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UNIVERSITY OF THE WITWATERSRAND

SCHOOL OF CONSTRUCTION ECONOMICS & MANAGEMENT

AN INVESTIGATION OF THE ADEQUACY OF HEALTH AND SAFETY TRAINING AMONG IMMIGRANT CONSTRUCTION WORKERS

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A research report submitted to the faculty of Engineering and the Built Environment, University of Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master of Science in Building.

Johannesburg, 2012

DECLARATION

I, Wesley Chikwanyanga, declare that this research report is my own unaided work. It is being submitted to the Degree of Master of Science to the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination to any other University.

....

Signed **Date**

ABSTRACT

The presence of immigrants on South African construction sites has long been noted, with recent reports indicating that the number of immigrants employed on construction sites has been on the increase in the past decade. Incidental to this, construction related accidents have also been on the increase. With reports from other parts of the world suggesting that immigrants are more prone to accidents than natives, this research sought to investigate the adequacy of training provided to immigrants, since the lack of Health and Safety training has traditionally been associated with poor safety performance.

A questionnaire survey was conducted among immigrants on selected construction sites run by large firms in the Johannesburg area. The questionnaire probed into the types of training provided, content of the programmes, duration of the programmes, satisfaction with the training and injury history. The survey results revealed that the most common types of training were Site induction and Toolbox talk; and that the majority of immigrants on construction sites run by large-size construction firms received a minimum of three hours safety training and the training content covered all minimum requirements stipulated by O'Connor. The research concluded that although the construction companies were not fully complying with the OSH Act regulation, the Health and Safety training received by the majority of immigrants on construction sites run by large–size companies was adequate to enable them to safely conduct their tasks without endangering themselves and their colleagues. The research recommended a further investigation of the training practices in use for implementation on all sites.

In memory of my parents

Jane & Wellington Chikwanyanga

.

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CHAPTER 1 INTRODUCTION

1.1 Background to the study

The economic prosperity of individual countries has fuelled labour migration worldwide for centuries (Bust *et al*, 2008).The Southern African Development Community (SADC) region is no exception to the global trend, with evidence of labour migration dating back to 150 years ago (Crush, 1999). Throughout the apartheid era, South Africa remained a popular destination for migrant workers. According to the International Labour Organisation (2002), the influx of immigrants has been on the rise in the post-apartheid era; however the exact number of immigrants is a matter of controversy (Ellis, 2001). However, Akindele *et al*. in their recent study conducted in 2008 established that immigrants on construction sites account for about 40% of the site staff. The local media has also been abuzz with reports of the influx of immigrant workers into the country mainly from neighbouring countries (Hart 2008; Lubbe 2008; RGN 2009).

The major driving force behind the recent influx of immigrants has been the construction boom recently experienced by the country. During the boom, the value-added by the construction sector to the total Gross Domestic Product (GDP) grew from 2% in 2005 to 4% in 2008 (Trade and Industry Policy Strategies 2009). The graph below best depicts the growth in construction in comparison to the all industry growth index.

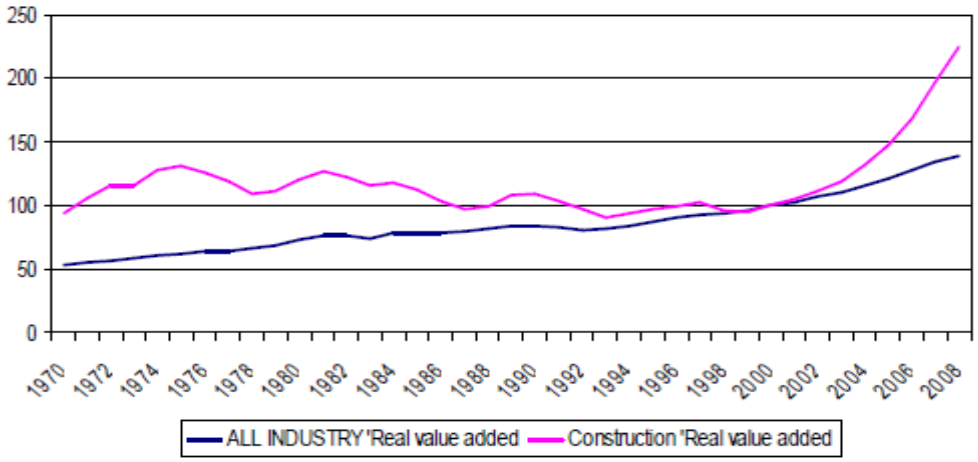


Figure 1-1 Real Value Added Growth in construction and all economic sectors 1970-2008 (index, 2000=100); Source: Trade & Industrial Policy Strategies, 2009

A key aspect of the construction industry is its provision of a significant amount of unskilled menial and manual jobs (Loosemore and Lee, 2002). As a result of this, the construction industry tends to absorb a large portion of immigrant workers. Research has shown that employers in the construction industry prefer immigrant workers because they regard them as more "hard working", honest and disciplined than the natives (Rogerson, 1999). Nissen *et al* (2008) assert that the growing number of immigrant workers on construction sites has implications for safety conditions in the industry as a whole. Furthermore this assertion is in tandem with research findings from Akindele *et al* (2008), in which all the safety officers surveyed said that immigrant workers are more susceptible to accidents on site.

Statistical data covering the period 2004/5 to 2007/2008 which was obtained from the Department of Labour (DoL) also paint a gloomy picture since there show a sharp rise in accidents. Between 2004 and 2005 the number of reported construction related accidents, excluding Motor vehicle related accidents, were 224 with the figure drastically increasing to 578 accidents in 2007/2008. Naturally, such drastic increases did not go unnoticed and helped fuel media frenzy about the status quo of safety in the construction industry which is reported to employ about 6% (Trade and Industry Policy Strategies 2009) of the country's total workforce. Smallwood (2004) had also expressed similar serious concerns about the number of accidents experienced on South African construction sites that resulted in death or injury.

Moreover what compounds the situation further is the revelation by the Construction Industry Development Board (2009) reports that there is poor management commitment to H&S, non-compliance with Health and Safety legislation and the Construction Regulations, as well as inadequate site supervision and poor provision of PPE by employers.

Research conducted in the United States found that Hispanic immigrants had a higher accident rate when compared to other ethnic groups (Brunette 2004). Furthermore, Lingard and Rowlinson (1994) being cited by Debrah and Ofori (2001) found that foreign immigrants are more susceptible to accidents. However the available accident statistics from South Africa do not shed light on the nationality of the accident victims. That is why there is a need to investigate whether the local construction industry resembles accidents trends in the international community.

1.1.1 Causes of Accidents among immigrant workers

O'Connor *et al* (2005) attribute the high injury and fatality rate among immigrants (Latinos) to the lack of adequate training and language barriers, whilst Brown (n.d.) attributes the high levels of injuries and deaths amongst immigrants in their places of work to the following:

- Either the immigrants lack of training and limited knowledge regarding health and safety in the workplace. Hence the increased frequency of fatalities and injuries in the construction industry which is reputed for providing employment for most of these immigrants.
- Or the immigrant workers failure to wear protective clothing on construction sites and thus increasing their exposure to injuries and accidents.

Debrah and Ofori (2001) highlight the fact that foreign workers are more likely to face communication challenges due to language barriers. They further assert that immigrant

workers are not accustomed to being precautionary or alert to dangers and seldom use the necessary equipment and personal protective equipment. Their argument is that if these workers are adequately trained, then they are less likely to be at risk. This is due to the fact that training plays an essential part in shifting the Health and Safety culture (Cooper, 1995). As previously highlighted, O'Connor *et al* (2005) also attribute the high injury and fatality rate among immigrants (Latinos) to the lack of adequate training. In 1998, Cooper found that less training led to higher accident occurrence rates. Moreover, the UK Training Agency (1989) also found that Construction companies that conducted the least amount of health and safety training experienced the highest accident rates hence they concluded that an inverse relationship exists between health and safety training and accident incidents. The emerging question could be: is the increase in construction-related accidents due to increased employment of untrained immigrants in the industry?

1.1.2 Implications of Accidents to the Construction Industry

The European Agency for Safety and Health at Work (2002) highlights that accidents at work and the accompanying occupational injuries are a considerable economic burden to employers, employees and to society as a whole. The economic burden is put into context by Pillay and Haupt (2008) who maintain that construction accidents account for 4% of the global Gross Domestic Product (GDP). The authors further postulate that South Africa obviously contributes to this tragic scenario since occupational accidents and diseases account for approximately 3.5% of its GDP (about R30 billion).

The growing number of immigrants in the construction industry warrants research into their Health and Safety awareness, because the consequences of accidents are severe both socially and economically. With research conducted elsewhere in the world indicating that immigrant workers are more prone to accidents (Lingard and Rowlison 1994 cited in Debrah and Ofori 2001)) and the problem being exacerbated by their poor safety awareness and not being accustomed to taking precautions, their training is of utter importance. Earlier studies indicate

that the Health and Safety training received by immigrants is not adequate (O'Connor *et al*, 2005) and the same sentiments are echoed by safety officers surveyed by Akindele (2008).

1.2 Problem statement

Accidents at work and the accompanying occupational injuries are a considerable economic burden to employers, employees and to society as whole (European Agency for Safety and Health at Work, 2002). Anecdotal evidence from South Africa shows that there is a huge presence of immigrants on construction sites and that the number of the Zimbabwean immigrant contingent in particular is on the increase. Likewise the CIDB (2009) reports that construction accidents are on the increase in South Africa. Moreover, research from other parts of the world (Singapore, America & Australia) suggests that foreign labourers working on construction sites are more prone to accidents (Debrah and Ofori, 2001; Loosemore & Lee, 2002; O'Connor *et al*, 2005). Recent studies in America have attributed increased accidents on construction sites to inadequate Health and Safety training afforded to immigrants (O'Connor *et al*. 2005; Akindele *et al*. 2008). However, to date, no research has been carried out to investigate the quality of safety training provided to immigrants in the South African construction industry. If the health and safety of this contingent is left unchecked it could result in loss of valuable labour to augment the dwindling and ageing workforce in the South African Construction Industry (SACI)(Eppenberger 2008). Furthermore increased accident reports will further damage the image of the SACI and make it more difficult to attract young people to replace the ageing workforce in the industry (International Labour Organization 2001). Thus the adequacy of safety training received by immigrants on construction sites deserves to be researched further.

1.3 Research questions

The questions this research seeks to answer include the following:

i. What is the demographic profile of immigrant construction workers in the Johannesburg area?

ii. What proportion of the annual construction-related accident statistics (2000-2008) in the Johannesburg area is made up of immigrant workers?

iii. What type of safety training do immigrants receive?

iv. What impact do levels of English Proficiency have on the amount of training received?

v. What impact does the quality of training received have on safety performance onsite?

1.4 Significance of the study

The study, through scientific research, sought to provide factual information about the quality and impact of Health and Safety training provided to immigrant construction workers on South Africa construction sites. The study provides awareness for the need for improved management of safety training programmes targeted at immigrants and thereby contributes to the reduction of the occurrence of construction related accidents.

1.5 Objectives of the study

i. To determine the proportion of existing accident statistics made up of immigrants
ii. To characterize the demography of immigrant construction workers
iii. To measure the adequacy of Health and Safety training provided to immigrants
iv. To determine the impact of quality of Health and Safety training on the occurrence or reduction of accidents on site.

1.6 Hypothesis

Based on the above-mentioned research questions, the following hypotheses were proposed;

Hypothesis 1:

The majority of the immigrant population on construction sites is made-up of young, male Zimbabweans.

Hypothesis 2:

Immigrant construction workers constitute a significant portion of the annual accident statistics.

Hypothesis 3:

Immigrant construction workers are exposed to more Health and Safety training programs besides the traditional site induction training.

Hypothesis 4:

The perceived levels of English proficiency currently possessed by immigrant construction workers determine the amount of safety training received.

Hypothesis 5:

Immigrant construction workers who have received the least amount of safety training are likely to have the worst safety record.

1.7 Scope and limitations of the study

The study focused on the immigrant workforce employed on construction sites run by large (CIDB Grade 7-9) construction companies, since research has established that these groups are likely to have some sort of formal safety training programmes in place. Furthermore, research has established that these contractors subcontract some trades and labour to a number of small to medium sized subcontractors (Debrah & Ofori 2001). Thus construction sites run by these big companies are likely to have a mixture of companies differing in size employed as subcontractors. According to Rogerson (1999), subcontractors are involved in the employment of foreign migrants. Furthermore the research was limited to companies

located within the Johannesburg vicinity since research by Rogerson (1999) found that 60% of incoming migrants first settle in the area and it is in this area that penetration of immigrants into the construction sector has proceeded the furthest.

Recent xenophobia attacks experienced by foreigners in South Africa might have resulted in some of the foreigners not wanting to participate in the survey or providing answers that do not reflect the dynamics on the grounds. Furthermore employers were approached as the initial contact points and thus played a gate keeping role which might have resulted in a skewed sample.

1.8 Assumptions

- It is assumed that the demographic profile of construction workers in South Africa is homogenous, that is, the population is closely related.
- The research also assumed that respondents to the survey had enough comprehension skills to clearly understand and contribute to the survey.

1.9 Research methodology

This study used a combination of both qualitative and quantitative methods to obtain primary data. The main reason behind the choice is two-fold in that firstly the research intended to describe the immigrant population in construction and this falls under Creswell's (1994) as cited by Leedy (1997) definition of a qualitative study. Secondly the research intended to analyse and summarise existing injury statistics from the records of the Federated Employers' Mutual Assurance Company (FEM), thus the quantitative method is suitable for achieving this. The following were covered by the method:

- A comprehensive literature review of relevant topics, with special focus on the Health and Safety of immigrants focusing mainly on the adequacy of training received.
- Procuring available and applicable statistical data relating to construction injuries/deaths;
- Semi-structured questionnaires targeting immigrant construction workers randomly selected from the list of immigrant workers provided by the participating companies, to assess their personal perception of safety training on site;
- Statistical analysis of all collected data with the aim of identifying and establishing any trends;
- A review of the research findings and their interpretation in terms of the literature reviewed.

1.10 Structure of the Study

The research report is structured as follows:

Chapter 1 provides background information on the state of occupational health and status of immigrant workers and its implication to the construction industry. The chapter further provides a synopsis of the research problem and the objectives of the research.

Chapter 2 provides a literature review mainly focusing on the topic of Health and Safety of immigrants and the adequacy of training received. The challenges faced in safety training of immigrants are reviewed. The relationship between language and amount of training received is reviewed as well as whether there is a link between nationality of immigrants and amount of training received.

Chapter 3 outlines the research Methodology and justifies the researcher's selected methodological design, both qualitative and quantitative. The merits and suitability of the mixed method as a tool for data collection on this study will also be discussed.

Chapter 4 details the research findings, provides possible interpretation of the data and further offers a comparison of the findings and literature review.

Chapter 5 discusses the results from the previous chapter in relation to the realisation of the research proposition.

Chapter 6 summarises the major points of the study and provide conclusions reached from the study. The chapter further provides recommendations of possible areas for further studies so as to improve the knowledge base.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

The purpose of this section is to review the relevant literature pertaining to the construction industry, immigrant workers, and issues relating to their Health and Safety. The training aspect of Health and Safety of immigrants, and the challenges faced are also reviewed. Furthermore, the relationship between language and the amount of training received will be reviewed as well as whether there is any link between nationality of immigrants and amount of training received. Moreover, the research looks into the background to injury causation among immigrant workers and winds up with a synopsis of the Health and Safety training of immigrants with regards to its adequacy.

2.2 The construction Industry

Ofori (1990: 23) defines the construction industry as "that sector of the economy which plans, designs, constructs, alters, maintains, repairs and eventually demolishes buildings of all kinds, civil engineering works, mechanical and electrical engineering structures and other similar works". The United Nations (2001) maintains a similar definition to the one above, although their definition is biased towards economic contribution thus they define construction as comprising "economic activity directed to the creation, renovation, repair or extension of fixed assets in the form of buildings, land improvements of an engineering nature, and other such engineering constructions as roads, bridges, dams and so forth" (United Nations, 2001). Altman and Mayer (2003) disagree, maintaining, to the contrary, that there is no standard way of defining the construction industry. Both authors are of the opinion that it is more appropriate to refer to the industry as "construction and building, where expenditure includes three categories that are:

- Construction, which comprises all infrastructure expenditure;

- Building which includes non-residential buildings such as shopping malls, offices; buildings, manufacturing plants, and
- Residential buildings." (Altman and Mayer,2003:7)

In spite of a general lack of consensus on the definition of construction industry, one can see key elements emanating from both seemingly opposing propositions, which can be summarised as follows:

- The industry is an all-encompassing and multifaceted sector,
- It has indirect links that affect and support activities in the financial, manufacturing, wholesale, retail, residential and services sectors (Myers, 2004).

Furthermore the role and importance of the construction industry to national economy is widely accepted and Ofori (2006:1) instructively summarises this by stating that:

"The construction industry is an important sector of the economy which makes significant contribution to gross domestic product (GDP), capital formation and employment (Hillebrandt, 2000); and has backward and forward linkage effects with several other sectors." (Ofori, 2006:1)

Globally the industry's value-added contribution to the individual economies measured in terms of the GDP is significant in both developed and developing countries (Wibowo 2009). In terms of numbers the GDP contributions are estimated to be between 7-10% for developed countries and 3-6% in developing countries respectively (Wibowo 2009). In terms of employment according to the International Labour Organisation 2001 Report, the industry employed an excess of 29 Million people in developed countries and a further 82.4 Million in developing countries. Table 2-1 below summarises these statistics:

Table 2-1 : Global employment situation in construction sector 1998

Number of Countries	Region	Employment (000s)		
		High Income Countries	Low Income Countries	Total
9	Africa		1,867	
23	America	9,275	10,917	
22	Asia	7,258	60,727	
2	Oceania	685	-	
34	Europe	11,820	8,978	
90		29,038	82,439	111,477
% of Total		26	74	

Source: International Labour Office Geneva Report 2001

The huge employment numbers shown in the Table 2-1 above draw attention to the importance of labour to the economies of various countries. Laycock (1999) observed similar trends and concluded that labour is fundamental because it provides a means to production. Deacon (2003) summaries the importance of construction workers to the industry by describing them as 'the core' of the industry *inter alia* and thus makes a strong case for their fair treatment.

