The Influence of National Culture on Health and Safety Performance in Kuwait Oil and Gas Sector Construction Projects

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Submitted in Partial Fulfilment of the Requirements of the
Degree of Doctor of Philosophy, 2019

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Acknowledgment

First, I give my thanks and praise to the Almighty Allah who gave me the strength and persistence to undertake and finish this research.

I also extend my heartfelt gratitude to my supervisor, Dr Gerard Wood, for his feedback, constructive criticism, guidance, and patience throughout this research project. Without Dr Wood's insights, expertise, and knowledge, this paper would not be at the final standard. I am also thankful to him for connecting me with Dr Kaushal Keraminiyage who became my second supervisor, and without whose help I could not have overcome challenges to completing this research paper. I am also grateful to Dr Gerard Wood and his colleagues at the University of Salford's School of the Built Environment. They influenced this project with useful feedback, informative lectures, and interesting conversations.

My thanks go to all the companies and individuals who devoted time to participate in this study, with particular acknowledgement to Kuwait Oil Company as well as Kuwait National Petroleum Company. Without help from these companies and people who gave excellent and helpful feedback, this research would have failed.

Finally, I would like to thank my parents, my wife, and my children for their continuous prayers and support while I completed my research.

Declaration

This thesis is submitted to the University of Salford in partial fulfilment of the requirements of the degree of Doctor of Philosophy. While the research was in progress, some research findings were published in refereed conference papers prior to this submission (refer to Appendix IV).

Mohammad Almutairi 19/12/2019

Abbreviations

AOS	Kuwait Administration of Safety
BBS	Behaviour Based Safety
CAPMAS	Central Agency for Public Mobilization and Statistics
DPK	Development Plan of Kuwait
FI	Frequency Index
GCC	Gulf Cooperation Council
GLOBE	Global Leadership and Organisational Behaviour Effectiveness
IDV	Individualism Index
IVR	Indulgent Versus Restraint Index
KFH	Kuwait Finance House
KM	Kuwait Municipality
KNPC	Kuwait National Petroleum Company
KOC	Kuwait Oil Company
KPC	Kuwait Petroleum Company
LTO	Long Term Orientation Index
MAS	Masculinity Index
OSHMS	Occupational Safety and Health Management Systems
PACI	Kuwait Public Authority for Civil Information
PAM	Kuwait Public Authority for Manpower
PDI	Power Distance Index
SIT	Social Identity Theory
UAI	Uncertainty Avoidance Index
VSM13	Value Survey Model 2013

Abstract

Difference in terms of culture among the workers in a workplace setting must not be ignored as it is the main cause of misinterpretations and misunderstandings, which eventually lead to accidents. Responses to the acts, behaviours and activities resulting in increased risks vary between demographics and cultures. Individuals' normative practices are reflected in how they react to risky actions and situations. This research explores the repercussions and impact of a nation's culture on the workers' behaviours, specifically on the construction workers in Kuwait. Furthermore, it aims to provide recommendations for enhancing the safety performance. A mixed-method approach is employed in the present study, under which qualitative and quantitative research methods are combined. The quantitative methods were used to assess the relation between the participants' safety behaviour and their national culture. Out of the 508 responses that were completed, 468 questionnaires were accepted to obtain the desired matched sample required for the national culture analysis. In contrast to what was proposed by extant literature, this study found that power distance dimension and safety compliance are negatively correlated. Results also indicate that nations with high uncertainty avoidance dimension have a comparatively lower rate of safety compliance. In addition, nations with low individualism vs. collectivism dimension have a comparatively high rate of safety participation. Furthermore, the qualitative method of the study includes document analysis and semi-structured interviews to obtain data related to factors that influence safety performance. The final study findings after the validation highlighted six primary factors that affect construction safety performance: insufficient budgets, safety culture, work pressure, national culture, government role and allocation of safety personnel during tendering. Management's role and commitment to safety were emphasised with regard to safety outcomes. This study is the first of its kind conducted in the Kuwaiti construction and oil and gas industry. It contributes to the existing body of literature with regard to national culture and safety behaviour by retaining its focus on the context of Kuwait. The study contributed to academic knowledge of the health and safety in the construction industry in Kuwait, which accords with the goals indicated in the previous literature. In practical terms, the study results can be used to identify areas that need to be improved and resolutions that could be acted on.

1.0 Introduction

Construction Industry considered as a multifaceted industry incorporating several modes of work, techniques and resources. Nevertheless, the wide-ranging and often precarious nature of the initiatives associated with the construction industry bring considerable risks, the evidence suggesting that construction workers are five times more likely to become occupational fatalities compared to their counterparts in different industries (Kartam & Bouz, 1998). In fact, construction workers are routinely exposed to many casualties, fatalities and illnesses each year (Al-Humaidi & Tan, 2010). In response, strategic approaches to health and safety in the construction industry have been initiated both privately and by the state, one notable example being the UK government's implementation of legislation and frameworks to heighten construction firms' health and safety standards. Some of these measures include the substitution of the Construction Design and Management Regulations (CDM) 2007 with the CDM Regulations 2015, the Construction Skills Certification Schemes and the Corporate Manslaughter and Corporate Homicide Act 2007.

However, these measures have not safeguarded against the industry's high accident and fatality rates, a fact made obvious by the ongoing high figures and their adverse effect on construction firms' bottom lines. As noted by Vasconcelos, Soeiro and Junior (2011), approximately 16.7% of annual industrial fatalities around the world occur in the construction industry, amounting to around 60,000 deaths. In the US, the Bureau of Labor Statistics [USBLS] (2019) stated that the construction industry was implicated in 1008 employee deaths (accounting for 19.2% of all occupational fatalities), and the construction industry ranks third amongst the US industries as a contributor to non-fatal injuries, specifically, accounting for 149.6 non-fatal injuries per 100,000 full-time employees (Hallowell & Yugar-Arias, 2016). An analysis of the UK context over the past twenty years clearly shows that improvements in the frequency and type of non-fatal injuries and occupational fatalities, while undeniable, are still insufficient; the UK's construction firms are still responsible for around 36% of occupational fatalities (Health and Safety Executive [HSE], 2020).

