.0*	*36.1*	*21.7*	*3.77*	*0.83*
Females	1.0	2.1	41.7	45.8	9.4	3.60	0.73

1 The bold responses refer to those from the sample of 179 students, the italicised responses refer to the 83 male students and the normal text responses refer to the 96 female students.

The responses of the students in Table 3 indicate how they viewed the construction industry on a 5-point scale, where 1=extremely negative, 2=negative, 3=neutral, 4=positive, and 5=extremely positive. It is evident that they tended to have a positive view of the construction industry (mean=3.68). Female students were less positive than their male counterparts. However, a large proportion (~41%) of the students were neutral, suggesting that, if efforts were made to promote the industry better than it has to date, it is possible that more students would decide one way or the other about careers in the industry.

Table 4: Perceptions of industry (n=179; n_m=83; n_f=96)

Statement	*1 %*	*2 %*	*3 %*	*4 %*	*5 %*	*Mean*	*Std Dev.*
Prestige of industry						**3.03**	**0.65**
						3.02	*0.67*
						3.12	0.68
A career in the construction industry is prestigious	**8.4**	**15.6**	**47.5**	**23.5**	**5.9**	**3.01**	**0.97**
	9.6	*19.3*	*47.0*	*20.5*	*3.6*	*2.89*	*0.97*
	7.3	12.5	47.9	26.0	6.3	3.11	0.96
It is not better to work in an office than it is to work outside on site	**26.3**	**9.5**	**26.3**	**16.8**	**21.2**	**2.97**	**1.47**
	20.5	*13.3*	*25.3*	*14.5*	*26.5*	*3.13*	*1.47*
	16.7	18.8	27.1	6.3	31.3	3.17	1.47
A career in the construction industry is better than a career in other industries	**18.4**	**27.9**	**39.1**	**8.9**	**5.6**	**2.55**	**1.06**
	18.1	*32.5*	*34.9*	*10.9*	*3.6*	*2.49*	*1.03*
	18.8	24.0	42.7	7.3	7.3	2.60	1.10
Career/opportunity						**3.24**	**1.05**
						3.16	*1.03*
						2.70	1.06
There are more career-advancement opportunities in the construction industry	**7.8**	**14.0**	**28.5**	**24.6**	**25.1**	**3.45**	**1.23**
	7.2	*18.1*	*21.7*	*22.9*	*30.1*	*3.51*	*1.29*
	20.8	26.0	34.4	10.4	8.3	2.59	1.17
The construction industry is not a male-dominated industry	**21.8**	**19.0**	**21.2**	**11.2**	**26.8**	**3.02**	**1.50**
	19.3	*25.3*	*25.3*	*14.5*	*15.7*	*2.82*	*1.34*
	36.5	8.3	17.7	13.5	24.0	2.80	1.62
Remuneration/reward						**3.53**	**0.78**
						3.47	*0.81*
						3.32	0.71
A career in the construction industry is fulfilling as results can be seen	**2.2**	**10.1**	**29.1**	**31.3**	**27.4**	**3.72**	**1.04**
	3.6	*8.4*	*30.1*	*31.3*	*26.5*	*3.69*	*1.07*
	1.0	11.5	28.1	31.3	28.1	3.74	1.03
A career in the construction industry is rewarding	**1.7**	**8.9**	**39.7**	**27.9**	**21.8**	**3.59**	**0.98**
	1.2	*9.6*	*39.8*	*28.9*	*20.5*	*3.57*	*0.96*
	2.1	8.3	39.6	27.1	22.9	3.60	1.00