2.3 The profile of the workforce in the construction industry

The Construction industry is known to be tolerant to skilled, semi-skilled and unskilled labour use and thus offers a channel of entry into the workforce for anyone (Ive & Gruneberger 2000). Moreover, Rogerson (1999) maintains that basic construction skills are easy to learn on the job and thus he sees the construction industry as an entry point into the country's working class. Given the diversity in the industry's workforce in terms of skills level and work experience, it is important to analyse the industry's workforce.

In the United States of America (USA), the construction workforce is male dominated and is composed of immigrants and natives, with the immigrants making up 24% of the population whilst the natives make up the balance of 76% (Nissen *et al*, 2008 citing the 2006 US Census Bureau). Dong and Platner (2004) observed that the majority of the natives occupy the high skilled jobs whilst the immigrants occupy the lower-skill occupations. Moreover, Dong and Platner (2004) maintain that Hispanics make up the majority of the immigrant workforce and most of them are typically young, lack English-speaking abilities and have attained less than nine years of schooling (Dong et al. 2009).

Similarly, McKay *et al* (2006), observe that the United Kingdom (UK) construction industry resembles the one in USA in a number of ways by being male dominated, labour intensive and enjoying the significant presence of a number of immigrants. However, as explained by McKay *et al* (2006) it differs from the USA in that the largest groups of immigrant workers in the industry are from Lithuania and Poland. Furthermore, the same authors observe that the industry is dominated by workers in their mid-20's and early 30's, and that for most immigrants; English is not their first language.

The International Labour Organisation (2001) observes that the Malaysian construction industry workforce is predominantly male and mainly made up of immigrants from the neighbouring Indonesia. Ofori (1994) observed similar trends in the Singaporean workforce, with the exception being that the main groups of immigrants in Singapore are the Malaysians and Thai's. It is worthwhile to note that Immigrant construction workers are a prominent feature in all the construction industries analysed above and the South African construction follows similar trends. With Rogerson (1999) establising that the South African construction industry attracted male,young, single and illiterate immigrant workers mostly from Zimbabwe and Mozambique.

2.4 Immigrant Workers

There is no straight forward definition of an immigrant worker (McKay, Craw & Chopra 2006).A immigrant worker can be defined as: *"*an individual who arrives in a host country within the last five years, either with a job to go to or intending to find a job." (Bell and Jarman (2004) as cited in McKay *et al* (2006:15). On the other hand, the International Labour Organisation (2009) adopts a definition that encompasses the diversity and dynamics of this group and thus simply defines migrant workers as workers employed in countries other than their own.

Sibanda (2008); Kainth (2009); Brown (n.d), all concur in attributing immigration to 'push' and 'pull' factors. They explained the 'push factors', as the driving force that leads to a person emigrating from his or her own country, for example unemployment and poor living conditions. Whilst the pull factors are "those attraction forces that are associated with the host country for example higher wage rates and better living standards"(Brown 2010)

Per se, immigration has both positive and negative consequences on the economy of the receiving country (Sibanda, 2008). According to Brown (n.d) one of the consequences of immigration on the receiving country is a general increase in population which will result in an increased demand on basic services, which will indirectly impact the construction industry. According to Kassim (1996) cited in Abdul-Aziz (2001), shown in the table below, a majority of foreign workers in Asian countries are employed in the construction industry.

Table 2-2 : Number of regularized foreign workers by nationality (July 1992- December 1995)

Country	Construction	Plantation	Domestic help	Manufacturing	Services	Others	Total	Percentage
Indonesia	92805	101521	62347	16188	2063	1125	276049	64.95%
Bangladesh	26484	16416	56	40996	4743	416	89111	20.97%
Philippines	1160	49	26876	1298	191	554	30128	7.09%
Thailand	6342	10845	3818	166	1126	519	22816	5.37%
Pakistan	1121	183	2	672	67	3	2048	0.48%
Others	2218	460	83	660	867	574	4862	1.14%
Total	130130	129474	93182	59980	9057	3191	425014	
Percentage	30.6%	30.5%	21.9%	14.1%	2.1%	0.8%		100%

Source: Kassim (1996) as quoted in Abdul-Aziz, 2001

2.4.1 *Employment of Immigrant Workforce in the Construction Industry*

According to Rogerson (1999), the construction industry is characterised by a segmented labour market, casual forms of employment and the employment of labour through labour brokers which is commonly known as labour subcontracting. Supplementary to this, the industry is marked by an erratic demand in labour (Keepile, Mthombeni & Tsiri 2007), geographical mobility of projects, low barriers to entry and thus presents opportunities for employment of immigrant workers. The market forces also add to the dynamics of employment in this sector, and forces firms to employ mostly on a temporary basis thus resulting in suppression of worker rights which leads to their exploitation (ILO, 2001)

The construction industry's notoriety for poor safety standards and the portrayal of construction work as dirty, difficult and dangerous has resulted in the industry experiencing labour shortages and its poor image (ILO, 2001). Moreover, the global industry's shift to labour subcontracting and the terms of employment it provides (manual and menial labour), have resulted in it being shunned by the natives (ILO, 2001 and Abudal-Aziz, 2001).

Interestingly, research done by Rogerson (1999) in South Africa revealed that employers in the country's construction industry shunned natives and preferred immigrant workers because

they considered them to be more “hard working”, honest and disciplined than the natives. This is contrary to Abudal-Aziz (2001) and the ILO’s (2001) findings, in which their research revealed that in other countries, the natives shunned employment in construction industry because they consider it dirty, low in prestige and income. Another interesting observation is that in some cases, the failure by the domestic labour market to meet a rising demand of a thriving industry forced the employers to resort to employing foreign workers to meet the labour demands and shortage (Abudal-Aziz, 2001; Loosemore and Lee, 2001). Regardless of the reason behind the engagement of foreign workers, their employment presents some consequences.

Nissen *et al* (2008) maintain that the growing number of immigrant workers on construction sites has implications for safety conditions in the industry as a whole. Akindele *et al* (2008) in their study echoed similar thoughts in their findings. Language barriers and cultural diversity present challenges for communication on site and have been identified as having an impact on Health and Safety performance.

2.5 Health and Safety

According to the Construction Industry Development Board (CIDB, 2009) the Health and Safety of workers enhances performance relative to cost, the environment, productivity, quality, and schedule. Furthermore, construction workers represent the ‘human capital’ of the industry (Deacon 2003) and thus their safety and well-being is of paramount importance. Besides this, the business case of Health and Safety is further enhanced by the consequences of construction accidents which are considerable to the employers, employees and consequently the economy at large (The European Agency for Safety and Health at Work, 2002).

2.5.1 *Health and Safety of Immigrants in the Construction workplace*

Globally a lot has been written about the Health and Safety of immigrant workers in the construction industry. O'Connor *et al* (2005) conducted a study similar to the current survey on fifty young Latino construction workers (study carried out in U.S.A). The survey concluded that these workers (young Latinos) had received little Health and Safety training (*ibid*), and generally laboured under unsafe conditions, with the most affected being those workers who had little comprehension of the English language. The sample size for this survey is too small for the researchers to draw decisive conclusions about safety training received by immigrants in general and thus the authors concede that if a similar study is carried out on a larger sample the results of the survey might be different. However, the study does offer some significant insight into issues pertaining to the Health and Safety training of the immigrant workers on construction sites. Furthermore, Dooley (2002) found that even though employment of Hispanic immigrant workers in the U.S.A. was on the increase (6%) in the year 2000 as compared to the preceding year, fatal injuries among Hispanic construction workers were also on the rise. The research established that the number of construction related injuries among the Hispanics had gone up by 24% from the previous year.

On the South African front, a lot has been written about construction Health and Safety (CIDB, 2009) but very little has been written about the growing number of foreign construction workers who contribute to the growth of the industry and the economy at large. Moreover the number of foreigners in the country and especially those in the construction industry is not known since most of them are in the country illegally and are employed in the informal sector of the construction industry (Ellis 2001; Akindele *et al*, 2008). Furthermore, according to Akindele *et al* (2008), what compounds the situation more is the fact that the industry as a whole does not keep a database of workers in its employment.

A previous study done by Akindele *et al* (2008) which mentioned immigrant construction workers in South Africa focused mainly on the link between accidents occurrence on site and

language biases. Most of the participants in the study were natives; with only a minority of the participants, about 19%, making up the foreign workers contingent. This minor representation of the immigrant construction workers in the study is contrary to the same authors' research findings that had established that foreign workers made up close to half (40%) of the population on site. By virtue of this minor representation of the foreign workers, the study did not focus on immigrant workers. Moreover, the study did not examine the adequacy of the safety training received by immigrant workers. Furthermore, the generalisation of the study is limited in that those surveyed were primarily illiterate construction workers, with a majority of the participants claiming to be citizens of South Africa. It is worthwhile to emphasise that during the time the study under reference was conducted, xenophobia attacks were rampant in the country. Thus immigrant participation in the survey and accuracy of the research findings might have been compromised due to the immigrants' fear of victimisation.

2.5.2 *Theories of Accident Causation and Human Error*

Accident causation and human error theories were conceived out of an endeavour to try and explain why accidents occurred and under the premise that "understanding the causes of accidents may lead to an effective means of their prevention…." (Abdelhamid & Everett 2000, p. 52).The same models can be used to explain why accidents occur to immigrant construction workers as well and Table 2-3 below summarizes the theories that are applicable to accidents on construction sites.

Table 2-3 : Accident Causation Theory

Name of Model/Theory	What the model says	The reason why accidents occur
Heinrich's axioms	People are the fundamental reason behind accidents and management having the ability-is reponsible for the prevention of accidents	A sequence of factors
The Accident-Proneness theory	"Injuries happen to people who have a genetic predisposition to being injured" or " accident proneness is associated with the propensity of individuals to take risks or to take chances"	Inherent personal traits
Goals-freedom-alertness theory	workers will work safely if they have clearly defined goals and they are given the freedom to pursue those goals	low quality (unsafe) behavior resulting from an unrewarding psychological climate
The adjustment stress theory	negative forces or stresses in the work environment can lead to injuries	All types of stresses,e.g poor work relationships;death, divorce ;harsh deadlines; poor coordination etc
The distractions theory	accidents occur when workers are distracted when they are performing their work tasks	Physical hazards and mental diversions

Source: Hinze 2006

2.5.3 *Causes of Accidents among Construction Immigrants Workers*

Dooley (2002) observed that many Hispanic workers on construction sites who had suffered fatal accidents, could not speak English well or at all, suggesting that they had failed to comprehend any safety and health related instructions given to them, if any given at all, and possibly any other safety information conveyed to them. Thus he attributed the high levels of accidents amongst Hispanics to language barrier.

Bust *et al* (2008) offer an alternative opinion and attribute the high accident rates amongst immigrants to cultural differences. They maintain that people from different nationalities have different cultures and interpret and understand the actions of others based on their own present cultural knowledge and conventions. They further point out that cultural differences result in miscommunication which can result in Health and Safety problems. On the other hand, O'Connor *et al* (2005) maintain a similar line of thinking to Bust *et al* (2008) and attributes the high injury and fatality rate among immigrants (Latinos) to language barriers and the lack of adequate training. The argument brought about by Bust *et al* (2008) might not be that strong in the South Africa context since most of the immigrant construction workers on sites are from neighbouring states of Malawi, Mozambique and Zimbabwe as established by Akindele *et al* (2008), countries which share the same Bantu culture and hence their cultural differences might not be significant.

Brown (n.d) attributes the high levels of injuries and deaths amongst immigrants in their places of work to the following:

- Either the immigrants lack of training and limited knowledge regarding health and safety in the workplace. Hence the increased frequency of fatalities and injuries in the construction industry which is reputed for providing employment for most of these immigrants.

- Or the immigrant workers' failure to wear protective clothing on construction sites and thus increasing their exposure to injuries and accidents.

Then again, Lingard and Rowling (1994), and Debrah and Ofori (2001) all concur in attributing the high accident occurrence amongst immigrants in the construction industry to the practice of labour subcontracting. Dainty *et al*. (2007) maintain similar views and elaborates this by explaining how labour subcontractors generally do not take the Health and Safety of their employees seriously. On the contrary in Wells (2011), the author argues that although industry training programs are available, these only cater for main contractors and exclude subcontractors and thus immigrants do not receive training as a result.

2.6 Health and Safety Training

Various authors (O'Connor *et al*., 2005; Brown, 2010; Debrah & Ofori, 2001) all concur in attributing the high accident rates among immigrants to lack of training and language barriers. This questions the importance of training and the important content it should cover. Training, in the most simplistic definition, is an activity that changes people's behaviour (The Sage Dictionary). The significance and value of training has long been recognised and as early as the 5th Century BC, Confucius is said to have realised the importance and value of training hence he coined the famous and often repeated saying, "Give a person a fish and you feed him for a day. Teach a person to fish and you feed him for a lifetime." Debrah and Ofori (2001) noted that immigrant workers are not accustomed to taking precautions and have poor safety awareness, thus seldom use the necessary equipment and appropriate personal protective equipment. To put this observation in the perspective of Confucius' wisdom, it is not enough to just give immigrants jobs in construction, since they will probably only do the job for a while and probably get hurt, but if they are trained to do it properly, they change their culture and adopt more safer ways of doing the job and become safety conscious (Lew and Carpenter, 1997).

However, although most Researchers agree that training will not always lead to behaviour change, it nevertheless triggers the process of change since it provides the knowledge by which change can be made (Smallwood, 1997; Lew and Carpenter, 1997; Jaselskis *et al*., 1997; Eppenberger, 2008).

2.6.1 *The Curriculum, Content and Adequacy of Health &Safety Training*

The following sections probe into the types of training programs, and content ideally needed in any Health and Safety training pack. There further look into what is considered to be adequate training and the evaluation of Health and Safety training.

2.6.2 *Types of Health and Safety Training Programmes*

Tackett *et al* (2006) classified training received by construction workers to fall into two types which they identified as formal and informal training. Further, they defined "informal training as undocumented training received outside of a classroom setting" (Tackett *et al* 2006:6), whilst they identified formal training as the opposite of this, that is it is structured, documented and conducted in a classroom environment. On the other hand, Hughes and Ferret (2007) only identify training to be of a formal nature and fail to recognise the informal Health and Safety training, which was identified by the focus groups in Tackett *et al.* (2006) study as crucial for on job safety.

The following table summarises the types of Health and Safety training that were identified by both Hughes and Ferret (2005), and Tackett *et al* (2006).

Table 2-4: Types of Health and Safety Training Programmes/Courses

	Tackett et al (2006:6)	Hughes and Ferret (2005:64)
1	Orientation	Induction
2	Toolbox talks	Job-specifictraining eg 'toolbox training'
3	OSHA 10-hour training	Supervisory and management training
4	CPR/First Aid	Specialist trainining eg First Aid,fire prevention, Scaffold inspection
5	Automatic electronic defibrillator	
6	Hazmat and Waste removal	
7	Fall protection	
8	Scaffold safety	
9	Lockout/tagout	
10	Use of personal protective equipment	
11	Welding safety	
12	Equipment operation	
13	Trench/excavation safety	
14	Confined space entry	

Though the list of training courses identified by Tackett *et al* (2006) might seem longer when compared to the one identified by Hughes and Ferret (2007), in actual fact they are similar, the difference being that Hughes and Ferret opted to group some of the training courses into one or two groups whereas Tackett *et al* just listed the courses without attempting to group them together.

2.6.3 *Subject matter of site Health and Safety training*

Heath (1981) asserts that the decision of what to include in Health and Safety Training is largely dictated by legislation, and the emphasis on the subject matter to be covered, in most cases, is at the discretion of the implementing organisation. Hughes and Ferret (2007) strongly emphasise that new employees should be provided with at least induction training.

From the topics they identified as the basics of induction training, it can be deduced that the main thrust of induction training is Health and Safety training, since most of the training content centres around this topic. The following are identified as topics to be covered by the induction training:

- The Health and Safety policy of the organisation including a summary of the organisation and including employee consultation
- A brief summary of Health and Safety Management system including the name of the employee's direct supervisor and safety representative, and source of H & S information
- The employee responsibility for Health and Safety including any general Health and Safety rules
- The accident reporting procedure of the organisation, the location of the accident book and the location of the first aid kit
- The fire and other emergency procedure including the location of the assembly point
- A summary of any relevant risk assessments and safe systems of work; and
- The location of welfare, canteen facilities and rest rooms (Hughes and Ferret 2007:63).

The topics identified above are in agreement with the principal content that Heath (1981) asserted as being essential for worker training and education in health and job safety, which he listed as follows:

- The requirements of legislation and ensuing regulations;
- Literature from the federal regulatory body;
- The requirements of the job based on job training analysis and safety analysis

- Injury and illness experience for operations identical or similar to those performed by the worker;
- Standing operating procedures and other rules and regulations that are unique to the establishment where they will be working (Heath, 1981:389).

2.6.4 *What is considered to be adequate safety training?*

Davies and Tomasin (1996) recommend that the basic Health and Safety training should last about two hours at least. However, the authors failed to provide statistical evidence to substantiate and prove their assertion. Moreover, research results from a survey carried out by O'Connor *et al* (2008) indicate that on average the immigrant Latino construction worker receives safety training that is an hour long and the researchers further highlighted that this was inadequate, though they failed to provide a benchmark on which to measure their assertion against. Therefore with respect to training duration it can be concluded that the benchmark upon which the adequacy of Health and Safety training received by immigrants is assessed, depends on the author/researcher.

O'Connor *et al* (2008) maintain that data content of training programs can be used as another basis upon which the adequacy of Health and Safety programs can be assessed. The authors (ibid) argue that if content relating to "what to do in a hazardous job situation that could result in injury" is covered in the training, then it can be concluded that the program meets minimum levels for it to be classified as adequate.

2.6.5 *Health and Safety Training Practices*

"…those implementing formal training (n = 2) or a combination of formal and on-the-job training (n = 34), most (75%) used both in-house and external trainers to conduct their

training. The majority of training was being provided during normal working hours (97%) with some during nonworking hours (44%) and some in the off-season (47%)."
(Goldenhar *et al*, 2001:245).