Whereas the situation is stark in the developed world, it is even more so — and often ambiguously so — in the developing world. As a case in point, the rapidly developing Kuwaiti construction industry is constrained by relatively few health and safety regulations, and although it is certain that the frequency of non-fatal injuries and occupational fatalities is high, no credible data sets are available to evaluate the magnitude of the issue. This problem has been compounded by the lack of research on the Kuwaiti construction industry in the past twenty years.

Comparative analysis is widely considered the optimal means of gaining unambiguous and contextualised insight into a research problem. The results of such analyses can be used to formulate appropriate strategic responses to the identified issues. The injury rate is a worldwide standard, which represents number of reported injuries per 100,000 workers per year, can be calculated using the following formula: injury rate = (number of injuries) / (total number in employment) ×100,000. As presented in Table 1.1, the key findings are that the Kuwaiti construction industry's nonfatal injury rate of 262.5 ranked it as third of the five countries; in contrast, the UK, with 2143 nonfatal injury rate, ranked as the most hazardous. But in the present context, it is impossible to compare Kuwait with other countries because of differences in definitions and reporting systems for workplace accidents (HSE, 2016). For example, Bahrain uses insurance records as a key source of information; Jordan refers to Social Security Corporation records; Saudi Arabia collects data through the Ministry of Labor; and Egypt's data is collected by the Central Agency for Public Mobilization and Statistics (CAPMAS). Countries that use insurance records to collect data include only insured employees when making calculations; while some include every reported case, others record only events requiring compensation. Additionally, as Saudi Arabia uses the lunar-based Hijri calendar rather than the Gregorian calendar, the year is usually only 354 days long. Inclusion of self-employed workers also differs between countries; Kuwait's data do not include self-employed individuals. In Jordan, the relatively small construction workforce is likely to mean that injury rates are more variable. Mada (2016) questioned the validity and accuracy of CAPMAS data for construction-related injuries in Egypt (539 in 2015).

Table 1.1: Comparative study for 2015

Note: Data from CAPMAS, 2015; HSE, 2019; PAM, 2015; SSC, 2016.

Country	Employees	Injuries	injuries rate/100,000
Kuwait	230855	606	262.5
Bahrain	142181	101	71
Egypt	2697000	539	19.9
Jordan	40166	1571	3911
UK	2100000	45000	2143

1.1 Kuwaiti Construction Industry: An Overview

As an oil-rich developing country in the Arab world (the region stretching from the Maghreb region of North Africa to the easternmost point of the Arabian Peninsula), Kuwait is the geographic focus of the present study. A small land mass of 17,818 km^2 situated in the northeast Arabian Peninsula and bounded to the east by the Persian Gulf, Kuwait shares land borders with Saudi Arabia and Iraq and maritime borders with Saudi Arabia, Iraq and Iran. The country's climatic conditions are arid, owing to its desert topography, with extremely hot summers counterbalanced by cool yet short winters (Central Intelligence Agency [CIA], 2018). Statistics released by the Public Authority for Civil Information [PACI] (2017) indicate that the expatriate population in Kuwait (69.6%, 3,094,538) is far greater than the Kuwaiti population itself (30.4%, 1,352,060). With its oil-rich status, the Kuwaiti economy lacks diversification, and oil and petroleum exports account for over 50% of its GDP and between 90-92% of government and expert revenues (CIA, 2018). With its proven oil reserves, Kuwait ranks third in the Middle East (first is Saudi Arabia, and second is Iraq), and the country was a founding member of the Organisation of Petroleum Exporting Countries (OPEC, 2016).

The prosperity of the Kuwaiti construction industry has been bolstered by a range of public sector initiatives. These touch on various sectors, especially centring around infrastructural development and buildings, and they amount to around £114bn (Al-Nakib & Al-Mutawa, 2014). Several noteworthy changes to the situation occurred in mid-2013 with the establishment of a new governing body. First, the causeway development to connect north and south Kuwait was discontinued; second, plans to enhance pathways to Silk City were renewed; and third, infrastructure development has received extensive attention in the national budget. For the 2015 to 2020

period, Table 1.2 outlines several initiatives from the Development Plan of Kuwait (DPK).

Table 1.2: DPK 2015–2020 Construction Initiatives.

Note: Data from Kuwait Finance House (KFH), 2014.

Project	Budget
Al-Zour New Refinery	£10.0 billion
Clean Fuels Project	£9.30 billion
Kuwait Airport Expansion	£3.20 billion
Mubarak Al Kabeer Port	£0.80 billion
Madeenat Al Hareer (city of silk)	£61.7 billion

Extensive attention has been directed towards oil and gas construction projects in the wake of the new government of 2013. For example, the Kuwait National Petroleum Company (KNPC) reported an intended investment of £26.9 billion into the expansion of oil and gas projects in the coming half-decade (Oxford Business Group, 2014), and by the beginning of 2015, numerous high-value contracts (valued at several billion £) had already been established in the oil sector. For example, to develop the initial stage of the Kuwait Oil Company (KOC) Lower Fars Heavy Oil Development Programme, the international oil and gas company Petrofac won a £3.1 billion contract in the first month of 2015. This project, situated near Kuwait's northern border, chiefly concerned engineering, procurement and construction, the main purpose being to establish a 162 km pipeline and a primary processing facility to facilitate the transportation of heavy crude to the Ahmadi South Tank Farm. Within the next five years, the KOC is intended to assume control over the project, with an estimated production capacity of 60,000 barrels per day.