Statement	*1 %*	*2 %*	*3 %*	*4 %*	*5 %*	*Mean*	*Std Dev.*
The construction industry pays well	**4.5**	**8.4**	**31.8**	**34.6**	**20.7**	**3.59**	**1.05**
	3.6	*13.3*	*24.1*	*41.0*	*18.1*	*4.33*	*2.00*
	5.2	5.2	38.5	28.1	22.9	3.58	1.06
A job in an office does not pay more than a job on site	**14.5**	**11.2**	**30.7**	**20.1**	**23.5**	**3.27**	**1.33**
	16.9	*12.0*	*30.1*	*20.5*	*20.5*	*3.15*	*1.35*
	26.0	19.8	31.3	10.4	12.5	2.63	1.31
Health and safety						**3.22**	**0.75**
						3.26	*0.73*
						3.14	0.74
Construction is not an industry suited for disabled persons	**15.6**	**10.6**	**21.8**	**17.3**	**34.6**	**3.45**	**1.45**
	18.1	*8.4*	*20.5*	*20.5*	*32.5*	*3.41*	*1.47*
	13.5	12.5	22.9	14.6	36.5	3.48	1.44
The construction industry is not too physically demanding	**9.5**	**18.4**	**32.4**	**22.9**	**16.8**	**3.19**	**1.20**
	7.2	*21.7*	*27.7*	*25.3*	*18.1*	*3.25*	*1.20*
	15.6	20.8	36.5	15.6	11.5	2.86	1.20
Working in the construction industry is safe	**8.4**	**21.2**	**42.5**	**16.8**	**11.2**	**3.01**	**1.08**
	6.0	*20.5*	*39.8*	*22.9*	*10.8*	*3.12*	*1.05*
	11.5	11.5	45.8	21.9	9.4	3.06	1.08
Fraud and corruption						**3.69**	**1.21**
						3.88	*1.16*
						2.46	1.25
There is corruption in the construction industry	**6.1**	**9.5**	**27.9**	**21.8**	**34.6**	**3.69**	**1.21**
	3.6	9.6	22.9	*24.1*	*39.8*	*3.87*	*1.16*
	30.2	19.8	32.2	9.4	8.4	2.46	1.25
Economic conditions						**3.61**	**0.88**
						3.76	*0.87*
						2.99	0.83
There are many jobs available in construction	**5.6**	**8.9**	**34.1**	**17.9**	**33.5**	**3.64**	**1.19**
	3.6	*8.4*	*27.7*	*21.7*	*38.6*	*3.85*	*1.15*
	29.2	14.6	39.6	9.4	7.2	2.51	1.21
There are a great deal of problem-solving opportunities in construction projects	**7.3**	**10.6**	**27.9**	**26.3**	**27.9**	**3.57**	**1.21**
	6.0	*14.5*	*16.9*	*30.1*	*32.5*	*3.69*	*1.24*
	8.3	7.3	37.5	22.9	24.0	3.47	1.17
Promotion						**3.55**	**1.07**
						3.52	*1.00*
						3.58	1.12
The construction industry enjoys a positive image	**3.4**	**12.3**	**31.8**	**30.7**	**21.8**	**3.55**	**1.07**
	2.4	*13.3*	*31.3*	*36.1*	*16.9*	*3.52*	*1.00*
	4.2	11.5	32.3	26.0	26.0	3.58	1.12

The students were presented with 16 statements within seven constructs about their perceptions of the construction industry and

were asked to indicate their level of agreement on a 5-point scale, where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree. Their responses are shown in Table 4. All the means were <4.00 and ranged between 2.25 (tending to disagree) and 3.50 (tending to agree).

It is evident that, with respect to the industry being less prestigious than other industries, female students tended to agree more strongly with the statements presented to them. They tended to agree less than their male counterparts about the opportunities for career advancement. This finding echoes the findings of Makhene and Twala (2009: 130) and Tucker *et al.* (1999: 25). While females agreed less about the financial rewards of working in the industry, they agreed most negatively about the claim of the industry paying well. Makhene and Twala (2009: 130) and DG Enterprise (2000: 5) found similar sentiments in their respective studies. Similarly, females agreed less that the industry had a good health and safety performance record, feeling most negatively about the industry being too physically demanding [for them]. In their studies, Pearce (2003) and the CIDB (2002) found that the health and safety performance record of the industry was poor. As a consequence, the industry had a bad image. Female students felt more negatively about whether there was fraud and corruption in the sector. The CIDB (2011) concurred that fraud and corruption characterised the industry. Female students agreed less that economic conditions impacted on the industry. Snyman (2009) found that the economic cycle affected the construction sector more than other sectors. The female students tended to agree with their male counterparts that the industry had a positive image. Of concern are the large numbers of high-school students who were neutral about the various perceptions presented to them. Several authors such as Chan and Connolly (2012) and DG Enterprise (2000) argued for more promotional activities to improve the image of construction in order to attract new young entrants.