Indeed, the prevailing practices are that Health and Safety training programs are of a formal nature or a combination of formal and on the job training (Tackett *et al*: 2006; Hinze: 2003 and Goldenhar *et al*: 2001). Research has also established that the most popular channels of imparting Health and Safety training on construction sites are:

- Lectures;
- Discussions and
- Demonstrations (Goldenhar *et al*: 2001)

With regards to the language a study of the Health and Safety issues pertaining to Hispanics in the US construction industry by Brunette (2004) established that the prevailing practice in training was to offer Health and Safety training to Hispanics in English. The author (ibid) concluded that this was inappropriate since English is not their first language hence levels of understanding are lower as a consequence. In addition, results from Australia indicate that the prevailing practice is also to provide training in English (Loosemore, 2005) which is also the case on South African industries as research by Akindele *et al* (2007) also established that the majority of the respondents had received their training in English.

2.7 Legislation provisions for Health and Safety Training

From a legislation point of view, the Occupational Health and Safety Act underscores the importance of and need for training. However, according to Davies and Tomasin (1996) all that Occupational Health and Safety Act (OSH Act) provides for in terms of training of employees is simply that the employer provides safety instruction and training as he deems necessary to ensure the Health and Safety of his employees at work. The act states that

"All employers are responsible for providing such information, instructions ,training and supervision as may be necessary to ensure, as far as is reasonably practicable, the Health and Safety at work of his employees"

(OSH Act 85 of 1993)

Thus, although OSH Act does recognise the importance of Health and Safety training; it however leaves employees at the employer's mercy due to its ambiguity, and its failure to stipulate the minimum training requirements to be provided to all employees. The employers thus have room to manipulate the whole training processes to their advantage, albeit by cutting on training costs and thus endangering the lives of employees.

2.8 Research Gap

There have been a number of valuable studies that focussed on citizenship, Health and Safety practices (O'Connor *et al*, 2005; Debrah and Ofori, 2001 & Loosemore & Lee, 2002) which present evidence on several issues that impact on employment of immigrants in the construction industry. Moreover, there has been some research attempts particularly aimed at assessing the adequacy of safety training afforded to young immigrants in the USA construction industry (O'Connor *et al*, 2005). However, no similar attempts have been made on the South African front where research has shown that the construction industry is dominated by immigrants (Rogerson, 1999) and it has been reported that the influx of illegal immigrants in the country has peaked since 2000. Socio-economic circumstances between America and South Africa are worlds apart thus research findings from the study conducted in the former might not be applicable in the South African context, hence the need to investigate the matter locally.

The focus of this research therefore is to ascertain the adequacy of training provided to immigrants on construction sites in South Africa.

2.9 Conclusion of Literature Review

The discussion above indicates that little is known about the immigrant workers in the South African construction industry. It further highlights the fact that elsewhere in the world, construction accidents among immigrants have a direct relationship with the number of immigrants in the industry, and that foreigners are more susceptible to accidents than the natives. In addition the impact of accidents has been discussed both from an economic view and as well as a social point of view, with the conclusion being that accident effects are undesirable.

The literature surveyed also shows that little is known about the adequacy of the Health and Safety training received by immigrant construction workers. The main causes of accidents among immigrants are identified by the various authors as:

- Lack of adequate training and language barriers.
- Limited knowledge regarding safety and health in the work place.
- Failure to wear protective clothing on construction sites and thus increasing their exposure to injuries and accidents.

Therefore, all the above causes of accidents can be linked to inadequate Health and Safety training, since it is logical to assume that if the workers were better informed they would have been able to identify any potential hazards and thus avoid them. The main reason behind inadequate safety training among immigrants is identified as language barrier. Hence it is the proposition of this research that immigrant construction workers are less likely to receive adequate safety training.

The lack of information about immigrants in the construction industry, coupled with the huge costs that are associated with construction accidents and their vulnerability to accidents calls for more research into Health and Safety of immigrants.

CHAPTER 3 RESEARCH METHODOLOGY

3.1 Introduction

The primary focus of the research was to examine the quality of Health and Safety training received by immigrants on Johannesburg construction sites and to assess its adequacy in equipping them to safely carry out their work duties. In order to ascertain the adequacy of the Health and Safety training received, a descriptive survey of immigrant workers on construction sites was carried out. Details relating to the procedures and methods employed in the descriptive survey, together with their pros and cons, are outlined in the following paragraphs:

3.2 Research Design

Kweit & Kweit (1981) cited in Leedy (1997) define research design as "the strategy, the plan, and the structure of conducting a research project." Cooper and Schindler (2005) simply define research design as the blueprint for fulfilling objectives and answering research questions. The research questions raised in the study dictated the employment of both primary and secondary data (document study) survey techniques in the effective data gathering procedure.

The survey technique was chosen as it determines characteristics, opinions, attitudes and behaviour, as they currently exist in a population. Furthermore the survey technique tends to be both time and cost effective. The primary data was collected through questionnaires.

However, the chosen methodology, surveys, often achieves low response levels and is often enveloped with problems of bias as its short comings. The risks are that the questions asked in the tools may be irrelevant, confuse respondents and provide meaningless data, and that the

data do not allow the researcher to answer cause and effect questions about related variables. A section on the treatment of biases in one of the following paragraphs addresses how some of the concerns raised herein were addressed.

3.3 Targeted Population

The targeted population for this research was the immigrant construction workers randomly selected from the list of immigrant workers provided by the companies that had showed their interest in participating in this survey. The basis for focusing on these individuals is the assumption that they are qualified and competent to comment on the adequacy of Health and Safety provided as they are affected by the consequences of safety performance on site either directly or indirectly. It was also assumed that the targeted groups' views would be reflective of the construction industry in the province.

3.4 Location of population

The research was limited to companies and individuals located on construction sites within the Johannesburg vicinity. The choice was based on the findings of Rogerson (1999) in his research that established that 60% of incoming migrants (the target) first settle in the area and furthermore that it is in this area that penetration of immigrants into the construction sector had advanced the furthest. Moreover a pilot study by the Forced Migration Studies (2010) also established that Johannesburg was a popular destination among immigrant construction workers.

3.5 Selection of sample

According to Leedy (1997) the main aim of surveys is to describe a population based on information observed/ provided by a few. With this in mind, it was essential that the sample, obtained for the survey, be representative of the larger population. Time and resource constraints could not allow a census of the entire target population, thus justifying the use of a sample. Wood and Janet (2006) assert that the sample be randomly selected so that generalizations of the entire population can be fairly made. Thus from the list of immigrants provided by the participating construction sites, the researcher simply randomly selected the participants for the survey to avoid bias and save time and resources.

3.6 Sample size

To analyse the demographic profile of immigrant construction workers and determine the impact of training received by immigrants on Health and Safety performance on site, a sample size of six (6) construction companies was chosen for the survey. The sample was randomly selected from the list of contractors who had been in operation for the past five years and were between CIDB Grades Seven and Nine and based in Johannesburg. The choice was based on the assumption that these contractors were likely to have some form of Health and Safety training program in place as safety is a key requirement in the size of contracts they tendered for. Furthermore, research has also established that these contractors subcontract some trades and labour to a number of small to medium sized subcontractors (Debrah & Ofori 2001). Rogerson in his 1999 research had established that subcontractors are in the habit of employing foreign immigrants. Moreover, it had been reported that the number of immigrants had been on the rise in the past five years and thus it was likely that the targeted group (large sized construction companies) also had immigrant workers in its employment, mainly due to immigrant workers' reputation of being highly productive and disciplined (Rogerson 1999).

From the sample, 72 participants to whom the questionnaire was administered were randomly chosen by the researcher from the list of immigrants workers in the employment of the six respective companies that had shown willingness to participate in the survey. The assistance of the respective Health and Safety officers of the six participating companies was sought in identifying the survey participants and the researcher personally administered the questionnaire survey. This sample size was chosen on the assumption that at least 30 responses would be obtained which would be sufficient for this sample to be representative of the population. The reason being for n-sample size greater or equal to 30 the t-distribution would approximate to the normal distribution and thus generalizations about the sample could be taken to be approximately true for the entire population (Dowdy, Wearden & Chilko 2004).

3.7 Data Collection Tools

The researcher opted to employ questionnaire techniques for the fieldwork. The choice of this technique was dictated by the area under research and the variables being tested which required an evaluative survey. The desk research was used mainly to collect secondary data for the review of related literature and relevant injury statistics from the Federated Employer's Mutual Assurance Company (FEM) for the period 2000-2008.

3.7.1 Secondary Data

This data was obtained from work already published by others. The greater part of this type of data formed the basis for review of related literature and was also used in the data analysis section of this research report. The sources of this type of data included books, journals, the internet and the workmen's compensation insurance company (FEM).

The researcher sought both qualitative and quantitative data from the secondary data sources. The advantages were that: data was less costly to collect, and the data collected was fairly easy to analyse and interpret. The disadvantages included the background information in terms of the conditions under which the information was collected and limitations thereof were not always readily available, most of the published data would not zero-in on the exact research topic. The researcher could not divorce the bias of opinion and views that was inherent in the published data.

The relevant injury data collected from FEM was sourced through an email sent to the Johannesburg Branch Manager of the company requesting the specific information from the claim data they captured from the claims they had processed in the period in question that is 2000-2008. The information requested for in the email was the yearly injury statistics (from 2000-2008), the Nationality of the claimants (obtained from type of identity documentation/number provided), the type of injuries suffered, age of claimants and gender of claimants.

3.8 Primary Data

3.8.1 Questionnaires

"A questionnaire is a list of questions sent to a number of persons for them to answer, It secures standardized results that can be tabulated and treated statistically" (Bogdan & Biklen 1998, p. 66) Questions asked in the questionnaire were derived from the objectives of the study. The questions were made simple and straight forward. The questionnaire was composed of both open ended and closed questions. The advantage obtained by using open ended questions was that the researcher could obtain the respondents' explanations and commentaries on the questions asked. Such explanations broadened the information available to the research and greatly made the drawing of conclusions easier. The problem encountered with such type of questions was the difficulty in the process of collecting and analyzing the data. The closed questions collected the quantitative data and such data was easier and faster

to analyze although the researcher could not get the respondents reasoning behind their choice of answer. The typical questionnaire as sent out is shown in the Appendices.

Another advantage of using the questionnaires was that it collected data from a great number of sampling units quickly. Moreover they were fairly cheaper to administer, the results could be understood easily through graphs and the data was easy to interpret. Another advantage was that the researcher's own opinion did not influence the respondents. Questionnaires, unlike interviews, could not explain respondents' behaviour/attitude. The weakness of this method was that it was difficult to check whether questions were answered correctly and honestly.

3.9 Sources of Bias and its treatment

Bias in this research could not be entirely eliminated. In the first instance, the selection of the Johannesburg area for the study immediately assumed a representative sample of the whole population. Although the reasons supporting this were fairly valid, it was not possible to eliminate the human factor in for example the personality traits of the respondents in this area.

However, the researcher attempted to eliminate further biases to the study by the random selection of respondents after determining the sample sizes. Furthermore the questionnaire responses were made to be as direct as possible to minimize opinions.

3.10 Data Presentation and Analysis Procedures

Miles and Huberman (1994) cited in Shaw (2003) suggests the use of graphs and tabular charts as a good idea of presenting data. Following in this recommendation, all quantitative data gathered in this study was extracted from the questionnaires and presented in the form of Excel graphs and charts. The data was then manually analysed for any emerging statistical trends. All this took place after firstly physically checking all the returned questionnaires for completeness and correct completion, and lastly assigning numerical scores to respondents' answers. The qualitative data gathered from both the questionnaires and interviews on the other hand, was presented in a narrative format and it was also manually analysed. Lastly the construction injury data collected from the insurance company was also manually analysed.

3.11 Research Ethics

According to Leedy (1997) the use of human subjects in research automatically raises the question of ethical standards that need to be observed. Furthermore the University of Witwatersrand requires strict adherence to guidelines provided in their Code of Ethics for Research on Human subjects prior to authorising research on human participants. The following explains how the university ethical guidelines were observed in this research.

In order to meet the requirement of total disclosure of the aims and objectives of the research, and the possible demands on the human subject, a research query letter introducing the researcher and highlighting the research project and its purposes was sent out to the research participants. The letter was sent out as a cover letter to all the questionnaires distributed and given to all the interview participants prior to conducting the interviews. The research query letter also informed the participants that they could withdraw from the study at any point and that they had the option of not answering any of the questions posed.

Furthermore the letter also assured the participants of the strict treatment of all information provided in confidentiality. All the information collected from the interviews and

questionnaires was stored in password protected files to protect the participants' opinions and ensure their privacy. Furthermore companies selected for the study were allocated alphabetical letters to identify them, with all the human participants' allocated numbers to identify them and no mention of their names in any part of the research report.

During the interviews and prior to the recording of the interviews on a Dictaphone, permission and consent was sought from the participants. As soon as the researcher reached his office, all the recorded information was transferred from the Dictaphone on to his laptop and the files password protected. All these files were then deleted from the Dictaphone and the files kept on the laptop will be deleted after the conclusion of the research to protect the anonymity and privacy of participants.

CHAPTER 4 RESULTS AND ANALYSIS

4.1 Introduction

The purpose of this chapter is to present the results and analysis of the survey. Simple descriptive statistics and frequencies and cross-tabulation were used to analyze quantitative data. Statistical tests of significance were employed to test the proposed hypothesis. The chapter is divided into two sections in accordance with the survey instruments used, and concludes with a chapter summary.

4.2 Analysis of Questionnaire Survey

4.2.1 Response to Questionnaires

Of the 72 questionnaires left with Health and Safety officers for distribution and administering to immigrants on the six construction sites, 42 were returned two weeks after dropping them off at the construction sites. This represents a 58.3 % response rate on the census. However, two of the returned Questionnaires were not included in the analysis of the data because the respondents had identified themselves as South Africans thus making the respondents ineligible for the survey. The effective response rate was therefore 55.6%.

4.2.2 Demographic profile of respondents

Gender

The sample was made up of 40 respondents. Of the 40 respondents 2.5% were Female and the other 97.5% were male.

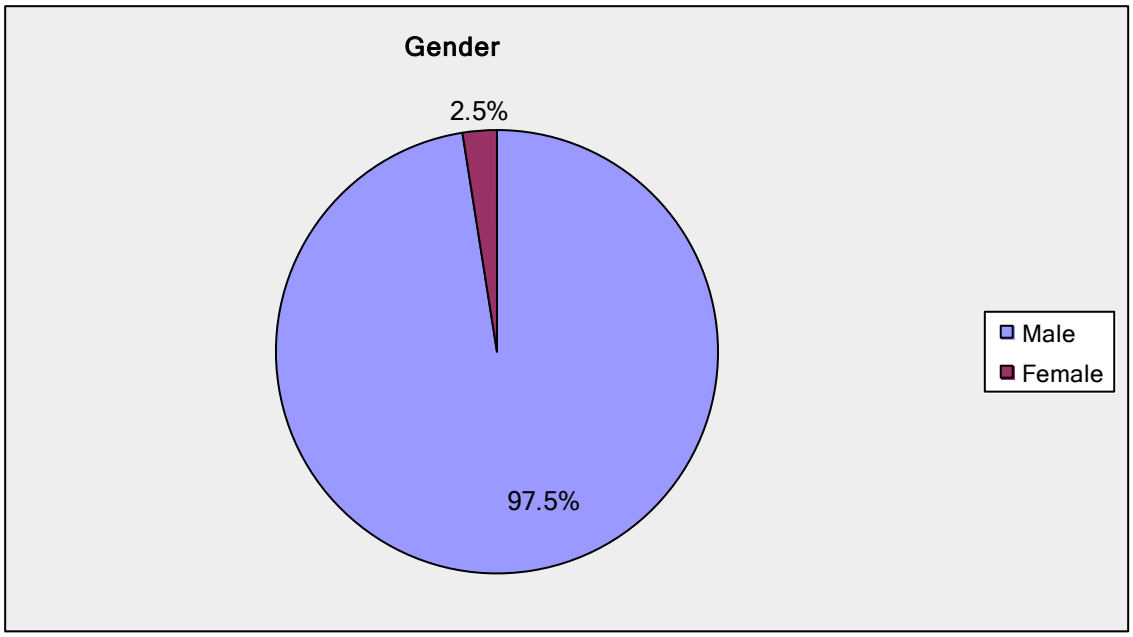


Figure 4-1 Gender Distribution

Age

The majority of the respondents (50%) were between the age group 21 – 29, followed by the 30- 39 age group (35%), and then the 40-49 (7.5%), then the 18-20 (5%), and the lowest proportion were in the age group 50–59 (2.5%). There were no respondents either above 60 years old or below the age of 17.