The situation regarding Kuwait's major downstream initiatives looks positive following the planning and postponement phases. In 2015, the KNPC assigned a range of contracts as a component of the £9.30 billion Clean Fuels Project (Garcia, 2016). The project will augment the refining capacity of the nation by facilitating the modernisation of its most expansive oil refinery complex (including the Mina Al Ahmadi and Mina Abdullah refineries). This will also be achieved by constructing the AlZour Greenfield refinery. Another KNPC contract, amounting to £3.7 billion, was awarded in early 2014 to GS Engineering & Construction and to SK Engineering & Construction, a pair of Korean organisations. This project centres on the modernisation of the country's current oil refineries. The investment scheme in 2015

was continually driven by the oil major, where bids for parts of the AlZour Greenfield refinery were accepted (with an estimated capacity of 615,000 bpd). A group headed by the South Korean Hyundai Engineering Company reportedly submitted the smallest bid (£1.2 billion) for the engineering, procurement and construction contract, which involved constructing an export terminal, a small vessel wharf and a set of marine facilities. Rivalling the world's most expansive oil refineries, the plant was cited by the KNPC as one of the cornerstones of Kuwait's downstream strategy. It is also planned to function as the key supplier of feedstock power plants. The Petrochemical Industries Company is presently using a £6.7 billion investment to facilitate the integration of an Olefins III plant into the existing refinery complex, and the KNPC is currently planning an oil product storage plant (£1 billion) (Kuwait & Times, 2016).

1.2 Work-related Injuries in Kuwait

In Kuwait, safety on site – including the reporting of casualties – is overseen by two government authorities. Firstly, the Administration of Safety (AOS) of the Kuwait Municipality (KM) is responsible for safety procedures within the construction industry, including on site activities. Secondly, Kuwait Public Authority for Manpower (PAM) is responsible for the protection of employees' rights upon the occurrence of a casualty. AOS examines on site casualties; PAM focuses on casualties taking place in all industries in Kuwait. In accordance with data collected by PAM, the construction industry can be understood as being accountable for the bulk of employee casualties. Substantial injuries and unintended fatalities among construction employees make up almost half of all employee casualties in Kuwait. With some exceptions, there exists no accessible, exhaustive records of casualty and illness statistics in Kuwait; only a small number of studies focusing on categories of casualties were discovered, with little evidence that there exists any kind of reliable monitoring or application (Al-Humaidi & Tan, 2010). Kartam and Bouz (1998) stated that the current work contends that these authorities lack any substantial partnership or collaboration with regard to the sharing of reports and information. Furthermore, data on casualties within the construction industry is incomplete and inaccurate; this is because there does not exist a respectable system or body for reporting and examining casualties within the construction industry in Kuwait.

Looking at Kuwait more broadly, Figure 1.1 depicts the number of workplace injuries by main industry group for the period 2014 to 2016, based on data from PAM (2014, 2015, 2016). The data show that the construction industry is ranked first for work-related injuries as reported for this period. Construction industry was responsible for 29% and 28% of all injuries reported in 2014 and 2015; the number of injures increased in 2016 to 672, accounting for 34% of all injuries reported in that year. These figures support the general consensus that construction sites are the most dangerous workplaces in Kuwait (Al-Humaidi & Tan, 2010; Al-Tabtabai, 2002; N. Kartam & R. Bouz, 1998; Kartam, Flood, & Koushki, 2000). In fact, Robertson and Lamm (2008) classified Kuwait as one of the most dangerous places to work worldwide.

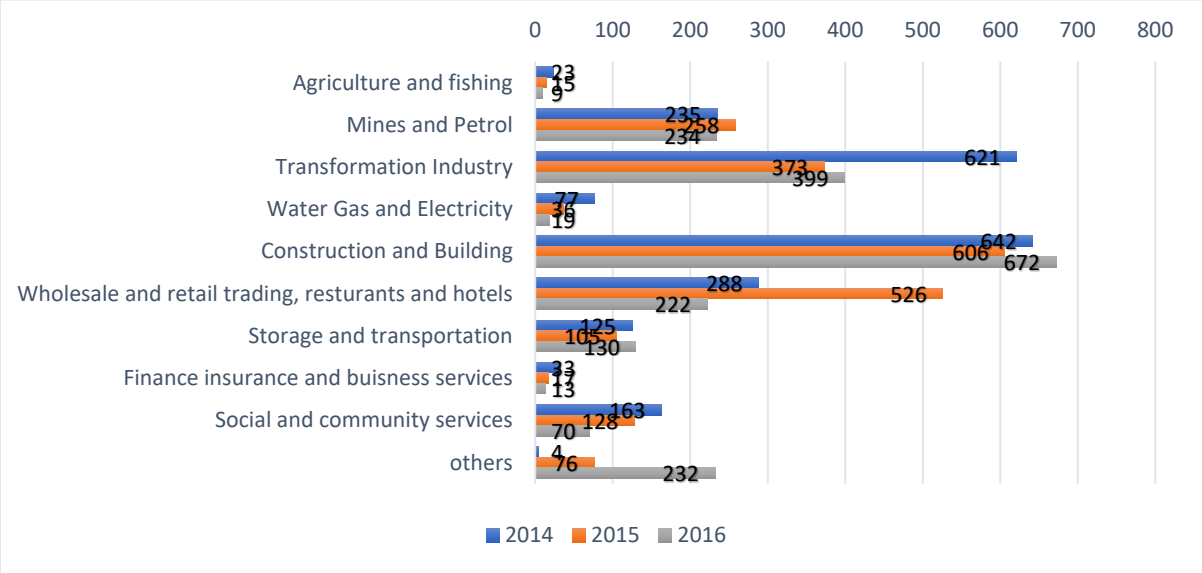

Figure 1.1: Number of workplace injuries by main industry group, 2014–2016.

Note: Data from PAM, 2016.