Table 5: Aggregated means of perception constructs (n=179; n_m=83; n_f=96)

Construct	*Mean*	*Std Dev.*
Fraud and corruption	**3.69**	**1.21**
	3.88	*1.16*
	2.46	1.25
Economic conditions	**3.61**	**0.88**
	3.76	*0.87*
	2.99	0.83

Construct	*Mean*	*Std Dev.*
Promotion	**3.55**	**1.07**
	3.52	*1.00*
	3.58	1.12
Remuneration/reward	**3.53**	**0.78**
	3.47	*0.81*
	3.32	0.71
Career/opportunity	**3.24**	**1.04**
	3.16	*1.03*
	2.70	1.06
Health and safety	**3.22**	**0.75**
	3.26	*0.73*
	3.14	0.74
Prestige of the industry	**3.03**	**0.65**
	3.02	*0.67*
	3.12	0.68

Table 5 shows the aggregated means for each of the constructs that make up their attitude towards the industry.

It is evident that high-school students tended to agree most strongly with the perceptions that the industry is subject to fraud and corruption and it being a victim of economic conditions. They agreed least with the perceptions that the industry was a prestigious one and that it was a healthy and safe one to work in.

The overall high-school student attitude towards the construction sector was calculated from the mean of the aggregated means which was 3.00 and standard deviation of 0.42 indicative of the impact of the large neutral cohort of students in the sample on the mean attitude which can best be described as lukewarm. Female students (mean=3.04) tended to have a marginally more positive view of the industry than male students (mean=2.97).

The constructs were tested for significant correlations using Spearman's rho non-parametric test for strength and direction of the relationships. There is evidence of associations between several of the constructs, which were significant at either the 0.01 level or the 0.05 level. Table 6 shows the correlations that are significant.

Table 6: Significant correlations (n=179)

		Prestige	*Career advancement*	*Reward*	*Health and safety record*	*Fraud*	*Economics*	*Promotion*
Prestige	Correlation coefficient Sig. (2-tailed)	1.00 -	-0.02 0.785	**0.37**** **0.00**	0.03 0.69	**0.32**** **0.00**	0.12 0.12	**0.17*** **0.03**
Career advancement	Correlation coefficient Sig. (2-tailed)	-0.02 0.79	1.00 -	0.10 0.20	**0.26**** **0.00**	0.11 0.15	0.11 0.14	.04 0.65
Reward	Correlation coefficient Sig. (2-tailed)	**0.37**** **0.00**	0.10 0.21	1.00 -	0.13 0.08	0.12 0.10	-0.01 0.88	**0.19*** **0.01**
Health and safety record	Correlation coefficient Sig. (2-tailed)	0.03 0.69	**0.26**** **0.00**	0.13 0.08	1.00 -	0.01 0.86	0.11 0.13	-0.12 0.10
Fraud	Correlation coefficient Sig. (2-tailed)	**0.32**** **0.00**	0.11 0.15	0.12 0.10	0.01 0.86	1.00 -	0.11 0.16	-0.08 0.27
Economics	Correlation coefficient Sig. (2-tailed)	0.12 0.12	0.11 0.14	-0.01 0.88	0.11 0.13	0.11 0.16	1.00 -	**0.20**** **0.01**
Promotion	Correlation coefficient Sig. (2-tailed)	**0.17*** **0.03**	0.04 0.65	**0.19*** **0.01**	-0.12 0.10	-0.08 0.27	**0.20**** **0.01**	1.00 -

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

The strength of the positive association between Prestige and Reward, Fraud and Promotion is weak and very highly significantly different from zero (P<0.001; P<0.05). In other words, 37%, 32% and 17% of the variation in Prestige is explained by Reward, Fraud and Promotion, respectively. The strength of the positive association between Career advancement and Health and safety record is weak and very highly significantly different from zero (P<0.001). In other words, 26% of the variation in Career advancement is explained by Health and safety record. The strength of the positive

association between Reward and Promotion is weak and very highly significantly different from zero (P<0.05). In other words, 19% of the variation in Reward is explained by Promotion. The strength of the positive association between Economics and Promotion is weak and very highly significantly different from zero (P<0.05). In other words, 20% of the variation in Economics is explained by Promotion. While not shown in the paper, where positive associations exist, they are stronger and highly significantly different from zero (P<0.001; P<0.05) in the case of female students than their male counterparts.

The students were quizzed about their knowledge of various participants in the construction process on a 5-point scale, with 1=nothing, 2=little, 3=average, 4=some knowledge, and 5= everything. Their responses are shown in Table 7.