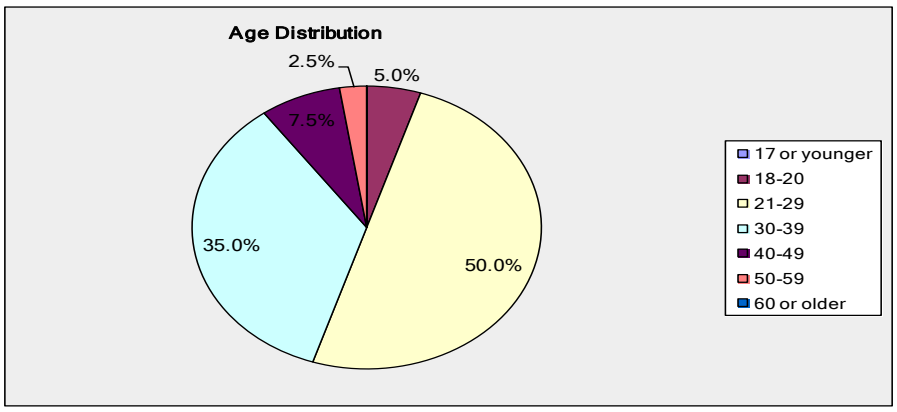


Figure 4-2 Combined Age Distribution of Respondents

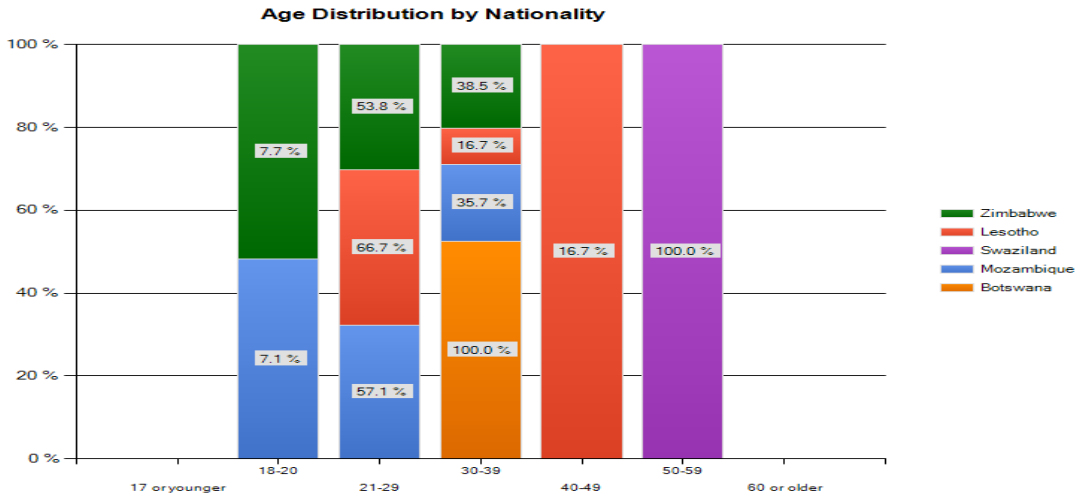


Figure 4-3 Age Distribution by Nationality

Figure 4-3 shows the age distribution by Nationality. All the Mozambican and Zimbabwean respondents were below the age of 40 and are considered young.

Nationality

The biggest group of respondents was the Mozambicans (35%), followed by Zimbabweans (32.5%), Basotho (15%), Cameroonians and Nigerians (5% apiece) and the least represented groups were the Batswana, Malawians and Swazis (2.5% each).

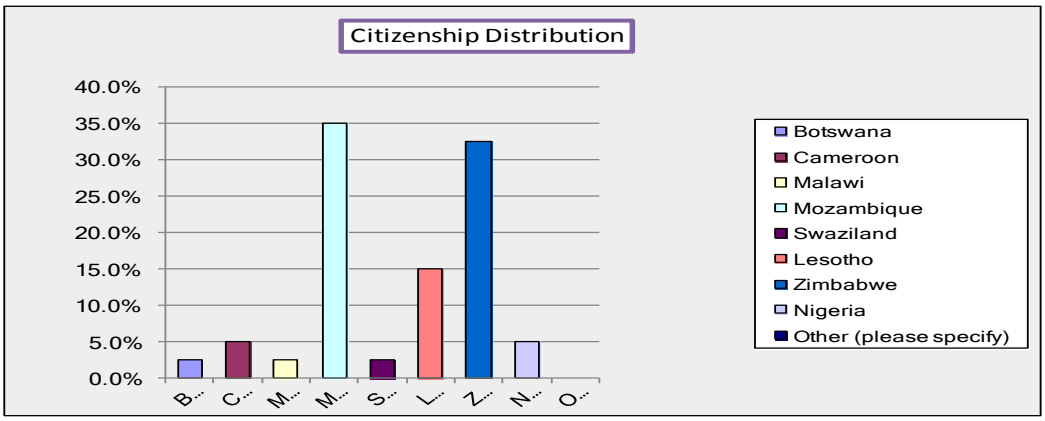


Figure 4-4 Distribution of Nationalities among Immigrants

4.2.3 Levels of Education

The highest proportion of respondents (37%) had attained 8-10 years of schooling, followed by 46% equally split between those who had attained up to seven (7) years of schooling and those who had attained University/Technical college level education, followed by those who had no formal education (11%) and lastly those who had attained Matric/A 'levels (6%).

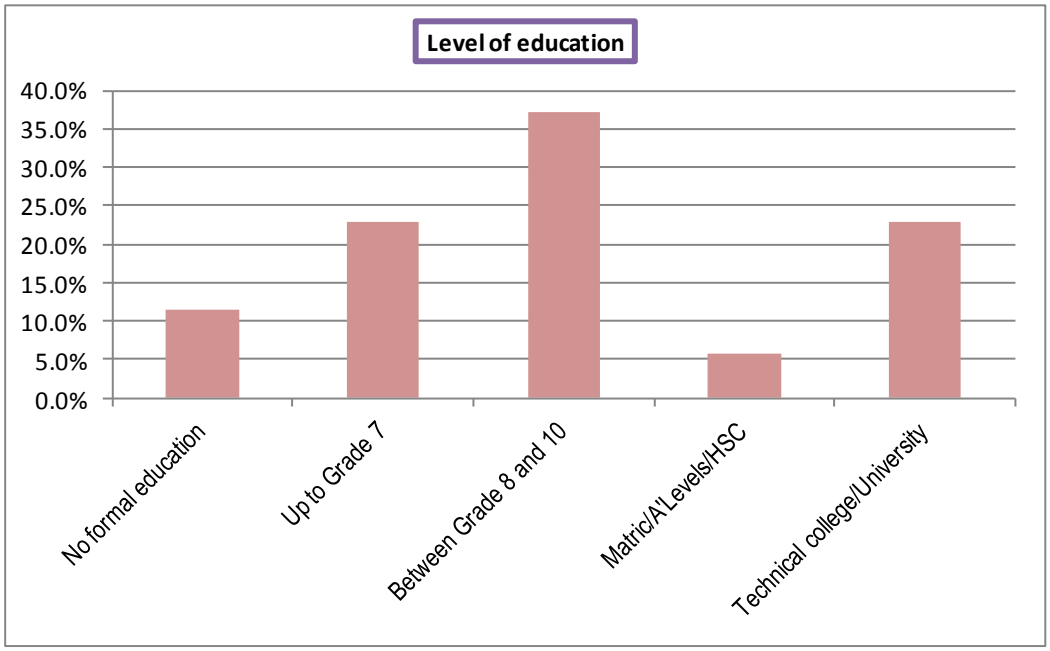


Figure 4-5 Levels of Education

Figure 4-6 below indicates that all the Zimbabwean respondents had some form of formal education whilst the Mozambican and Basotho respondents had some members that had never received any form of formal education. The most significant difference between the levels of education of the different nationalities is that the majority of the Zimbabweans (83.3%) and Mozambicans (60%) had reached high school (sometimes termed secondary school) or had been to technical college whilst for the Basotho workers this was only 33.3%. The majority of the immigrant workers had only completed standard six, seven or eight (grades eight, nine and ten). It must also be noted that 34% of immigrant workers had not reached high school.

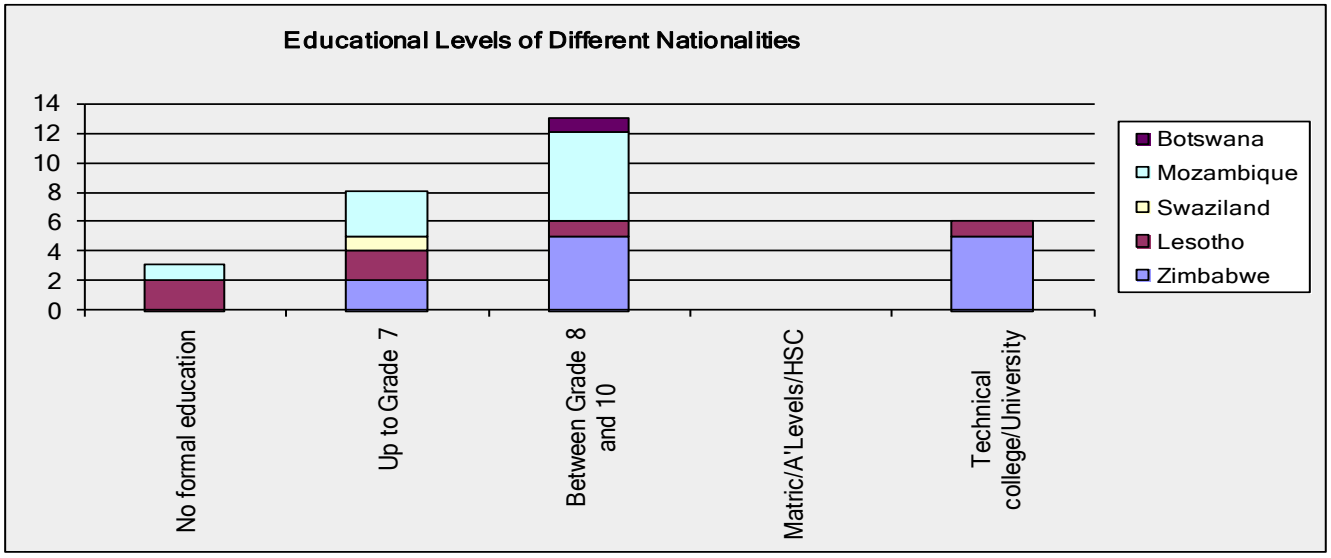


Figure 4-6 Spread of Educational Levels among different Nationalities

4.2.4 Experience and Employment History

Figure 4-7 below indicates the combined work experience of the respondents in the South African Construction Industry. The majority of the respondents (79.5%) had more than a year's work experience in the construction industry.

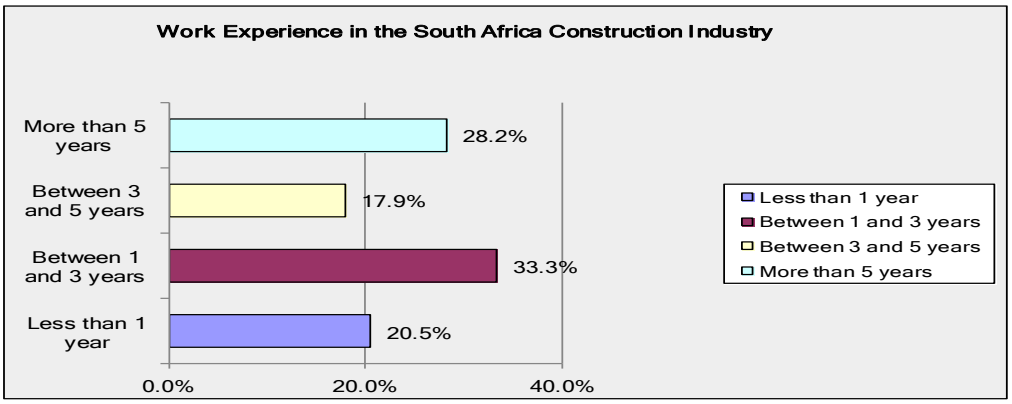


Figure 4-7 Work Experience in the South African Construction Industry

Figure 4-8 below indicates the magnitude of respondents who had obtained some construction industry work experience from their home countries before migrating to South Africa. The majority of the respondents (57.9%) had no previous work experience related to the construction industry from their home countries.

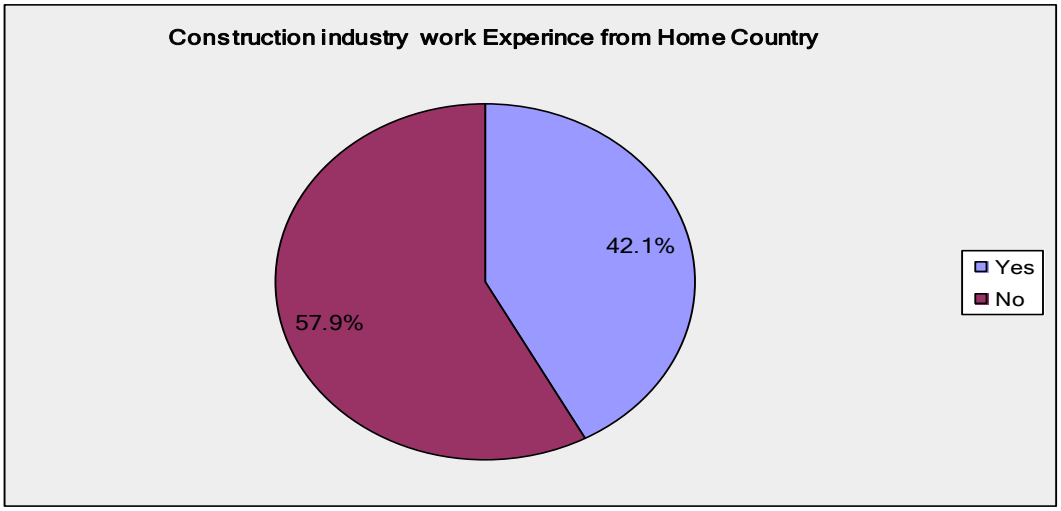


Figure 4-8 Work Experience obtained from Home Country

Table 4-1 below indicates the magnitude of construction related experience gained from the immigrants' home country. The majority of the respondents (62.5%) had less than a year's experience from their home country.

Table 4-1 Magnitude of Construction Experience from home country

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 year	10	25%	62.5%	63%
	Between 1 and 3 years	4	10%	25.0%	88%
	Between 3 and 5 years	2	5%	12.5%	100%
	More than 5 years	0	0%	0%	100%
	Total	16	40%	100%	
Missing	System	24	60%		
Total		40	100%		

4.2.5 Employment Status

Figure 4-9 below indicates the combined employment status of the respondents. The highest proportion of respondents (32.5%) was employed as General Workers.

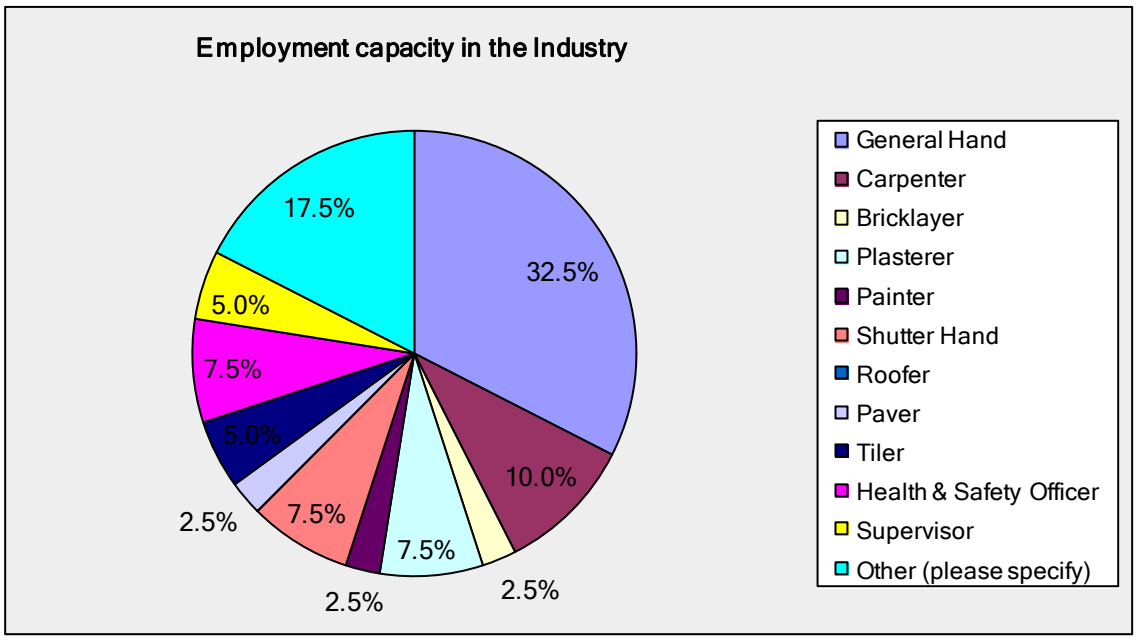


Figure 4-9 Employment capacity in the Construction Industry

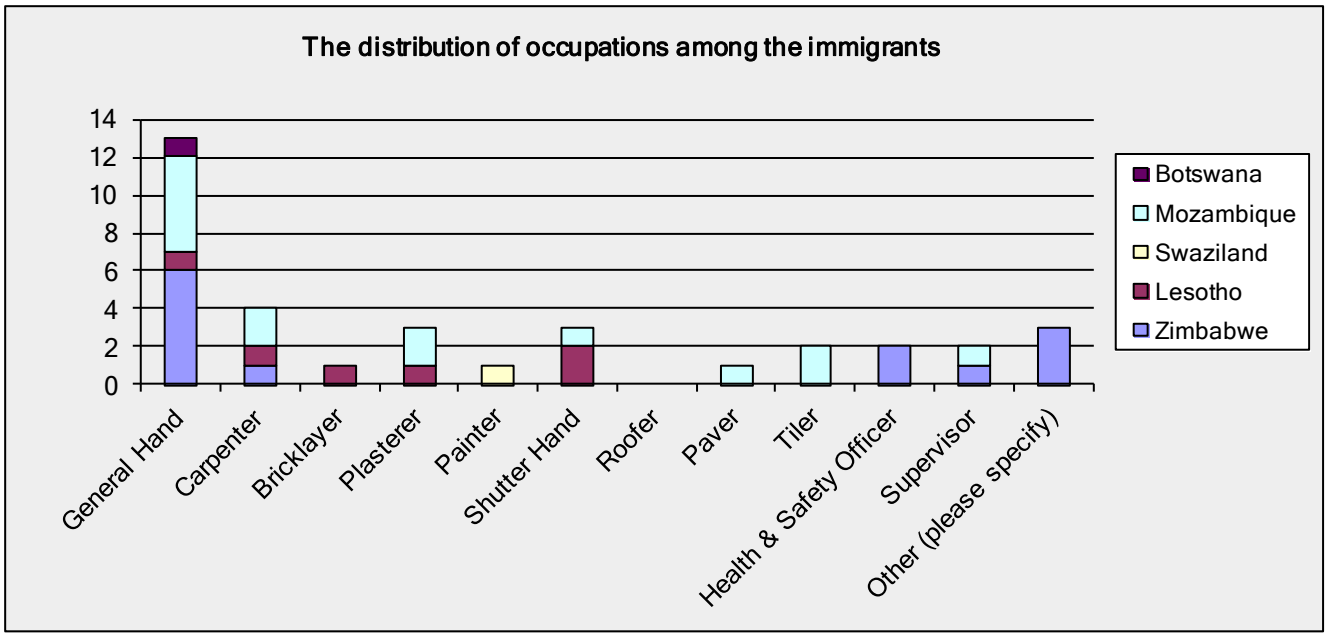


Figure 4-10 The distribution of occupations among the immigrants

Figure 4-10 above indicates the distribution of the trades among the different trades. The graph indicates that the Mozambican respondents predominantly occupy the tiling and paving trades whilst the Basotho predominately occupy the Bricklaying trade.