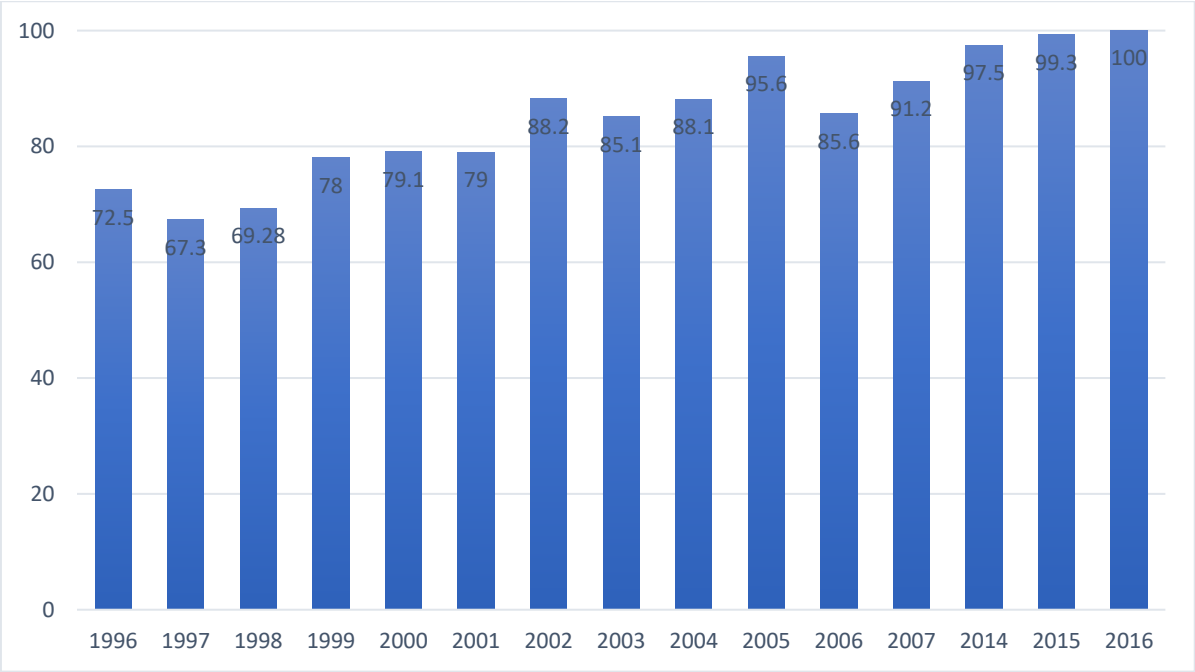

Figure 1.2: Permanent disability percentage, 2014–2016.

Note: Data from PAM, 2016.

In addition, Figure 1.2 shows that 100% of construction accidents in 2016 caused permanent disability. According to Al-Humaidi and Tan (2010), the equivalent figure in 1997 was 67.3%. This increase in permanent disability is further confirmation that the construction industry is highly dangerous in Kuwait.

The research that does already exist regarding safety within the construction industry in Kuwait notes several factors: the considerable use of migrant labour; the way in which distinguished lifestyles and practices echo human relationships; distinguished routines within the workplace; challenges with regard to communication approaches and the fact that employees are psychologically sensitive and concerned with their own personal difficulties. As contended by Kartam et al. (2000), these elements are able to shape the individual focus and minds of employees, and may play a role in the occurrence of casualties.

The situation in Kuwait oil and gas sector looks better as the Kuwait Petroleum Company [KPC] (2011) stated that considerable enhancements to the health and safety situation in the Kuwaiti oil and gas industry have been made in the past decade. The impetus behind these enhancements was said to be the KPC's prioritisation of safety and its commitment to reinforcing this with all relevant

measures. The International Organization for Standardisation (ISO) 14001 and the Occupational Health and Safety Assessment Series (OHSAS) 18001 international certifications for Environment Management System and Occupational Health and Safety Management system were also facilitated by the KPC.

The oil and gas industry is widely understood to be the foundation of Kuwait's stable economy, which breeds security and social development within the country. Oil and gas production, transportation and exploration form a substantial part of the high-risk work within the construction industry. Consequently, casualties taking place within the sector significantly affect financial profits, environmental factors, and the human workforce.

1.3 Research Rationale

A central challenge arising from the Kuwaiti situation, along with that of many of the other Arab states of the Gulf, involves culture-specific problems which are especially prominent in the construction sector. These include the lack of a homogeneous labour force (owing to the majority proportion of expatriate workers), the linguistic diversity and the lack of shared, standardised working cultures and labour practices (Al-Humaidi & Tan, 2010; Al-Tabtabai, 2002; Kartam & Bouz, 1998; Kartam et al., 2000).

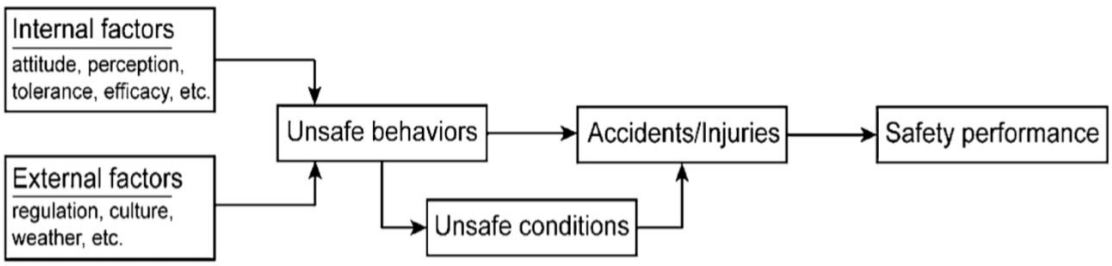

Figure 1.3: A general accident casual model (Source: Wang, Zou, & Li, 2016)

As shown in Figure 1.3 (Wang, Zou, & Li, 2016, p. 268) occupational accidents are caused by different factors; of these, unsafe behaviour is among the most significant (Fang, 2012, cited in Wang et al., 2016). As a result, both researchers and academics in the safety field need to understand the factors influencing individuals' behaviour in the working environment, as well as to investigate the situations and

scenarios leading to and causing workplace accidents. In any workplace setting, the cultural variation and differentiation among the workforce must be considered, as ignoring or neglecting to acknowledge such differences is a key cause of misinterpretations and misunderstandings—events that can ultimately lead to accidents. Responses to the acts, behaviours, and activities that result in increased risks vary between different demographics and cultures. Individuals' normative practices are reflected in the ways in which they react to risk-carrying actions and activities.