Table 7: Knowledge of participants in construction process (n=179; n_m=83; n_f=96)

Participant	*1 %*	*2 %*	*3 %*	*4 %*	*5 %*	*Mean*	*Std Dev.*
Architect	**7.3**	**1.7**	**7.8**	**17.3**	**65.9**	**4.33**	**1.16**
	8.4	*1.2*	*6.0*	*21.7*	*62.7*	*4.29*	*1.19*
	6.3	2.1	9.4	13.5	68.8	4.36	1.14
Project manager	**5.0**	**5.6**	**24.6**	**27.4**	**37.4**	**3.87**	**1.13**
	4.8	*8.4*	*21.7*	*28.9*	*36.1*	*3.83*	*1.16*
	5.2	3.1	27.1	26.0	38.5	3.90	1.12
Main contractor	**11.7**	**14.5**	**24.6**	**17.9**	**31.3**	**3.87**	**1.13**
	10.8	*14.5*	*21.7*	*20.5*	*32.5*	*3.49*	*1.36*
	12.5	14.6	27.1	15.6	30.2	3.36	1.38
Civil engineer	**20.7**	**14.0**	**21.2**	**22.3**	**21.8**	**3.11**	**1.44**
	18.1	*19.3*	*16.9*	*22.9*	*22.9*	*3.13*	*1.44*
	22.9	9.4	25.0	21.9	20.8	3.08	1.44
Subcontractor	**24.0**	**15.6**	**22.9**	**13.4**	**24.0**	**2.98**	**1.49**
	24.1	*14.5*	*24.1*	*10.8*	*26.5*	*3.01*	*1.52*
	24.0	16.7	21.9	15.6	21.9	2.95	1.48
Quantity surveyor	**28.5**	**18.4**	**19.6**	**18.4**	**15.1**	**2.74**	**1.43**
	25.3	*19.3*	*18.1*	*22.9*	*14.5*	*2.82*	*1.42*
	31.3	17.7	20.8	14.6	15.6	2.66	1.45

Table 7 clearly shows that high-school students claimed to know almost everything about what an architect does. They had some knowledge of what project managers and main contractors do. They had average to hardly any knowledge of civil engineers, subcontractors and quantity surveyors. Except for knowledge about

architects, female students knew less about all the other participants than male students.

To establish a sense of the knowledge of the participants in the construction process, an aggregated mean was calculated, namely 3.41 with standard deviation of 0.86. This finding suggests average to some knowledge of the participants. The aggregate mean of female students (mean=3.19) with respect to their knowledge of the participants suggests that they knew slightly less than their male counterparts (mean=3.26).

Table 8 shows the responses of high-school students to what they would like to become if they considered a career in construction.

Table 8: Career choice (n=179; n_m=83; n_f=96)

Career choice	*%*
Civil engineer	**31.0%**
	39.5%
	21.2%
Quantity surveyor	**9.9%**
	7.9%
	12.1%
Architect	**35.2%**
	31.6%
	39.4%
Contractor	**4.2%**
	5.3%
	3.0%
Project manager	**19.7%**
	15.8%
	24.2%

It is evident that architecture was the most popular career option for the entire student sample. However, the most preferred career choice of female students was architecture (39.4%), while it was civil engineering (39.5%) for male students. The least preferred option was becoming a contractor.

When asked about how attractive the industry was to them on a 5-point scale, where 1=totally unattractive, 2=unattractive, 3=neutral, 4=attractive, and 5=extremely attractive, high-school students responded as shown in Table 9.

Table 9: Attractiveness of industry (n=179; n_m=83; n_f=96)

	1 %	*2 %*	*3 %*	*4 %*	*5 %*	*Mean*	*Std Dev.*
Attractiveness of career	**17.3**	**10.1**	**33.0**	**22.9**	**16.8**	**3.12**	**1.30**
	18.1	*16.9*	*22.9*	*26.5*	*15.7*	*3.05*	*1.34*
	16.7	4.2	41.7	19.8	17.7	3.18	1.26
Influence of perception	**12.3**	**13.4**	**30.2**	**24.0**	**20.1**	**3.26**	**1.27**
	10.8	*15.7*	*27.7*	*31.3*	*14.5*	*3.23*	*1.20*
	13.5	11.5	32.2	17.7	25.0	3.29	1.33

The students had average views about the attractiveness of a career in construction and how much that perception influenced their career choice. Female students found the industry slightly more attractive than male students, and their perception influenced their career choice more.

Furthermore, the responses of high-school students about whether they wanted to work in the construction industry are shown in Table 10, where 1=most definitely not, 2=hardly, 3=maybe, 4=somewhat, and 5=most definitely. It is evident that they had less than average sentiments about working in construction. Female students were less willing to work in the industry than male students.