4.2.6 English Proficiency

Figure 4-11 indicates the English proficiency distribution of the respondents combined. The results indicate that the majority of the respondents (62.5%) can read and write in English. Figure 4-12 on the other hand indicates the English proficiency distribution according to nationality. The graph indicates that the majority of the Zimbabwean respondents are able to read and write in English, whilst the majority of the Mozambican respondents can neither read nor write in English.

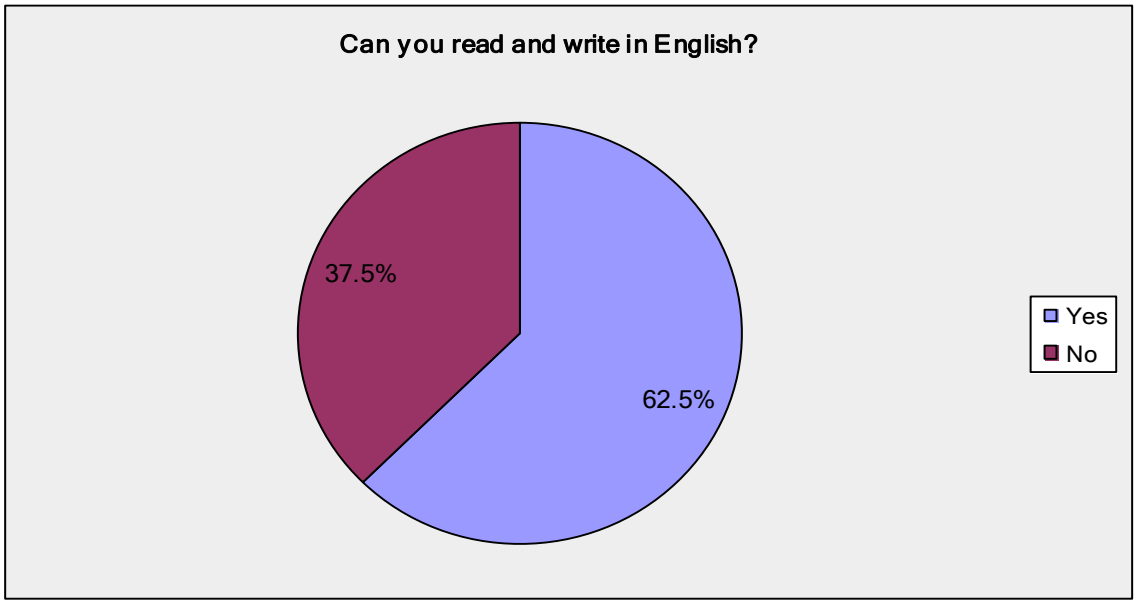


Figure 4-11 Combined English Proficiency

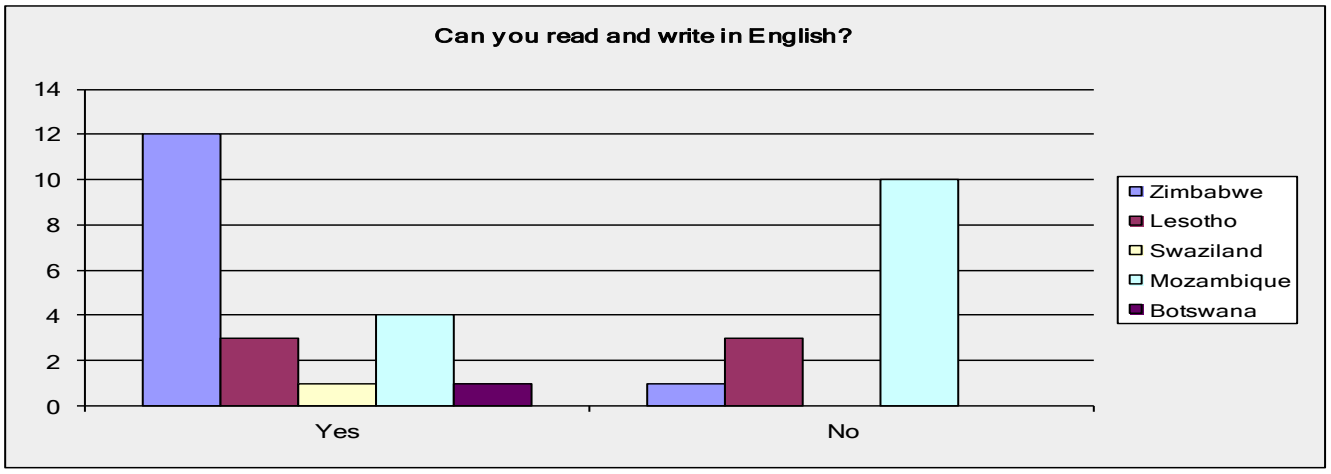


Figure 4-12 Distribution of English Proficiency according to Nationality

4.2.7 Training

Figure 4-13 below indicates whether or not the respondents had received any H & S training. The majority of the respondents (92.5%) had received some form of H & S training.



Figure 4-13 Indication of whether H & S Training had been received

The respondents who had indicated that they had received some form of H & S training were asked to indicate which types of training they had received and Figure 4-14 below shows the distribution of training programs among respondents. The majority of respondents had undergone Site induction and Toolbox training. Whilst just above half of the respondents had received formal classroom H&S training and job specific type of training.

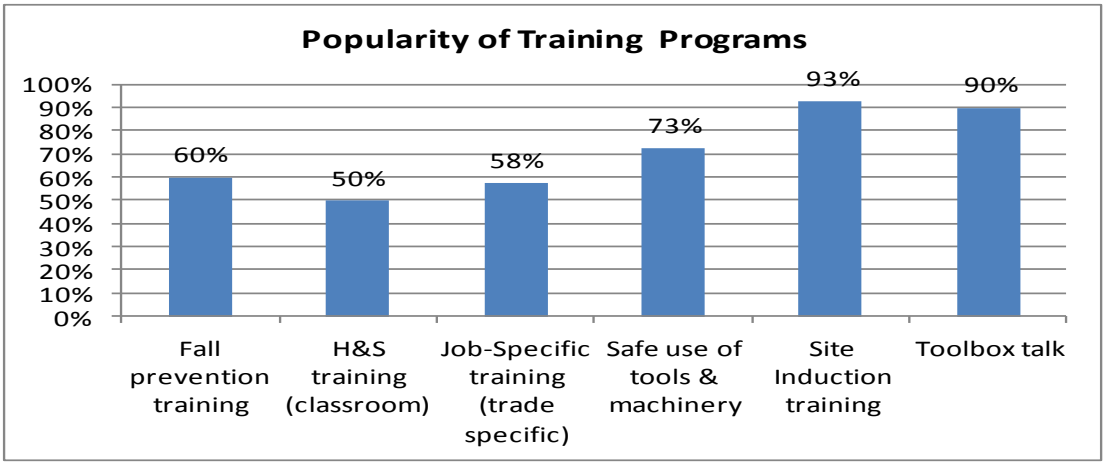


Figure 4-14 Popularity of Training Programs

Figure 4-15 below shows the distribution of the duration of the various training programs. Most participants received between 1- 2 hours each of Toolbox talk training, Site induction training and safe use of tools and machinery.

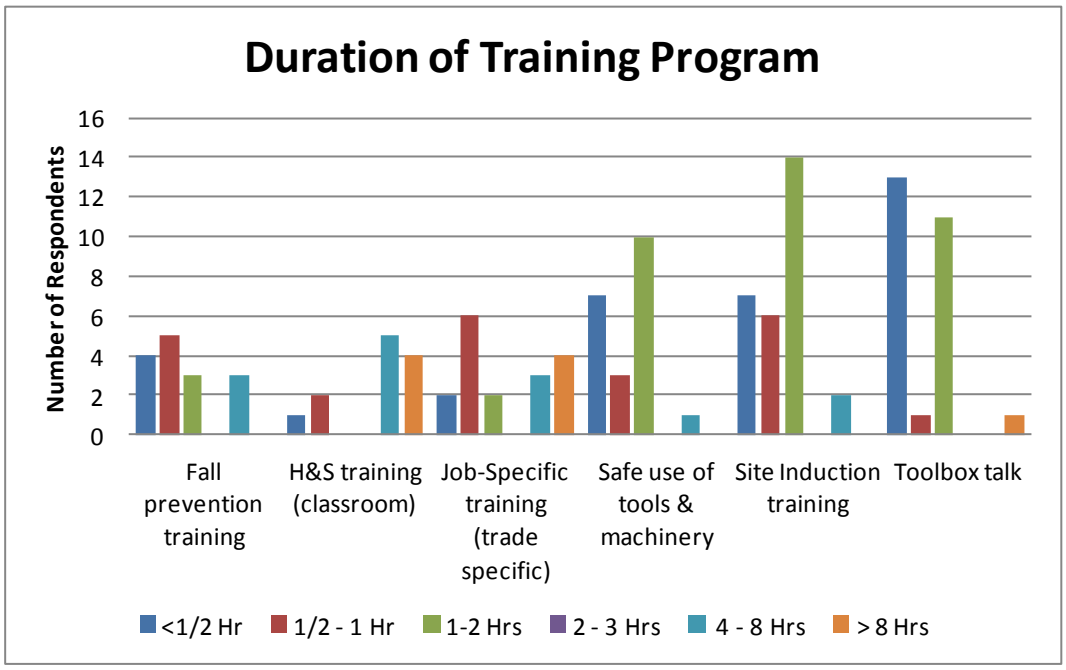


Figure 4-15 Duration of Training Program

Figure 4-16 indicates the frequency at which the respondents received any form of Health and Safety training. About three quarters (72.5%) of the respondents received some form of H &

S training on a weekly basis, followed by those who had received training only once when they were first employed, and the other 10% was split equally between those who had never received any H & S training and the respondents who received training on a monthly basis. The least portion (2.5%) was constituted by respondents who received H & S training on an annual basis.

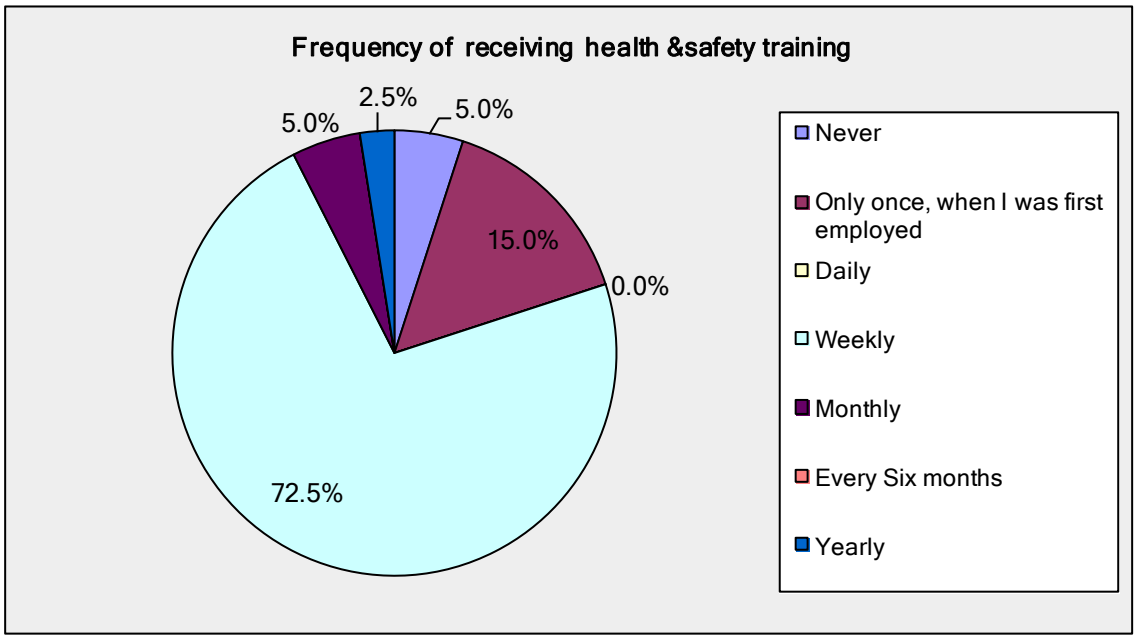


Figure 4-16 Frequency of Receiving Training

Training Content

Table 4-2 below summarises the training experience of respondents. The responses are not mutually exclusive since respondents were asked to indicate with a "YES" to all that applied. 89% of the respondents received training information regarding proper accident reporting procedures; 92% on the company H & S policy; 87% were introduced to their Supervisor & the company's H & S Officer; 87% also received information regarding the safe use of tools and machinery; 92% on fire and other emergency procedures. 63% received information regarding the location of the accident book; 92% were told about the location of the first

aider. All the participants had received information regarding the location of welfare, canteen facilities and toilets.

Table 4-2: Training Topic covered

Training content	n	% of Respondents
Accident reporting procedure of the organization	34	89%
Introduction to company Health And Safety policy	35	92%
Introduction to the company's H&S Officer & Employee's Immediate Supervisor	33	87%
Safe use of tools & machinery	33	87%
The fire and other emergency procedures	35	92%
The location of the accident book	24	63%
The location of the first aider	35	92%
The location of welfare, canteen facilities and toilets	38	100%

Language and Training

Figure 4-17 below shows the languages used for conducting Health and Safety training among respondents. Respondents were asked to choose at least one language in which they had received training instruction. The majority of the respondents 23 (62.2%) received their Health and Safety training in English, whilst isiZulu, Xitsonga, combination of Afrikaans & English, English & Xitsonga and a combination of English, Zulu & Xitsonga were the least popular languages (2.7% apiece) used for conducting training.

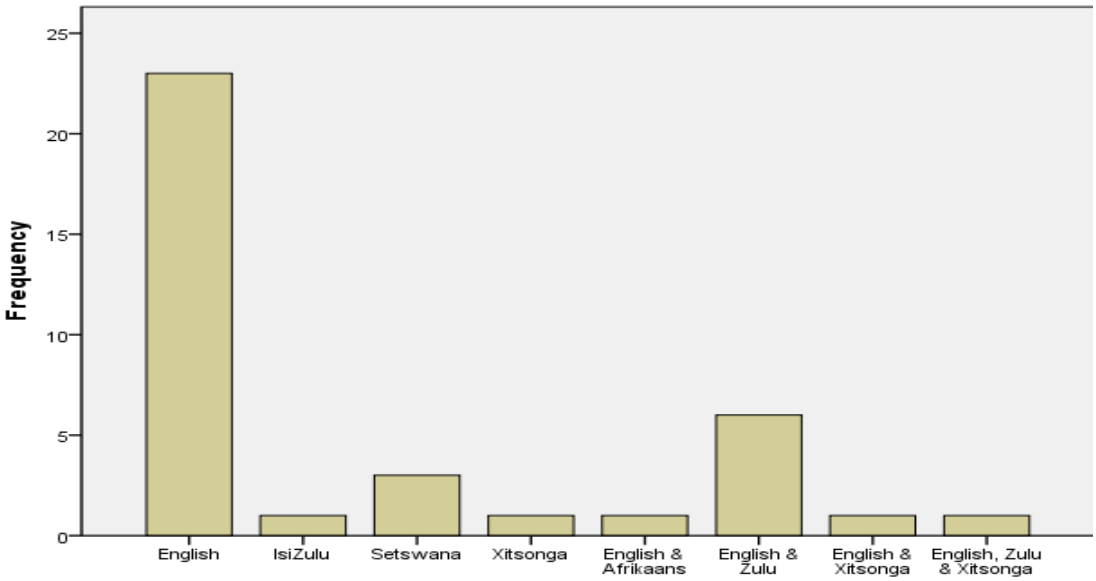


Figure 4-17 Language used for Conducting H & S Training

Respondents were then asked to indicate whether they thought the language used in their training was appropriate. Figure 4-18 below indicates the opinions of the respondents with regards to the suitability of the language used for training. The majority of the respondents (94.9%) thought the language that was used in their training was appropriate. A follow up question was also posed to assess whether respondents had understood the training content, and those who had expressed satisfaction with the language used for training indicated that they also understood the content of the training.



Figure 4-18 Suitability of Training Language

Figure 4-19 below indicates the relationship between training and English proficiency. All the respondents with low proficiency in the English language received some form of H & S Training adopting one of the local languages. On the other hand, the majority (88%) of respondents who had some command of the English language received some form of H & S training.