Cultural backgrounds affect how people view, are affected by and deal with actions that carry a degree of risk or uncertainty, and this characteristic embodies the cultural standards that are learnt by people in their own social environment. Therefore, large-scale factors in relation to the national cultural, political and economic undertones must be considered when signifying the importance of safety within the construction industry. Particularly for powerful multi-national firms, outlining a prevailing culture of safety is particularly intricate, with many different elements to it. The literature suggests that every aspect of operations in the construction industry (including processes, materials and drivers) is impacted by national culture, based on the observation that every country is characterised by a distinct outlook. Thus, Hudson (2007) argued that it is necessary that each nation state also prioritises distinguished safety procedures, created specifically to suit its own national culture.

According to Al-Bayati, Abudayyeh and Ahmed (2016) and Loosemore, Phua, Teo and Dunn (2012), cultural diversity should be managed properly to avoid miscommunication and to improve workplace relationships, productivity, and safety performance. With this statement, Al-Bayati et al. (2016) was drawing attention to the highly diverse construction industry workforce that manages projects commissioned by Gulf Cooperation Council (GCC) countries. According to Casey, Riseborough, and Krauss (2015) and Wasilkiewicz, Albrechtsen and Antonsen (2016), one of the biggest challenges facing employers within the construction industry entails misunderstandings between bosses and their employees. Not only does this mean that basic instructions can be misunderstood, but it also could carry wider-ranging implications for workforce safety, not to mention work quality and delivery. Choudhry (2014), Cooper (1998) and HSE (2009) also noted that one of

the biggest consequences of miscommunication—one that comprises more than 80% of workplace-related injuries—is improper or unsafe practices, which could be attributed partly to cultural misunderstandings in and around GCC construction zones. Dovetailing with this, it must be said that for the construction industry to prosper, it must improve how it manages and communicates with its workforce. It is known that shortcomings in this area will hinder any effective communication channels between the workforce and management. Such a flawed aspect in the industry can impact work quality, workplace safety and job-completion times greatly. It is on this basis that management teams within the construction industry are encouraged to understand their workforces' cultural foundations and seek ways to enhance different aspects of communication throughout work sites.

Over the years, researchers have realised the role that national culture plays in shaping organisations. Finestone and Snyman (2005) note that cultural differences must be taken into account and must be respected in the workplace as disregarding the importance of these differences can lead to potential clashes and misinterpretation. Until Hofstede published his ground-breaking work in 1984, business leaders viewed organisational culture as quite separate from national culture. Hofstede et al. (2010) argued that organisational cultures are in fact rooted in national culture. Burke et al. (2008) agree to this view, stating that National culture is the framework upon which organisations' operations are based, and this relationship does not depend on whether the cultural context is viewed in relation to shared meanings, principles and beliefs or to recognisable rituals and ceremonies. The authors add that, although regional differences can be seen in different countries, it has been demonstrated that national culture is the sole factor that shapes organisations. Dorfman, Vipin, Hanges, House, and Mansour (2004) point out that history, culture and customs will undoubtedly affect the performance and values of the workforce. Similarly, Hofstede et al. (2010) concluded that national culture has a greater impact than organisational culture or any other type of subculture on the performance of organisations.

The relationship between safety and national culture has been recognised over the last few years (Mearns & Yule, 2009), and organisations that attempt to create a positive safety culture must examine the connection between organisational safety and national culture. According to Helmreich and Merritt (1998), safety measures

will be effective only if organisations conduct a comprehensive evaluation of how national culture impacts their performance. Burke et al. (2008) assessed the theoretical hypotheses relating to the mediating roles of national culture and organisational culture in the success of safety training. They found that one feature of national culture, namely, the avoidance of uncertainty, moderated the transmission of safety training on how to reduce injuries and accidents. Another study looked at how culture affected workforce safety in Taiwan's high-risk industries. The authors found that culture plays a major part in influencing safety management as well as employees' attitudes and behaviours towards safety (Hsu, Lee, Wu, & Takano, 2010).

Although, national culture significantly influences the models of organisational operation (Burke et al., 2008), an apparently few experiential studies have focused on how national culture affects safety behaviour and performance (Mearns & Yule, 2009). Mearns and Yule (2009) have investigated to what degree the Hofstede's dimensions of national culture are applicable to the safety climate and behavioural practices within a multinational company that manages construction, maintenance, and other services. Considerable differences in national culture could have an impact on the effectiveness of transposing safety procedures and on the systems of work in different countries. On the basis of the argument of Kennedy and Kirwan (1998) that people's behaviour is shaped by their culture, clearly, culture not only exerts a major impact on people's behaviour, but it is also the main reason why accidents occur.

To date, the influence of national culture has been largely ignored in safety literature (Mearns & Yule, 2009; Starren, Hornikx, & Luijters, 2013). To the author’s best knowledge, there are no published studies on how national culture affects safety behaviour in oil and gas construction projects, particularly in Kuwait. Researchers have tended to focus on how national culture affects attitudes towards work, but they overlooked its impact on safety attitudes and behaviours (Mearns & Yule, 2009). Nevertheless, it remains an extremely important issue, and it is essential to establish how different cultures view safety issues (Mearns & Yule, 2009; Starren et al., 2013). A number of empirical studies have examined safety performance in Kuwait, and these investigations should be complemented by further studies on occupational safety. Safety behaviour and the influence of national culture have yet

to be comprehensively examined, and this study will hopefully provide valuable findings and make an important contribution to the literature in this field.