Table 10: Willingness to work in construction (n=179; n_m=83; n_f=96)

1 %	*2 %*	*3 %*	*4 %*	*5 %*	*Mean*	*Std Dev.*
17.3	**10.1**	**33.0**	**22.9**	**16.8**	**2.79**	**1.43**
21.7	*15.7*	*26.5*	*21.7*	*14.5*	*2.92*	*1.35*
32.6	13.7	25.3	9.5	18.9	2.68	1.48

4.2 Employer survey

Table 11 shows the profile of the employer sample. Most of the sample consisted of contractors (45.2%), civil engineers (16.1%), and subcontractors (12.9%).

Table 11: Profile of employers (n=31)

Role in industry	*N*	*%*
Contractor	14	45.2
Civil engineer	5	16.1
Subcontractor	4	12.9
Quantity surveyor	2	6.5
Construction manager	2	6.5
Property developer	2	6.5

Role in industry	*N*	*%*
Electrical engineer	1	3.2
Project manager	1	3.2

Table 12 shows that the level of membership of the MBA was 58.1%. Evidently, other disciplines saw the need to join the MBA. It is likely that with more effort this number could increase.

Table 12: Membership of MBA (n=31)

Yes	*No*	*Not applicable*
18 (58.1%)	12 (38.7%)	1 (3.2%)

The employers were asked to respond to a series of 26 statements within seven constructs about their perceptions of the construction industry and were asked to indicate their level of agreement using a 5-point Likert scale, where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree. Their responses are shown in Table 13. Rather than discuss the findings relative to each statement within each construct, the aggregated means are presented in Table 14 and discussed.

Table 13: Perceptions of employers (n=31)

Statement	*1 %*	*2 %*	*3 %*	*4 %*	*5 %*	*Mean*	*Std Dev.*
Prestige/reputation						**2.17**	**0.47**
The perception people have about an industry influences their decision to follow a career therein	6.5	6.5	3.2	83.9	-	3.64	0.88
The poor image is the main reason why there is a critical skills shortage due to the industry's unattractiveness as a career choice	7.1	21.4	17.9	32.1	21.4	3.29	1.26
There are many young people currently employed in the construction industry	12.9	32.3	22.6	32.3	-	2.74	1.06
The public perceive the construction industry as a positive one	16.1	48.4	12.9	22.6	-	2.42	1.03
The construction industry enjoys a positive image	16.1	54.8	23,6	6.5	-	2.19	0.79
Career/opportunity						**3.45**	**0.43**
Skilled labour is difficult to find.	-	9.7	6.5	64.5	19.4	3.94	0.87
Construction companies are currently suffering from a shortage of skilled labour	-	-	19.4	71.0	9.7	3.90	0.54
People applying for work can expect to be hired if they suit the requirements	-	16.0	6.5	71.0	6.5	3.68	0.83

Statement	*1 %*	*2 %*	*3 %*	*4 %*	*5 %*	*Mean*	*Std Dev.*
There are career-advancement opportunities in my firm	-	16.1	12.9	71.0	-	3.54	0.77
The lack of skilled labour prevents companies from growing	-	22.6	19.4	48.4	9.7	3.45	0.96
I would encourage my children to pursue a career in construction	14.3	21.4	17.9	39.3	7.1	3.04	1.27
Construction companies are currently growing in capacity and workforce	9.7	41.9	35.5	12.9	-	2.51	0.85
Remuneration/reward						**2.90**	**0.54**
The average age of the workforce is over 40 years	-	22.6	32.3	38.7	6.5	3.29	0.90
Jobs in construction pay well	6.5	32.3	22.6	38.7	-	2.93	1.00
Construction workers generally enjoy job security	-	61.3	29.0	9.7	-	2.48	0.68
Health and safety						3.25	1.06
Working on construction sites is safe	-	35.5	12.9	41.9	9.7	3.25	1.06
Fraud and corruption						2.35	1.31
Construction contracts are transparent and fraud free	35.5	29.0	-	35.5	-	2.35	1.31
Economic conditions						**4.06**	**0.50**
Construction companies are strongly affected by changes in the business cycle	-	-	-	51.6	48.4	4.48	0.58
Construction companies only employ part-time labourers according to the amount of work in the pipeline	-	12.9	16.1	64.5	6.5	3.65	0.80
Promotion						**2.90**	**0.71**
Media campaigns targeted at the youth could attract them to work in the industry	-	16.1	6.5	67.7	9.7	3.71	0.86
Improving the quality of construction products could improve the image	-	7.1	14.3	67.9	10.7	3.12	0.72
My company regularly promotes careers in the industry	7.1	39.3	-	53.6	-	3.00	1.12
The industry regularly promotes itself in the media	-	53.6	21.4	25.0	-	2.71	0.85
I interact regularly with high-school students	10.7	60.7	7.1	21.4	-	2.39	0.96
I attend career fairs and events to promote my company and the industry	28.6	46.4	-	25.0	-	2.21	1.33
I regularly visit high schools to inform them about careers in construction	46.2	38.5	7.7	7.7	-	1.77	0.91

The means of the various responses were aggregated as shown in Table 14.