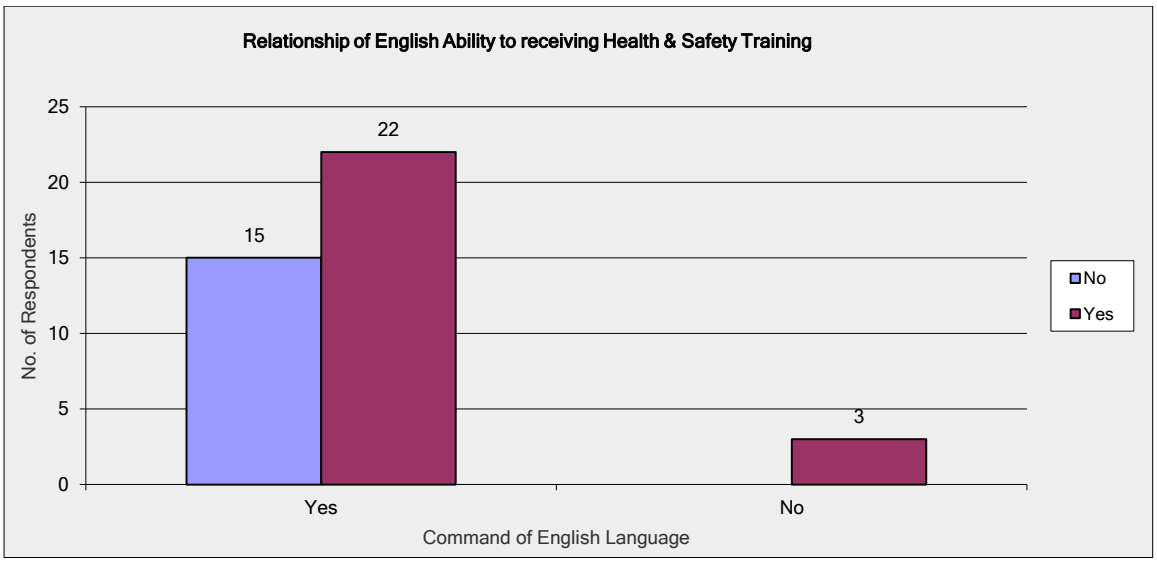


Figure 4-19 Training Vs. English Proficiency

Figure 4-20 below shows the relationship between English language capability and the language used in communicating the H&S training. Respondents were asked to choose at least one language in which they had received training. The majority of respondents (71.4%) received their training in English even when they had limited knowledge of the English language. Other languages such as Afrikaans (7.1%); isiZulu (42.9%); Setswana (21.4%) and Xitsonga (21.4%) were used to compliment the training instructions for the benefits of those with little or no proficiency in the use of the English language.

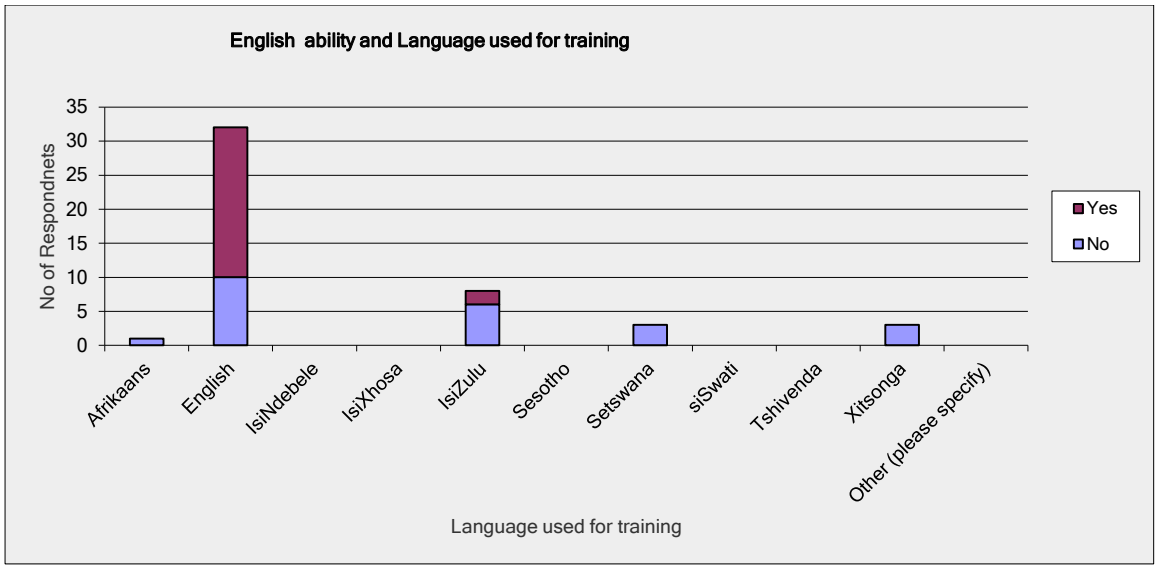


Figure 4-20 English Ability and Language used for Training

4.2.8 Satisfaction with Training received

Using a five-point Likert scale, with five (5) as Very Good, one (1) as Very Poor and three (3) Satisfactory, the respondents who had received some form of safety training were asked to rate their satisfaction with the quality of training they had been exposed to. Figure 4-21 below shows the average ratings of the satisfaction of respondents with the quality of training received.

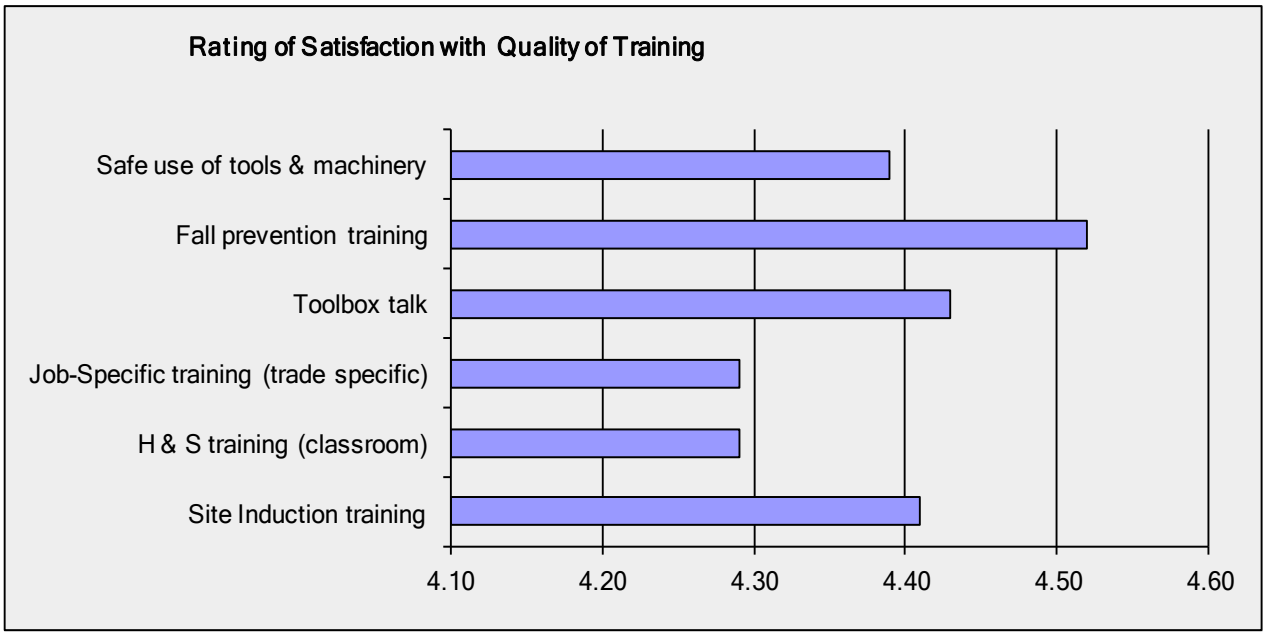


Figure 4-21 Rating of Satisfaction with Quality of Training

Furthermore a Cronbach's alpha test was done for the safety training variables. Cronbach's alpha is the most common measure of internal consistency to check the reliability of an ordinal scale. It is most commonly used when you have multiple Likert questions in a questionnaire that form a scale and you wish to determine if the scale is reliable. The Cronbach's Alpha for safety training is shown in Table 4-3 below;

Table 4-3 : Reliability Statistics

Cronbach's Alph	N of Items
0.783	6

The Cronbach's Alpha for safety training of 0.783 shows a high level of internal consistency. This means the variables can be grouped together to form a summated scale for Health and Safety training.

4.2.9 Perception of Health and Safety (H & S) Training

Figure 4-22 indicates the respondents' perception of H & S training. The majority of the respondents (94.9%) regarded training as important.

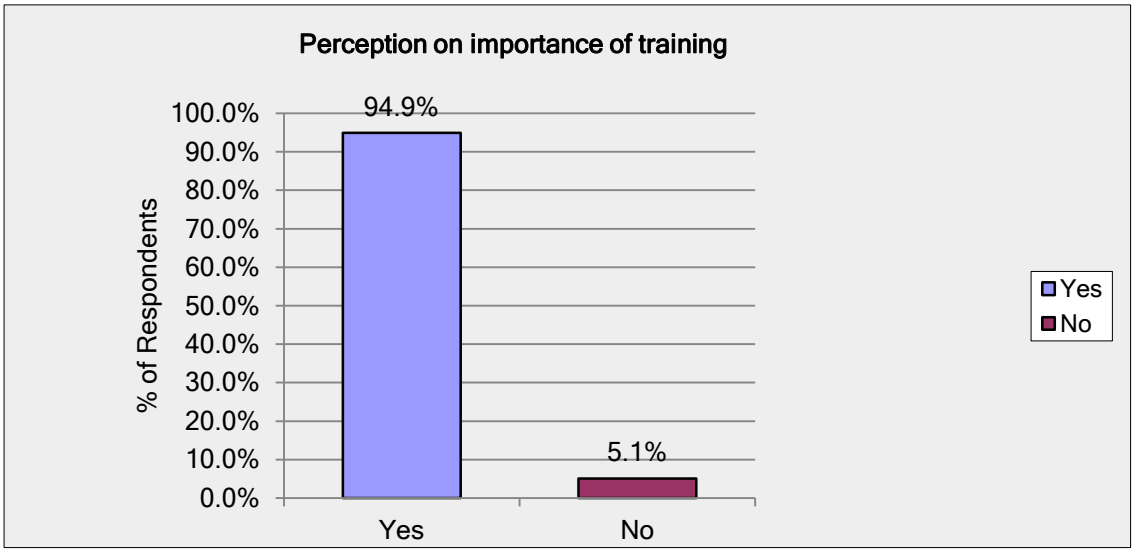


Figure 4-22 Perception on Importance of Training

The respondents who had sustained construction related injuries were asked if they thought training would help to lower chances of getting injured again and Figure 4-23 shows their perceptions. The majority of the respondents (90%) agreed that H & S training would help lower their chances of getting injured again.

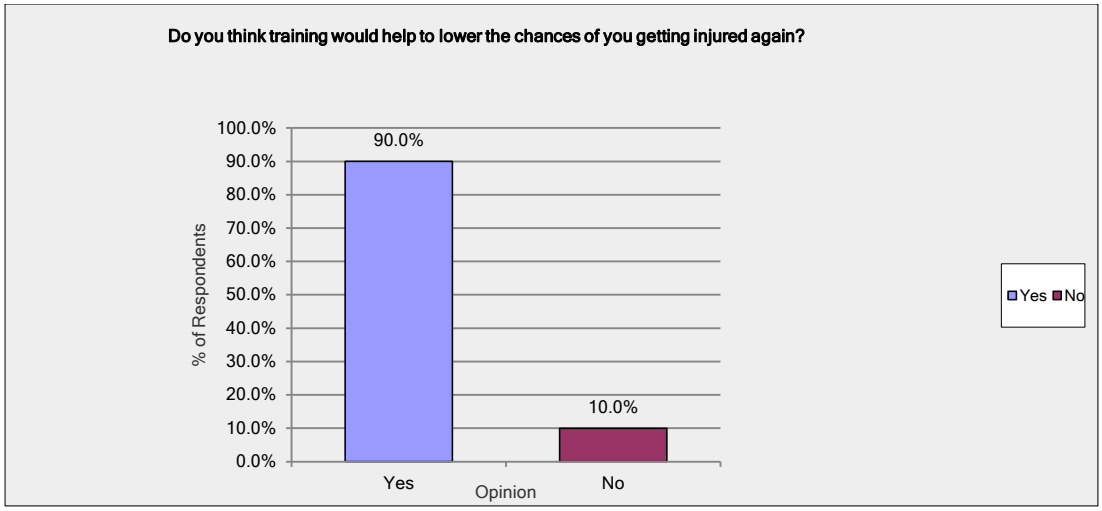


Figure 4-23 Accident victims' perception of Training

4.2.10 Accident History

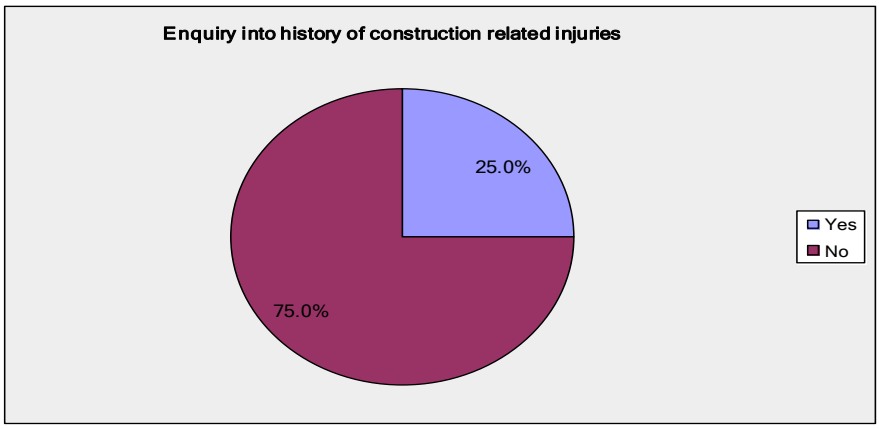


Figure 4-24 Enquiry into Construction Related Injuries

Figure 4-24 above indicates the results of an enquiry into the respondents' injuries history. The majority of the respondents (75%) had never sustained any construction related injuries. A follow up question was posed to respondents who had indicated that they had sustained some sort of construction related injury to ascertain the number of injuries they had sustained and the results are shown in Figure 4-25 below. Close to two thirds of the respondents (60%) had suffered between 2-5 construction-related injuries.

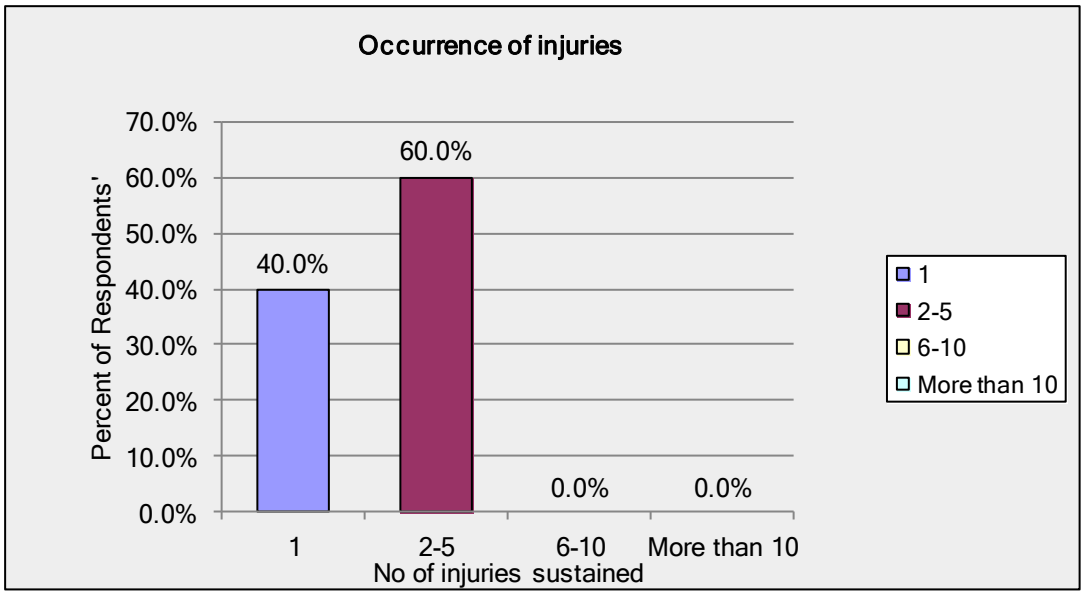


Figure 4-25 Number of Injuries sustained

An examination was also done to see if there is a relationship between age of respondents and the number of injuries sustained. Figure 4-26 below indicates the age distribution of those respondents who had suffered injuries as a result of working in the construction industry. All the respondents who had suffered injuries were between the ages 18-39 years. Half of the respondents (50%) who had incurred injuries were between the ages of 30-39; followed by the 21-29 age group and the lowest proportion were in the 18-20 age groups (10%).

Respondents who suffered injuries were asked to indicate the number of injuries they had sustained and Figure 4-27 below indicates the distribution of number of injuries incurred in the different age groups.