Although the Kuwaiti context is one in which neither issues of workplace safety nor the drastic implications of unsafe practices at the institutional level are acknowledged, the literature in this area is limited. Nor has any study sought to examine how national culture has impacted the Kuwaiti construction industry's safety performance, whether directly or indirectly. Hence, the present study seeks to fill this gap, investigating construction workers' safety behaviours, followed by an examination of the ways in which these characteristics impact occupational safety performance and identifying opportunities for improved practices.

Oil and gas lies at the heart of the Kuwaiti economy, and the stability this affords has created a secure environment in which the social advancement of the country has taken place. The oil-export industry comprises more than 50% of its GDP and between 90-92% of government and expert revenues (CIA, 2018). This dependence on the petroleum industry makes the oil and gas sectors absolutely essential to its economic vitality. But the other side of the coin is that high-risk construction work is widespread, necessitated by the national orientation towards oil and gas production, exploration and transportation. Particularly important, as reported in the literature, is that the high rate of accidents, deaths and injuries which occur in these high-risk sectors compromise the otherwise favourable degree to which such initiatives can be profitable. Certain hazards unique to the oil and gas industry, including chemical spills, can create overwhelmingly disruptive scenarios, further jeopardising economic prospects which should be positive. The study will centre on what influences safety performance in the Kuwaiti oil and gas construction sector.

1.4 Research Aim

The aim of this research is to understand how the safety behaviours of construction workers are affected by national culture within the oil and gas sector in Kuwait and will produce recommendations for enhancing the safety performance.

1.5 Research Objectives

- To identify and understand the main concepts of safety
- Evaluate the current state of the safety performance and safety behaviour found in construction sites
- Investigate the ways in which safety behaviour is impacted by cultural factors, drawing upon Hofstede's national cultural dimensions
- Identify factors influencing safety performance in the Kuwaiti oil and gas construction projects
- Provide recommendations for enhancing the safety performance in the Kuwaiti oil and gas industry's

1.6 Research Methodology Overview

Successful research is largely dependent on the method being used. As stated by Bryman (2015), the theoretical and practical research methods are the two most fundamental and commonly used scientific methods. The method selected for use both defines and explains the process undertaken in gathering primary data from the study respondents. A methodology can be implemented via several different frameworks – one example is the Saunders, Lewis and Thornhill (2015) framework, which is also called the 'research onion'. This framework classifies the research method into five sub-sections, describing each part of the research process in detail (Saunders et al., 2015). This research method was selected for the current study because of the various layers it enables one to include within a study. A substantial amount of data is necessary to ensure reliable results, and the data-gathering methods and applications outlined in the Saunders Framework's sub-sections enable diverse research objectives to be achieved. Selecting a suitable methodology based on the research questions being examined is fundamental to the success of a research project. The method functions as a guide for devising an appropriate approach for collecting and evaluating the data. The quantitative and qualitative approaches form the basis of the current research and, as such, a mixed-methods methodology has been selected. Questionnaires and interviews were conducted, and the deductive method was applied. The positivist model's scientific methodology has been followed as the research is based on the pre-existing national culture model established by Hofstede, making this the most suitable

approach. The research will use Hofstede's Value Survey Model 2013 (VSM13) and his positivist philosophy.

There are five basic stages to the research programme: the literature review stage, the pilot study stage, the data-collection stage, the quantitative and qualitative analysis stage, and the validation and conclusion stage.

Phase One: Literature review

This stage is crucial for the research as it enables the problem to be identified clearly and helps the researcher to devise the research aims, questions and hypotheses, as well as to establish the theoretical framework. This phase is focused on literature that examines safety behaviours, national cultural models, safety performance measures and the safety climate. Previous research is examined so that comprehension of best practice in health and safety management can be gained and a suitable study questionnaire can be designed.

Phase Two: Pilot Study

This stage focuses on major as well as minor problems, including the shaping of the overall question and questionnaires linguistic problems. A pilot study also helps the researcher to identify and overcome problems associated with document formatting, such as those related to text styles and font sizes (Bell, 2014).

Phase Three: Data Collection

This phase involves the questionnaire being distributed to the selected research sample. The interviewees chosen here are twelve health and safety management practitioners. Both the questionnaires and interviews have been designed to examine safety behaviour, safety outcomes and national culture.

Phase Four: Quantitative and Qualitative Analyses

There are two parts to this stage. In the first part (quantitative analysis), the research hypotheses are tested. In the present study, this stage focuses on the national culture, safety outcomes ranking and safety behaviour associated with oil and gas construction projects. Because of the ordinal nature of the data, several statistical analyses are required; for example, descriptive statistics help with the evaluation of perception or opinion trends (such as the measurement of dispersion

and frequency distribution), while inferential statistics enable the assessment of rankings and ratings, and factor analysis permits the examination of safety behaviour, national culture and safety outcomes. The data is also examined for validity and reliability through appropriate statistical analysis – for instance, Cronbach's alpha is commonly used. Statistical Product and Service Solutions (SPSS v25) software and Microsoft Excel software have been selected here for data analysis. Analysis enables the results to be discussed. The second part of the fourth stage involves qualitative analysis. In the current study, this analysis will be completed after submission of the internal evaluation report.

Phase Five: Validation and Conclusion

The first task in this final stage is the validation process, which is carried out with health and safety experts (a selection of government officials, academics, consultants and contractors). The second part of this stage consists of drawing conclusions and making recommendations. The overall recommendations take into account the recommendations gathered from the experts' interviews and surveys, as well as the researcher's field observations. Figure 1.4 shows the timeline of the current research.