Table 14: Aggregated means of employer perception constructs

Construct	*Mean*	*Std Dev.*
Economic conditions	4.06	0.50
Career/opportunity	3.45	0.43
Health and safety	3.25	1.06
Remuneration/reward	2.90	0.54
Promotion	2.90	0.71
Fraud and corruption	2.35	1.31
Prestige of the industry	2.17	0.47

It is evident that employers agreed most strongly with the perception that the industry was a victim of economic conditions. They tended to agree that the industry provided career opportunities considering the overall skills shortage and that it was a healthy and safe one to work in. Employers tended to be neutral about the remuneration and promotion constructs. They tended to disagree that the industry was corrupt and that the industry was a prestigious one.

The overall employer attitude towards the construction sector can also be described as neutral or lukewarm, with an overall mean of 3.11 and standard deviation of 0.39.

4.3 Employee survey

Table 15: Profile of employees (n=24)

		N	*%*
Category of employment	Tradesman	5	20.8
	Apprentice	4	16.7
	Operator	4	16.7
	General labourer	11	45.8
Age	18-25	8	33.3
	25-40	7	29.2
	40-60	9	37.5
Employment status	Full-time	13	54.2
	Part-time	11	45.8

Table 15 shows the profile of the employee sample. The majority of the employees included general labourers (45.8%), those between the ages of 40 and 60 years (37.5%), and full-time employees (54.2%).

The employees were asked to respond to a series of 17 statements within five constructs about their perceptions of the construction industry and were asked to indicate their level of agreement using a 5-point Likert scale, where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree. Their responses are shown in Table 16.

Table 16: Attitudes of employees (n=24)

Statement	*1 %*	*2 %*	*3 %*	*4 %*	*5 %*	*Mean*	*Std Dev.*
Prestige/reputation						**2.75**	**0.59**
Construction workers are respected in the community	29.2	33.3	20.8	16.7	-	2.25	1.07
There are few women working in construction	8.4	20.8	20.8	41.7	8.3	3.21	1.14
The public perceives the construction industry as a positive one	12.5	33.3	41.7	12.5	-	2.54	0.88
Many people want to work in construction	8.3	33.3	37.5	16.7	4.2	2.75	0.99
There are many young people working in construction	8.3	29.2	25.0	29.2	8.3	3.00	1.14
Health and safety						**3.10**	**0.57**
Construction work is too hard and physical	-	29.2	25.0	37.5	8.3	3.25	0.99
Working on construction sites is safe	4.2	33.2	29.2	29.2	4.2	2.95	1.00
Career/opportunity						**3.05**	**0.55**
People applying for work can expect to be hired if they suit the requirements	-	20.8	54.2	25.0	-	3.04	0.69
I want to work here when I am older	4.2	16.7	29.2	41.7	8.2	3.33	1.01
I would encourage my children to pursue a career in construction	16.7	37.5	29.2	16.6	-	2.45	0.98
I would encourage other people to work in construction	-	12.5	43.8	35.4	8.3	3.37	0.82
Remuneration/reward						**3.11**	**0.39**
I can get promoted in my company	-	12.5	33.3	45.9	8.3	3.50	0.83
A job in construction pays well	4.2	37.5	41.6	16.7	-	2.71	0.81
I enjoy working in construction	-	16.7	50.0	29.1	4.2	3.21	0.78
I know I will not lose my job soon	4.2	29.2	29.2	37.4	-	3.00	0.93
The average age of construction workers is over 40 years	-	25.0	37.5	37.5	-	3.13	0.80
Promotion						**3.29**	**0.95**
Media campaigns targeted at the youth could attract them to work in the industry	4.2	12.5	41.7	33.3	8.3	3.29	0.95

All the means were <4.00 and ranged between 2.25 (tending to disagree) and 3.50 (tending to agree). The means of the various responses were aggregated as shown in Table 17.