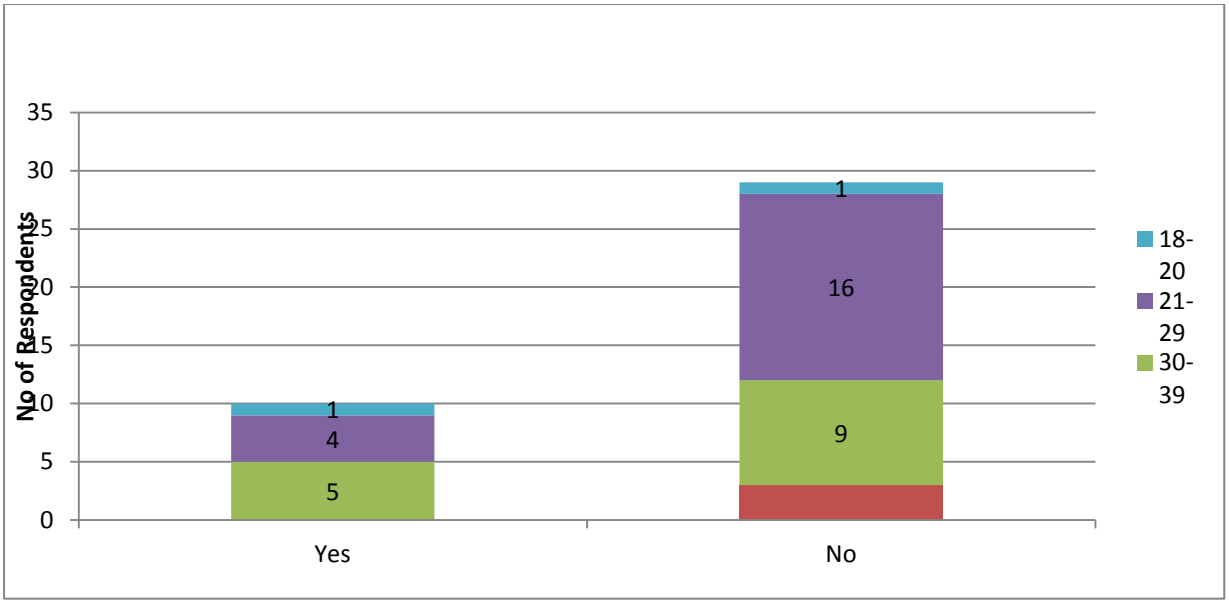


Figure 4-26 Injuries Vs Age

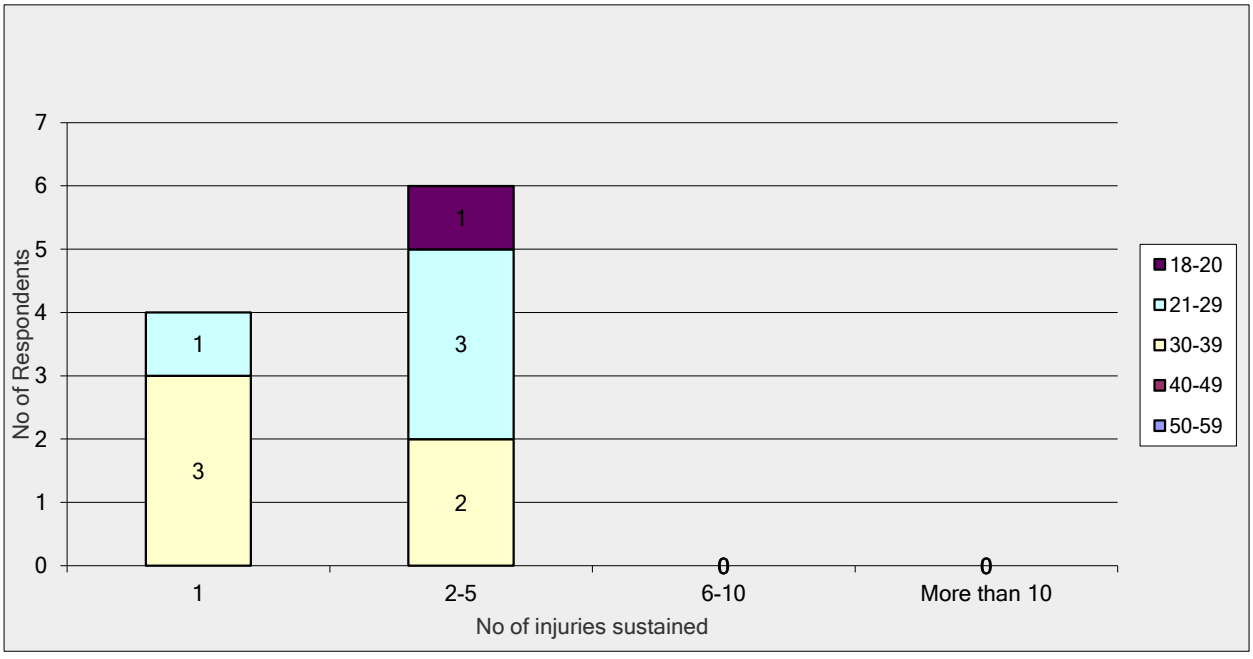


Figure 4-27 Impact of Age on Number of Injuries sustained

Table 4-4 indicates the results of the examination of the relationship between respondent's English ability and susceptibility to injuries. The majority of accident victims (90%) had some command of the English language.

Table 4-4 : Impact of English Ability on Injury occurrence

Injury incurred	Any Command of English		
Answer Options	Yes	No	Response Percent
Yes	9	1	25.0%
No	16	14	75.0%

4.3 Analysis of Compensation insurer sample

The research also scrutinised the injury claims for the Johannesburg region as covered by the Federated Employer's Mutual Assurance Company (FEM) for the period 2000-2008. The objective was to determine whether accidents among immigrants were on the increase.

4.3.1 Demographics

Twenty six immigrant construction workers were involved in construction related accidents in the period 2000-2008. Table 4-5 and Figure 4-28 describe the demographic profile of the victims. Only 23 (88%) of the accident victims among the immigrant group disclosed their gender and they were all male. The victim's self reported ages ranged from 23 to 55 years with a mean of 36.35 years and a median of 36 years. Victims aged 30 years had been involved in more accidents than any other group.

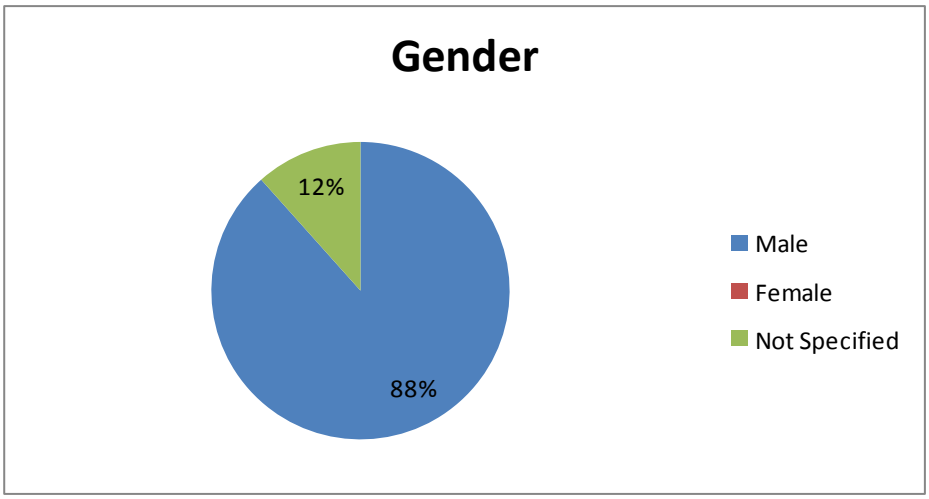


Figure 4-28 Gender of Accident Victims

Table 4-5: Age profile of Accident victims

AGE PROFILE OF ACCIDENT VICTIMS (IMMIGRANTS)	Age/No
Mean	36.35
Median	36
Mode	30
Range	32
Minimum	23
Maximum	55
Count	23

4.3.2 Annual Accidents

Table 4-6 Indicates the number of recorded accidents suffered by both immigrants and natives per annum from 2000-2008. During that period, the majority (99.93%) of the recorded/reported accidents occurred to South Africans.

Table 4-6 : Annual Accidents

	Annual Accidents		
year	Immigran	Nativ	Total
2000	2	3467	3469
2001	3	3028	3031
2002	2	3337	3339
2003	4	3588	3592
2004	2	3828	3830
2005	3	4255	4258
2006	2	4527	4529
2007	2	5630	5632
2008	6	5688	5694
Total	**26**	**37348**	**37374**
Percentage	**0.07%**	**99.93%**	**100%**

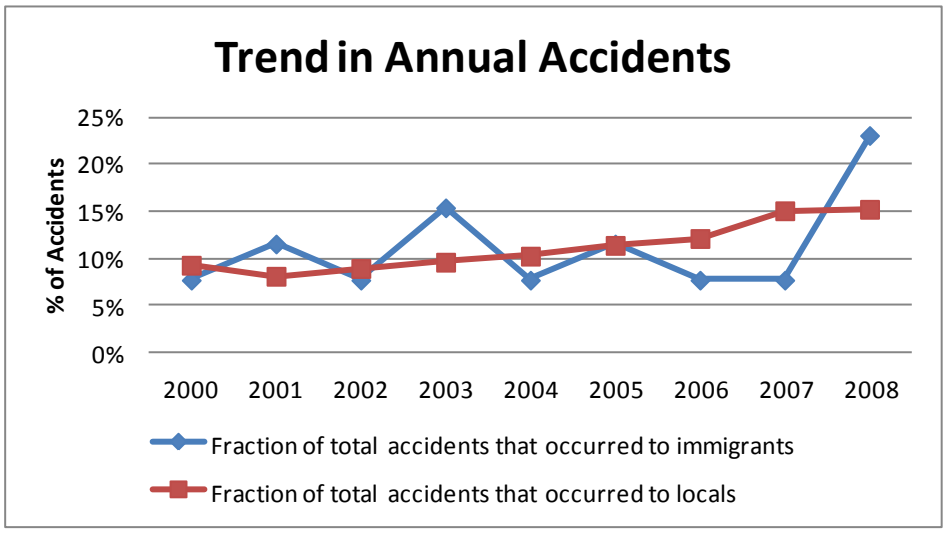


Figure 4-29 Trend in Annual Accidents 2000-2008

Figure 4-29 indicates the trend in accident occurrence. Generally there is an overall gradual increase in the number of incidences among construction workers in the Johannesburg region. The rise in injuries is probably correlated to the increased construction activity experienced in the Johannesburg area during the same period. Furthermore, within the same period, there

was a gradual increase in the number of construction related injuries sustained by immigrant workers compared to those of South African indigenes. However, accidents suffered by immigrant construction workers were on the decline in the period 2005-2007 whilst there was an increase among the natives. On the other hand, the period 2007-2008 witnessed a sharp increase in the number of accidents occurring among the immigrant workers whilst there was no change in the rate of incidence among the natives.

CHAPTER 5 DISCUSSION OF RESULTS

5.1 Introduction

This chapter discusses the results from Chapter 5 in relation to the realisation of the research proposition.

5.1.1 Respondent sample

The response rate achieved for the questionnaire of 55.6% is fairly acceptable when compared to the general survey response rates in the contemporary South African built environment which Crafford (2007) estimates to range between 7% and 40 %.

5.2 Evaluation of Research Questions

5.2.1 What is the demographic profile of immigrant construction workers in the Johannesburg area?

An analysis of the demographic profile of the respondents revealed the following:

- The majority of the respondents were male (97.5%). The results indicate that the South African construction industry in this respect resembles construction industries in other parts of the world as found by Ofori (1994); McKay *et al* (2006) and Nissen *et al*.(2008). However, this predominance of males on sites might introduce some bias on the way respondents answered the questions (Nelson & Quick 1999)
- Respondents reported ages ranged from 18 to 59 years. The majority (55%) of the respondents were between the ages of 18 and 29.

- The nationality distribution of the respondents revealed that the majority of them are from the Southern African region (Botswana, Malawi, Mozambique, Swaziland, Lesotho and Zimbabwe). The predominant groups found on the construction sites are the Mozambicans (35%) and Zimbabweans (32.5%). These findings confirm the earlier findings made by Rogerson(1999)

- The majority of the respondents had only completed standard six, seven or eight (grades eight, nine and ten). Moreover 34% of the respondents had not reached high school. These findings are similar to the findings done by Akindele, *et al*. (2008) and confirm that immigrants in general, immigrants have low literacy levels.

In general, these results indicate that the majority of immigrants on construction sites are young, male and possess low educational levels. Furthermore, the construction industry attracts most of its immigrant contingent from the neighbouring countries. These findings are in agreement with Rogerson's (1999) findings from a survey carried out about a decade ago.

5.2.2 What proportion of the annual construction-related accident statistics (2000-2008) in the Johannesburg area is made up of immigrant workers?

An analysis of the annual claims statistics from FEM which represent just around 20% of the total number of construction firms in South Africa revealed the following:

- Surprisingly immigrants constitute an insignificant percentage (0.07%) of the annual reported accident statistics. This is contrary to trends in the UK, USA, Malaysia, Singapore etc (O'Connor *et al*, 2005; Debrah and Ofori, 2001 & Loosemore & Lee, 2002). Generally FEM represents about 20% of contractors who are predominantly big but employ about half of the nation's total construction workforce (Construction Industry Development Board 2009). It is possible that accidents among immigrants might not be reported to FEM for

claims (due to their semi-legal immigrations status). Furthermore it could be that the injury statistics provided by FEM are grossly understated since they may not include figures from the subcontractors who are now the main agents through which the big contractors to execute the work (Debrah & Ofori 2001), the subcontractor firms are generally graded as small to medium in size contractors and covered by the Workmen's Compensation Fund. (Debrah & Ofori 2001)

- Figure 4-29 shows that there is an overall gradual increase in the number of incidences among all construction workers in the Johannesburg region. This increase can be attributed to the increased economic activity as evidenced by Figure 1-1. However, the trend in the number of accidents suffered by immigrants does not appear to be related to the economic activity and neither is it conclusive that it is rising when compared with the figure of the native construction workers. This is contrary to O'Connor *et al*. (2005) findings in the USA, where immigrant accidents rates were on the rise when compared to the natives.

- Figure 4-24 indicates that only a quarter of the respondents had suffered construction related accidents. This figure is suspiciously low and might be due to the fact that immigrants are not reporting accidents for claims due to their semi-legal immigration status.

5.2.3 What type of safety training do immigrants receive?

The analysis of types of training received by immigrants' construction workers indicated that the majority of respondents had been exposed to some sort of H & S training. The training programs received by the respondents ranked according to popularity are as follows:

i. Site induction training- 93%

ii. Toolbox training – 90%

iii. Safe use of machinery and tools -73%

iv. Fall prevention training-60%

v. Job specific training- 58%

vi. Formal classroom training- 50%

This distribution of training shows that the most popular types of training received by respondents are toolbox and induction training receptively. This result contradicts earlier research findings which had concluded that immigrant construction workers lacked H & S training (Nissen, Angee & Weinstein 2008). Such conclusion may have been influenced by the size of the companies surveyed in the research. If the focus was on small-medium companies, these organisations may not to have enough resources to fund training. Moreover it was established in the 2007 report by the Department of Labour, that most of the defaulting contractors in terms of the H & S regulation's were in the small-medium category (Department of Labour 2007). However it is also worrying that not all of the immigrant construction workers had received Health and Safety training since it is a legal obligation of the employer to ensure that all his employees had received this training (OSHAct No. 85 of 1993)

5.2.4 What impact do levels of Proficiency in English language have on the amount of training received?

As shown in Figure 4-19, proficiency in English language does not seem to have any impact on whether or not one receives training. Furthermore neither does it seem to dictate the amount of training received. Again this is contrary to O'Connor *et al*.(2005) findings. This study focussed on large well established companies who are likely to have established Health and Safety departments in place and who will more than likely protect their brand and reputation. This presuposed that these organisations have Health and Safety policy in place

which they follow diligently and may only employ legal migrants construction worker and ensure that they do not transgress the law inorder to protect their reputation. It is possible that if the same survey is carried out on small to medium size contractors, the results might be different since research has shown that generally they will not have full time safety officers nor have any safety policies or programmes in place(Akindele et al. 2008).

5.2.5 What impact does the quality of training received have on safety performance onsite?

The analysis of the results showed that the majority (90%) of the accident victims had received some sort of Health and Safety training. Close scrutiny of the results also revealed that the majority of the accident victims had received training in English and they had been exposed to the basic training content that both Hughes & Ferrett (2007) and Tackett *et al*. (2006) recommend as the minimum training content to be given to any employee. Furthermore the majority of the respondents had been exposed to more than an hour's time of safety training. O'Connor *et al*.(2005). Further,they discovered that the quality of training does not have a bearing on safety performance on site. A possible explanation of these results could be associated to the the accident proness theory, which states that " injuries happen to people who have a genetic predisposition to be injured" (Hinze,2006). The data fits the theory since evidence (self admittence to exposure to training interventions) is there that the employer had made efforts to expose the group to safety intervention strategies.

5.3 Summary of Chapter

This chapter revealed that although most of the participants had received some form of Health and Safety training, some employers were not fully complying with this legislative requirement. The other main points emanating from this chapter are:

i. Most participants had received between 1-2 hours of training per program of Toolbox talk training, Site induction training and safe use of tools & Machinery.

ii. The study also revealed that the survey participants had received more than the minimum subject content matter required for training to be regarded as adequate (O'Connor et al. 2005)

iii. The majority of the respondents were happy with the quality of the training they had received.

iv. The portion of the annual Immigrant workers' injury statistics revealed that immigrant workers only constitute an insignificant portion of the reported accidents.

CHAPTER 6 SUMMARY CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

The purpose of this section is to highlight the main findings of the research, provide recommendations based directly on the findings and recommendations for future research. The chapter commences by providing a synopsis of the study, restating the objectives, summarising the key research findings, testing the hypothesis and demonstrating how the research questions were adequately answered.

6.2 Synopsis of the study

Globally, the presence of immigrant workers in the construction industry always brings with it some consequences (both negative and positive) to the receiving country. Research from the United States of America, Singapore, Malaysia and Australia indicate that the presence of immigrant construction workers presents some challenges with Health and Safety. Notably it has been suggested that immigrant construction workers are more prone to accidents than the natives. In South Africa, the presence of immigrant workers in the construction industry has long been noted and recent media reports indicate that their numbers have been increasing but little has been documented about their Health and Safety performance in the construction industry.

A characteristic of all accidents is that they are preventable. Researchers have suggested training as one of the interventions that helps to change the safety culture of site operatives and reduce accident occurrence. This study sought to investigate the adequacy of the Health and Safety training provided to migrant workers on construction sites since research from other parts of the world had suggested that they might be more prone to accidents.

6.3 Restatement of the Objectives

The main aim of this research was to ascertain the adequacy of the Health and Safety training provided to immigrant construction workers on construction sites in the Johannesburg area. The following objectives were derived from this aim:

i. To determine the proportion of existing accident statistics made up of immigrants
ii. To characterize the demography of immigrant construction workers
iii. To assess the adequacy of Health and Safety training provided to immigrants
iv. To determine the impact of quality of Health and Safety training on the occurrence or reduction of accidents on site

Through the review of relevant literature and the collection of primary data, the above mentioned aims and objectives were fulfilled.

6.4 Testing of the Hypothesis

6.4.1 *Hypothesis 1*

The first hypothesis posited that the majority of the immigrant population on construction sites is made-up of young, male Zimbabweans. The research findings evidence from Figure 4-1 shows that almost all the research respondents were males. Figure 4-4 reveals that Mozambicans (35%) are the biggest group of respondents by nationality followed by the Zimbabweans (32.5%). Figure 4-3 shows that all the Zimbabwean and Mozambican respondents were below the age of 40, which according to Eppenberger's (2008) grouping, these respondents are deemed to be young. Although Zimbabwean's respondents were found to be predominalty male and young, they are ranked second on the popularity scale thus Hypothesis 1 is not supported and is therefore rejected.