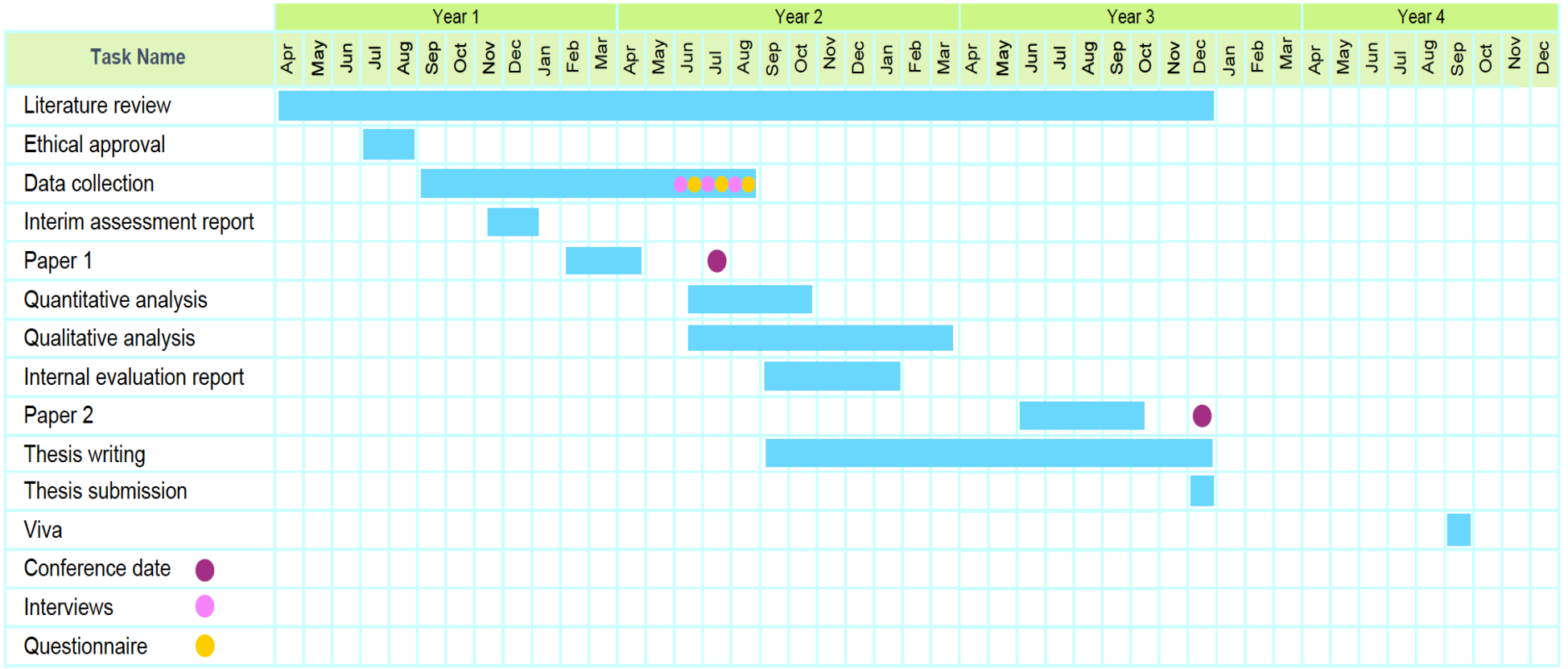

Figure 1.4: Current research timeline.

1.7 Theoretical Framework

A significant part of research is a theoretical framework. A theoretical framework is a theory selected by a researcher to help with their research. That is, a theoretical framework refers to implementing a theory or concept obtained from the theory to explaining a research problem, an event, or a specific phenomenon. Thoughts and actions based on theory are important in terms of selecting a topic, conceptualising the literature review, developing research questions and, the design approach, and choosing an analysis method for a dissertation. A theoretical framework thus can be regarded as the basis for developing all knowledge, literally as well as metaphorically, in a study. It provides support and structure for the study's rationale, purpose, problem statement, research questions, and significance.

Not only does a theoretical framework function as the foundation for a literature review but also its analysis and methods. Essentially, a theoretical framework provides a blueprint for the study, thus ensuring that the study's vision and structure are clear. A research plan, on the other hand, which includes a theoretical framework, helps ensure that the dissertation is structured, robust, and has organised chapters.

Prior to the literature review, this paper will establish a theoretical framework (Figure 1.5) as a conceptual basis for the practical undertaking of the research itself. This framework will allow the phenomena observed to be understood more clearly. The different connections amongst the phenomenon's key factors can be defined under this theoretical framework, and its description will act as the premise for the literature review chapter. In addition, a theoretical framework assists in the structuring of the data collection process and guides how data relates to existing literature (Maxwell, 2013). Therefore, a researcher can undertake their study within a theoretical framework, examine research questions, make choices regarding data collection, and connect research questions with data in the literature. All research involves a unique theoretical framework from which to work, whereas the research framework and paradigm describe a more open view of the subject, as they are based on key assumptions. Examples include the nature of knowledge, nature of reality, and different research methodologies and methods. The theoretical part of a research framework is tied to its outlook on epistemology and ontology, whereas its

practical part is involved with the methodology and methods of a research study. The current thesis will describe the most appropriate theory, or theories, as they relate to the research questions at hand.