Table 17: Aggregated means of employee perception constructs

Construct	*Mean*	*Std Dev.*
Promotion	3.29	0.95
Remuneration/reward	3.11	0.39

Construct	*Mean*	*Std Dev.*
Health and safety	3.10	0.57
Career/opportunity	3.05	0.55
Prestige of the industry	2.75	0.59

Overall employee perceptions ranged between being neutral and disagreeing about the constructs. It is evident that employees tended to be neutral about the perception that the industry would benefit from active promotion. They agreed least with the perception that the industry was a prestigious one.

The overall attitude of employees towards the construction sector, although they were not presented with the constructs of fraud and corruption and economic conditions, was the most negative of the three samples. The overall mean of 3.06 with standard deviation 0.37 is indicative of the large proportion of employees who were neutral about the perceptions presented to them, as shown in Table 16, ranging from 20.8% to 54.2%.

Table 18: Comparative aggregated means of perception constructs

Construct	*Students (n=179; n_m=83; n_f=96)*		*Employers (n=31)*		*Employees (n=24)*	
	Mean	*Std Dev.*	*Mean*	*Std Dev.*	*Mean*	*Std Dev.*
Fraud and corruption	**3.69**	**1.21**	2.35	1.31		
	3.88	*1.16*				
	2.46	1.25				
Economic conditions	**3.61**	**0.88**	4.06	0.50		
	3.76	*0.87*				
	2.99	0.83				
Promotion	**3.55**	**1.07**	2.90	0.71	3.29	0.95
	3.52	*1.00*				
	3.58	1.12				
Remuneration/reward	**3.53**	**0.78**	2.90	0.54	3.11	0.39
	3.47	*0.81*				
	3.32	0.71				
Career/opportunity	**3.24**	**1.04**	3.45	0.43	3.05	0.55
	3.16	*1.03*				
	2.70	1.06				
Health and safety	**3.22**	**0.75**	3.25	1.06	3.10	0.57
	3.26	*0.73*				
	3.14	0.74				

Construct	*Students (n=179; n_m=83; n_f=96)*		*Employers (n=31)*		*Employees (n=24)*	
	Mean	*Std Dev.*	*Mean*	*Std Dev.*	*Mean*	*Std Dev.*
Prestige of the industry	**3.03**	**0.65**	2.17	0.47	2.75	0.59
	3.02	*0.67*				
	3.12	0.68				

From the data in Table 18, it is evident that all cohorts of respondents were most negative about the reputation and prestige of the construction sector. The student cohort as a group was slightly more positive about the health and safety record of the industry. However, despite tending to be neutral to negative about all perceptions of the industry, employers were most positive about the perception that the industry was subject to economic cycles. Employees and students tended to be neutral about all perceptions of the industry. Of the three samples, employers were the most negative about all the perceptions of the construction industry, except for the impact of economic conditions. Employees were more negative than students about the five perceptions to which they responded. This is possibly due to their first-hand experience of the industry.

Table 19: Comparison of aggregated attitudes

Sample	*N*	*Mean*	*Std dev.*[2]
Students	179	3.15	0.44
Employers	31	3.08	0.38
Employees	24	3.06	0.37

By comparing the aggregated means of the five constructs that were common to all the samples in Table 19, it is evident that all the means ranged between 3.15 and 3.06, suggesting that overall the perceptions of the construction industry were neutral or lukewarm. This finding suggests that a great deal still needs to be done in order to change these perceptions of high-school students, employers and employees.

2 Standard deviations were included to show the extent of congruence of sentiments expressed around the mean. They were also useful when the means were the same, but the level of congruence was different

4.4 Focus-group responses

The focus group consisted of four industry employers. In response to what they perceived the image of the construction industry to be, they expressed that the following issues had a negative impact on the image of the sector:

- Corruption;
- Lack of promotion;
- Poor economy;
- Poor image, and
- Health and safety record.

Comments from the group include:

Corruption:

> *… the industry has a lot of work to do to rebuild the image after the recent media stories regarding the [corruption] during the World Cup. They got some repair work to do.*
>
> *… the last story in the newspapers where the construction industry got together to fix the bid prices did us extreme harm.*

Lack of promotion:

> *… nothing is said like, 'Look at this beautiful bridge that is being built'.*

Poor economy:

> *… not a lot going on because of the economy of the country.*

Poor image:

> *… I would think it is negative because there are not a lot of job opportunities.*
>
> *I don't think the industry has a good image.*

Health and safety record

> *… But for the last year or so we hear about buildings under construction collapsing and killing workers.*

They were also asked about what they thought contributed to the negative image of the construction industry. The following issues contributed to the negativity:

- Fraud and corruption;
- Poor promotion and publicity;
- Poor economy, and
- Site accidents.