6.4.2 *Hypothesis 2*

Hypothesis 2 stated that Immigrant construction workers constitute a significant portion of the annual accident statistics. The research findings summarised in Table 4-6 reveal that immigrant workers' injury statistics do not constitute a significant part of the combined annual injury statistics, thus we reject Hypothesis 2 and conclude that Natives constitute a significant portion of the annual injury statistics.

6.4.3 *Hypothesis 3*

Hypothesis 3 posited that immigrant construction workers are exposed to more Health and Safety training programs besides the traditional site induction training. The research findings revealed that the majority of the respondents had received at least the traditional induction training and tool box training (Figure 4-14) thus Hypothesis 3 is supported and we can conclude that the average immigrant is exposed to more training programs than just the traditional site induction training.

6.4.4 *Hypothesis 4*

Hypothesis 4 stated that the perceived levels of English language proficiency of immigrant construction workers determine the level of comprehension of safety training received. The research findings summarised in Figure 4-19 revealed that the majority of the respondents who possess low or no skills in the use of English language had received some sort of H & S training. Thus Hypothesis 4 is rejected and we can conclude that the level of proficiency in the use of English language does not dictate whether one receives training or not and the amount of training received.

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6.4.5 *Hypothesis 5*

Hypothesis 5 posited that immigrant construction workers who have received the least amount of safety training or no training at all are most likely to have the worst safety record. The results of the survey indicated that an overwhelming majority of the respondents who had suffered accidents had received some sort of H & S training and thus we reject Hypothesis 5 and conclude that based on the results, having received H & S training does not seem to influence one's safety record.

6.5 Conclusion

The research's main objective was to ascertain the adequacy of the Health and Safety training provided to immigrant workers on construction sites. The study's findings revealed the following about immigrant workers;

i. Most participants had received between 1-2 hours of training per program of Toolbox talk training, Site induction training and safe use of tools & Machinery. This implies that the majority of the respondents had collectively received at least three (3) hours of H & S training, which is three times the amount of time recommended for minimum training by O'Connor *et al*.(2005)

ii. The study also revealed that the survey participants had received more than the minimum subject content matter required for training to be regarded as adequate (O'Connor et al. 2005)

iii. The majority of the respondents were happy with the quality of the training they had received. The Cronbach's reliability test statistics revealed a high value suggesting that the views expressed were reliable.

iv. The portion of the annual Immigrant workers' injury statistics revealed that immigrant workers only constitute an insignificant portion of the reported accidents.

This study's findings suggest that the majority of immigrant construction workers may, indeed, be receiving adequate training. The study also suggests that the use of other languages to accommodate the teaching of people with little or no skills in the use of English language is effective and should therefore be encouraged.

6.6 Limitations

During the course of the research, some challenges were faced, which might have impacted the research outcomes. The premise of this research was that the researcher would be allowed to conduct the survey on all immigrant workers on the selected construction sites regardless of whether they were in the employment of the main contractor or the subcontractor. However the researcher was only restricted to participants under the employment of the main contractors thus opinions of those in the employment of subcontractors, which might defer from those expressed in this research, are not represented in this research. Furthermore employers were approached as the initial contact points and thus played a gate keeping role which might have resulted in a skewed sample.

6.7 Recommendations

Future research should be done on a large scale to permit a more vigorous analysis to enable generalisation of results. Moreover this research focused only on large contractors, future studies of the same problem focusing on small to medium contractors could be beneficial. The basis of this argument is that Akindele *et al* (2008) and the Department of Labour in their 2007 report established that most of the contractor's that were failing to compile with the H & S regulations were in the group of small to medium size contractors . It has also been suggested that contractors try to maximise profits by cutting H & S budgets and employing illegal immigrant construction workers whose rights they abuse, thus it is likely that the small

to medium contractors are likely to employ these tactics hence it's worthwhile to investigate the adequacy of training they give immigrant construction workers in their employment.

Furthermore, the investigation of accident records of construction companies' could be worthwhile in order to establish the proportion contributed by immigrant workers and the compensations received by the affected workers. It is likely that the majority of construction companies will not like to report and claim for injuries on behalf of illegal immigrant construction workers, since this may expose them as running foul of the law. Therefore, they would prefer to sweep the matter under the carpet.

Lastly an investigation of the training practices of large-size companies, with the intention of adapting the findings of this research as the basis of preparation of best practice manual could be worthwhile.

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APPENDIX A: QUESTIONNAIRE



UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

FACULTY OF ENGINEERING AND BUILT ENVIRONMENT
SCHOOL OF CONSTRUCTION ECONOMICS & MANAGEMENT

August 15, 2011

Dear Respondent,

I am inviting you to participate in a research project to study Health and Safety (H&S) Training in the Construction Industry. The title of my research is *An investigation of the Adequacy of Health and Safety Training among Immigrant Construction Workers*. Along with this letter is a short questionnaire that asks a variety of questions about Health and Safety. I am asking you to look over the questionnaire and, if you choose to do so, complete it and send or give it back to me. It should take you about 20 minutes to complete.

I am not aware of any risks to you if you decide to participate in this survey and I guarantee that your responses will not be identified with you personally. I would like to reassure you that the information obtained in the administration of this questionnaire shall strictly be for academic purposes and all data shall remain confidential. You are also encouraged not to put your name on the questionnaire.

I hope you will take the time to complete this questionnaire and return it. Your participation is voluntary. Regardless of whether you choose to participate, please let me know if you would like a summary of my findings. My contact details are at the end of the questionnaire. If you have any questions or concerns about completing the questionnaire or about being in this study, you may contact me at +27736634398. The University of the Witwatersrand has approved this study. However if you have any concerns about your rights as a participant in this study you may contact my supervisor, Dr H Quainoo on Mobile: +27 72 453 3149: E-mail: harry.quainoo@wits.ac.za

Your participation in this research is greatly appreciated.

Yours Sincerely

Wesley Chikwanyanga

Mobile: +27 73 663 4398;

Email: wesley.chikwanyanga@students.wits.ac.za



UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Appendix A

School of Construction Economics & Management

QUESTIONNAIRE

Research Topic:

An investigation of the Adequacy of Health and Safety Training among Immigrant Construction Worker.

The purpose of this research is to assess the adequacy of the Health and Safety training received by immigrants employed in the South African Construction Industry with the aim of improving Safety Management on Construction sites.

You are therefore requested to answer the following questions by putting a tick in the box next to the appropriate answer of your choice. Where a free response answer is required, please write it down in the spaces provided. You are free to supply any additional information that you feel may be helpful to this research.

Your participation in this research is greatly appreciated.

SECTION 1: DEMOGRAPHICS

1. Are you Male or Female

   Male ☐ Female ☐

2. What is your country of origin

Botswana	☐	Mozambique	☐	Swaziland	☐
Lesotho	☐	Zimbabwe	☐	Other	☐

3. If other, please specify

   _____

4. How old are you?

   _____Years

5. Please tick the box that best represents your profession

General Hand	☐	Carpenter	☐	Bricklayer	☐
Plasterer	☐	Painter	☐	Shutter hand	☐
Roofer	☐	Other	☐		

6. If other, please specify

   _____

7. How long have you worked in the South Africa Construction Industry?

   Less than 1 year ☐

   Between 1 and 3 years ☐

   Between 3 and 5 years ☐

   More than 5 years ☐

8. Were you employed in construction in your home country?

   Yes ☐ No ☐

9. If you answered the previous question with a **YES**, Please tick the box that best indicates the length of employment

   Less than 1 year ☐

   Between 1 and 3 years ☐

   Between 3 and 5 years ☐

   More than 5 years ☐

10. What is your level of education?

    No formal education ☐

    Up to Grade 7 ☐

    Between Grade 8 and 10 ☐

    Matric/A' Levels/HSC ☐

    Technical college/University ☐

11. Can you read and write in English?

Yes ☐ No ☐

12. If you answered the preceding question with a **YES,** please indicate the levels of proficiency

None ☐

Basic ☐

Moderate ☐

High ☐

SECTION 2: HEALTH AND SAFETY TRAINING

13. Have you received any Health and Safety Training?

Yes ☐ No ☐

14. If you answered the above question with a Yes, Please select the type of Training received

Training	**Please tick (√) if YES**	**Length of Training in Hours (Hrs)**
Site Induction training		
H & S training (classroom)		
Job-Specific training (trade specific)		
Toolbox talk		

Fall prevention training		
Safe use of tools & machinery		

15. What language was used for the Training received?

_____

16. Do you think the language used for Health and Safety Training was appropriate?

Yes ☐ No ☐

17. Please explain your answer

_____
_____
_____
_____

18. Did you understand the content of the Health and Safety Training received?

Yes ☐ No ☐

19. Please indicate if the following were covered in the Training received?

Content/Topic	Yes	No
Introduction to company Health and Safety policy		
Introduction to the company's H&S Officer & Employee's Immediate Supervisor		
Accident reporting procedure of the organisation		
The location of the accident book		
The location of the first aider		
The fire and other emergency procedures		
The location of welfare, canteen facilities and toilets		
Safe use of tools & machinery		

20. Generally, how do you rate your satisfaction with the training received ,indicate by placing a tick mark in the appropriate box

DESCRIPTION	Levels of Satisfaction				
	5 Very Good	4 Good	3 Satisfactory	2 Poor	1 Very Poor
Site Induction					

training					
H & S training (classroom)					
Job-Specific training (trade specific)					
Toolbox talk					
Fall prevention training					
Safe use of tools & machinery					

21. How often do you receive safety training?

Never ☐

Only once, when I was first employed ☐

Weekly ☐

Monthly ☐

Every Six months ☐

Yearly ☐

22. Do you think safety training is important?

Yes ☐ No ☐

23. What can be done to improve Health and Safety training?

_____
_____
_____
_____
_____
_____
_____
__

_____

SECTION 3: ACCIDENT HISTORY

24. Have you sustained any construction related injuries?

Yes ☐ No ☐

25. If 'Yes', how many injuries?

Injuries	
1	
2-5	

6-10	
More than 10	

26. Do you think training would help to lower the chances of you getting injured?

Yes ☐ No ☐

27. You are free to add any other information that you think is vital to this study.

_____
_____
_____
_____
_____
_____
_____
__

Thank you for your participation.

APPENDIX B: REQUEST FOR INFORMATION E-MAIL TO FEM

Zimbra **401501@students.wits.ac.za**

Request for Injury Statistics

From : Wesley Chikwanyanga <Wesley.Chikwanyanga@students.wits.ac.za> Mon, 08 Aug, 2011 13:56

Subject : Request for Injury Statistics

To : hermanen@fema.co.za

Cc : harry quainoo <harry.quainoo@wits.ac.za>

Dear Sir,

My name is Wesley Chikwanyanga and i am a Master's student at Wits. At the moment i am currently trying to complete a research project on Health & Safety Training in the construction industry. The title of my research is *An investigation of the Adequacy of Health & Safety Training among Immigrant Construction Workers*.

Could you please assist me in completion of my research by providing claims statistics for the Johannesburg region highlighting the following in particular

1. Yearly injury statistics for the period 2000-2008,
2. The Nationality of the claimant,
3. Age and Gender of claimant,
4. The type of injuries suffered

The information being sought is purely for academic purposes and will be treated with confidentiality. If you have any questions or concerns about the study please contact me at +27736634398 or my Researcher Supervisor Dr Quainoo on +27 72 453 3149:E-mail: harry.quainoo@wits.ac.za.

Please do let me know if you will be able to assist me.

Sincerely

Wesley

Chikwanyanga
Msc Candidate
School of Construction Economics & Management

Univeristy of Witwatersrand
Email:wesley.chikwanyanga@students.wits.ac.za

APPENDIX C: FOLLOW-UP E-MAIL TO FEM

Zimbra **401501@students.wits.ac.za**

Re: Request for Injury Statistics

From : Wesley Chikwanyanga <Wesley.Chikwanyanga@students.wits.ac.za> Thu, 18 Aug, 2011 19:48

Subject : Re: Request for Injury Statistics

To : hermanen@fema.co.za, gysmc@fema.co.za

Cc : harry quainoo <harry.quainoo@wits.ac.za>

Bcc : wchikwanyanga@gmail.com, gbepete@gmail.com

Dear Sir/Madam,

All of us are busier these days than we should,and most of us have a hard time keeping abreast of those obligations which are essential and required.I know how the little extras sometimes receive our best intentions,but i also know that in reality none of us have the time which we would desire to fulfill those intentions.

From my email which reached you-hopefully-about a week ago, I have had no reply.Perhaps you mislaid the email,or it may have found its way to the junk email-any one of dozens of contingencies could have happened.

In any event,I have attached my initial email request below. I am sure you will try to find a few minutes in your busy schedule to assist me with my information request. Your company are the only custodians of the updated and accurate statistics. Will you please help me?

Thanks. I shall appreciate your kindness.

Yours Sincerely

Wesley Chikwanyanga

Msc Candidate
School of Construction Economics & Management
University of the Witwatersrand
Email:wesley.chikwanyanga@students.wits.ac.za

—— Original Message ——
From: Wesley Chikwanyanga <Wesley.Chikwanyanga@students.wits.ac.za>
Date: Monday, August 8, 2011 1:56 pm
Subject: Request for Injury Statistics
To: hermanen@fema.co.za

APPENDIX D: DATA RECEIVED FROM FEM

ACCIDENT_D	GENDER	AGE	CAUSE	AGENCY	INJURY	LOCATION
25/08/2000	M	52	MOTOR VEHICLE ACCIDENT	MOTORISED EQUIPMENT - MOTOR VEHICLES, N.E.C.	BONY INJURY (E.G. FRACTURE, TUMOUR).	THORAX-EXC.SPINAL REGION
04/11/2000	M	25	STRUCK BY	WALLS(PROJECTIONS)	BONY INJURY (E.G. FRACTURE, TUMOUR).	THORACIC SPINAL REGION
10/01/2001	M		STRUCK BY	BRICKS,ROCKS & STONES	PENETRATING WOUNDS.	MULTIPLE TO HEAD,FACE
18/02/2001	M	41	STRUCK BY	NAILS,SPIKES,FISHBONES	PENETRATING WOUNDS.	FOOT INC. TOES
08/05/2001	M	39	STRUCK BY	DUST & PARTICLES NEC	SUPERFICIAL WOUNDS (INCLUDE BURNS AND SCALDS).	EYE & ORBIT
11/05/2002	M	39	MOTOR VEHICLE ACCIDENT	MOTORISED EQUIPMENT - MOTOR VEHICLES, N.E.C.	BONY INJURY (E.G. FRACTURE, TUMOUR).	UPPER & LOWER LIMB(S)
16/09/2002	M	23	CONTACT WITH ELECTRC CURRENT	EXPLOSIONS - OTHER EXPLOSIONS	SUPERFICIAL WOUNDS (INCLUDE BURNS AND SCALDS).	HEAD,FACE,NECK,LIMB(S)
10/11/2003	M	35	STRUCK BY	DOORS,WINDOWS & GATES	MULTIPLE INJURIES.	SKULL & SCALP
22/11/2003	M	36	CAUGHT IN,ON,BETWEEN	MISC. AGENCIES, NEC	MUSCLE INJURY (E.G. STRAIN, TORNLIGAMENTS, MUSCLES, TENDONS).	THUMB
22/11/2003	M	40	STRUCK BY	INSECTS	MISCELLANEOUS (INCLUDE INSECT AND REPTILE BITES).	OTHER-TRUNK
19/12/2003	M	26	STRUCK BY	INSECTS	MALARIA	OTHER-TRUNK
26/05/2004	M		STRUCK BY	MISC. AGENCIES, NEC	MUSCLE INJURY (E.G. STRAIN, TORNLIGAMENTS, MUSCLES, TENDONS).	ANKLE
14/11/2004	M	29	STRUCK BY	BRICKS,ROCKS & STONES	BONY INJURY (E.G. FRACTURE, TUMOUR).	SINGLE FINGER
20/01/2005	M	43	CAUGHT IN,ON,BETWEEN	MISC. - MACHINES, N.E.C.	AMPUTATION OR REMOVAL OF ORGAN .	TWO OR MORE FINGERS
21/04/2005	M	30	STRUCK BY	BRICKS,ROCKS & STONES	BONY INJURY (E.G. FRACTURE, TUMOUR).	SHOULDER
28/07/2005	M	27	FALL ON TO DIFFERENT LEVELS	MISC. AGENCIES, NEC	BONY INJURY (E.G. FRACTURE, TUMOUR).	FOREARM
03/02/2006	M	30	CAUGHT IN,ON,BETWEEN	BELTS,CHAIN,BLADE	PENETRATING WOUNDS.	SINGLE FINGER
04/07/2006	M	55	STRUCK BY	HAND TOOLS - SPANNER, WRENCHES, ETC.	BONY INJURY (E.G. FRACTURE, TUMOUR).	MULTIPLE TO 1 HAND
18/05/2007	M	31	STRUCK BY	SAWS (CIRCULAR) WOOD	BONY INJURY (E.G. FRACTURE, TUMOUR).	THUMB
12/07/2007	M	45	CAUGHT IN,ON,BETWEEN	FLOORS	AMPUTATION OR REMOVAL OF ORGAN .	SINGLE FINGER
23/04/2008	M	46	STRUCK BY	PIPES,POLES,ETC	BONY INJURY (E.G. FRACTURE, TUMOUR).	LEG,FIBULA,TIBIA
23/04/2008	M		STRUCK BY	PIPES,POLES,ETC	BONY INJURY (E.G. FRACTURE, TUMOUR).	LEG,FIBULA,TIBIA
27/05/2008	M	53	STRUCK BY	BELTS,CHAIN,BLADE	PENETRATING WOUNDS.	THORAX-EXC.SPINAL REGION
10/06/2008	M	30	MOTOR VEHICLE ACCIDENT	MOTORISED EQUIPMENT - MOTOR VEHICLES, N.E.C.	MULTIPLE INJURIES.	TRUNK,LOWER & UPPER LIMB
06/08/2008	M	23	FALL ON TO DIFFERENT LEVELS	FLOORS	MULTIPLE INJURIES.	MULTIPLE(TO TRUNK)
06/12/2008	M	38	STRIKING AGAINST	HAND TOOLS - MACHINES, HAND-OPERATED	PENETRATING WOUNDS.	SINGLE FINGER