Comments from the group include:

> *… we've had a lot of negative publicity.*
>
> *… the fixing of bid prices, it is a corrupt industry and tender processes …*
>
> *… buildings collapsing and deaths on site will never motivate people to join the industry.*

Participants reported that there were *more people leaving than entering the industry*.

They also reported that, when vacancies were advertised, the applicants were *poor quality,* either *had no training or experience.* They had to *always train applicants.*

With respect to what was needed for a sustainable industry, they responded that business partnerships, more investment and improving the image of the sector were critical through media campaigns and improving the quality of products. They agreed that there was a direct relationship between the image of the industry and the number of new entrants into the industry. The poorer the public image of the industry, the less likely that it would attract greater numbers of new entrants who choose construction as a career path.

5. Conclusions

This study aimed to determine the image of the South African construction industry from the perspective of high-school students, employers and employees currently working in the construction industry. The image of the industry was evaluated in terms of its attractiveness relative to careers in the construction industry.

Against the backdrop of skills shortages in the industry and reducing numbers of new entrants, the findings of this study present several challenges and opportunities to the sector. It appears that the industry's poor image discouraged students from wanting to work in the industry. The lack of new entrants in the industry could potentially worsen the industry's current skills shortage. For the large cohort of neutral students, for example, to include in their choice of career the construction industry which has been identified by the South African government as the vehicle for job creation, poverty alleviation, and

infrastructure delivery, demands that the industry markets itself as one that provides sustainable and financially rewarding employment in an environment characterised by good working conditions and opportunities for career advancement and lifelong learning. Agencies such as the Construction Industry Development Board (CIDB), the Construction Education and Training Authority (CETA) and the industry learned and professional societies need to embark on a vigorous marketing campaign to promote the construction industry. This task is made more daunting by several major considerations.

For example, high-school and guidance teachers are clearly ineffectual agencies to influence career choices, especially in the construction industry. Due to the students' general lack of knowledge about the industry and the careers therein, it appears that the current curriculum in the education system is falling short of preparing high-school students adequately for careers in the construction industry. The opportunity exists, in the face of the large cohort of students who have a lukewarm perception of the industry for education officers, to directly promote the industry in high-school classrooms and to use forums such as career exhibitions at schools in this effort. Such an intervention becomes more critical, considering the lack of knowledge about what the various participants in the construction process are and actually do. Organisations such as the MBASA, the Association of South African Quantity Surveyors (ASAQS), and the South African Council of the Project and Construction Management Professions (SACPCMP) have much to do to promote their particular disciplines, which are underrepresented in the choice of built environment consulting professions. Consideration for choosing contracting itself as a career in the sector presents a special challenge to the industry, since it ranks poorly on the list of careers that high-school students consider for themselves. Perceptions that construction is dangerous, hard, physically demanding, experiences economic cycles or 'bad times' and requires long working hours for hardly any money, exacerbate the challenges facing the industry.

The majority of the employers surveyed were of the opinion that the industry did not enjoy a positive image and that the public did not perceive the industry in a positive light. Of concern is the lack of involvement of employers in promoting careers in the industry. They did not attend career fairs or interact with high-school students. The industry is perceived as indifferent about the industry and its employees. It was important that the positives of the industry were portrayed to the public and the image improved. The lack of promoting the positives about careers in the industry has contributed to the unattractiveness of the industry as a career choice. It was

apparent that events such as career fairs have a positive impact on students and their choice of careers. Schools and some of the key construction companies must create a programme where students are given the opportunity to visit construction sites on a regular basis in order to expose them to the professions and inner workings of the industry.

Similarly, employees currently working in the industry had negative perceptions of the construction industry. Employers need to be conscious of these perceptions and introduce interventions that will improve the working conditions and, in particular, the health and safety of employees, while paying them adequately with clear career paths and promotion opportunities. These employees potentially influence others in choosing to work in the sector based on their experiences of the industry.

While high-school students, employers themselves and construction workers perceive the industry negatively, a concerted effort needs to be made at all levels to improve perceptions of the industry and consequently its image.

While this study was confined to the KZN province of South Africa, it reflects the outcomes of other studies done in other provinces such as the Western Cape. However, it is recommended that a national comparative study be done to determine the pervasiveness of the findings of this particular study in other provinces.

6. Acknowledgements

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