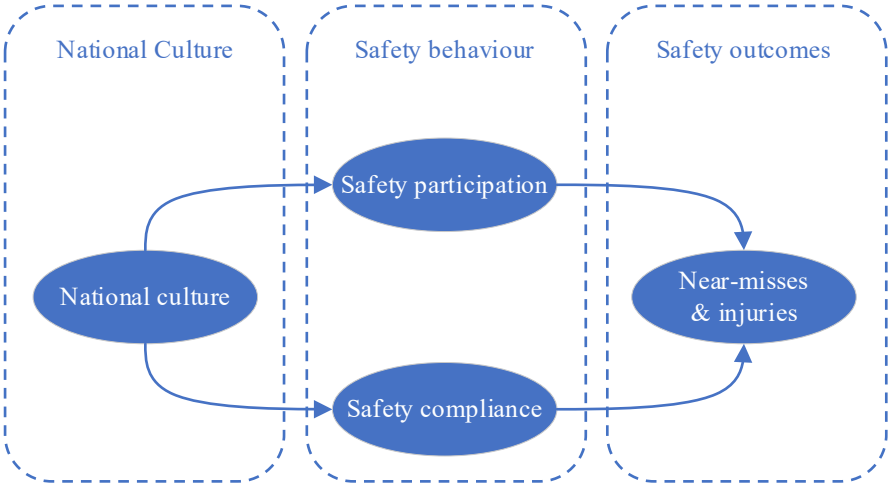

Figure 1.5: Current research theoretical framework.

The current study's theoretical framework guides the data collection processes, addresses literary gaps, and accounts for the research's scope; it has an emphasis on safety behaviour, safety performance, and national culture, along with the connections that exist amongst these different elements. The reason behind employing this theoretical framework is to offer a systematic basis for this study and to help in designing the research instruments.

1.8 Structure of the Thesis

Chapter One – Introduction

This chapter presents the study background and the research problem, giving justifications for the research aims and objectives, as well as the research methodology. The literature on the impact of national culture on the health and safety of workers is reviewed. Kuwait represented a gap in the literature globally, particularly regarding research into safety during construction projects conducted in Kuwait.

Chapter Two – Safety Literature Review

In this chapter, a comprehensive literature review of theoretical perspectives on major safety activity concepts is presented. The chapter also defines and describes

the safety climate and safety behaviour, examining how they affect safety outcomes. In addition, the role of national culture is reviewed. The literature review thus presents the relationship between the safety climate, safety outcomes, national culture and safety behaviour.

Chapter Three – National Culture Literature Review

This chapter illustrates the important features of various national culture models, examining their benefits and limitations. It also explores why Hofstede's model has been chosen for this study.

Chapter Four – Research Methodology

Chapter Four examines the research methodology used in this study, including the research philosophy, the data-collection process, data-analysis procedures and research strategies. Moreover, it presents key ethical considerations, as well as considering the matters of reliability and external validity. A questionnaire was developed and responses to this were used to achieve the objectives. This consisted of three primary areas: National culture, safety behaviour and safety outcome. VSM13 was employed for the national culture construct. Next, safety behaviour—the second construct—was composed of two elements: safety participation and compliance. The final construct, safety outcome, was composed of three factors: the accident rate, the injury rate and the days-off rate. It was theorised that national culture had a direct effect on safety behaviour constructs. Overall, the study objectives were addressed using twelve hypotheses.

Chapter Five – Quantitative Results

This chapter describes the study's quantitative results and analyses the questionnaires according to the factors and data types extracted. Here, the data will be examined for validity and reliability through the examination of appropriate statistical analysis. The chapter considers the hypothesis- and test-development processes in detail, as well as discussing the results. The analysis and the discussion on the association between safety behaviour and national culture were presented in this chapter. The construction of the hypotheses was detailed in this chapter together with correlation analyses and the findings. The end of the chapter was dedicated to associating the findings of the correlational test with the literature review articles on safety. Similarities and differences in results from prior studies

were discussed and concerned the impact of the selected safety indicators together with those of the current research study.

Chapter Six – Qualitative analysis

To enhance our understanding of the fundamental safety culture in a certain environment, it has been suggested that quantitative techniques should be supported by qualitative techniques (Nielsen, 2014). The interviews conducted supplied valuable details on the perspectives of the workers regarding safety conditions in the work environment and they also served to mirror the wider perspective of the construction industry in Kuwait and the safety culture they indicate. The interviews outlined four primary themes that affect construction safety: insufficient budgets, safety culture, work pressure, and national culture. Management's role and commitment to safety were emphasised with regard to safety outcomes.

Chapter Seven – Research findings validation and discussion

In this study, experts opinion were sought to evaluate the results' credibility, since this method enables participants to identify the extent to which the findings represent reality. Four experts participated in the validation: a professor of civil engineering from Kuwait University; a professor of industrial engineering from Kuwait University; senior safety engineer from Saudi Aramco; safety engineer from the Kingdom of Bahrain. Findings indicate that, as a whole, the expert opinions were positive and contained some recommended factors to be considered related to lack of oversight to safety measures from government bodies and the allocation of safety personnel during bidding and tendering phase. Every expert showed satisfaction with the classification of the research themes. The final study findings after the validation highlighted six primary factors that affect construction safety: insufficient budgets, safety culture, work pressure, national culture, government role, and allocation of safety personnel during tendering.

Chapter Eight – Conclusion and recommendation

The findings of the study are briefly presented in this chapter together with an explanation of how this study contributes to the literature, research recommendations, and conclusion.

2.0 Health and Safety Literature Review

2.1 Overview of Construction Health and Safety

The construction industry plays a pivotal role in improving the economy of any country by constructing infrastructure needed for growth. But the construction industry is plagued with various safety challenges every day and on every project. Construction industry data and statistics available shows a high rate of accidents, and it needs to be addressed. The major reason for the high rate of accidents in the construction industry is the complexity of the construction work environment. Different organisations work in a construction site, and each organisation has its own equipment and workers. Also, the construction work environment involves activities that could be dangerous, like demolition, working at heights, scaffolding, manual handling, etc.

Construction projects vary from one another, ranging from something as simple as a small house to something as complex as a skyscraper or a stadium. A lot of changes can lead to the rotation of teams and a lot of unskilled workers being employed (Rosenfeld, Rozenfeld, Sacks, & Baum, 2006). Several factors that contribute to organisational characteristics in a construction work environment were listed by Maloney and Cameron (2003) and include:

- A sub-contractor who does not have control over his work environment
- Project revenue that is determined by work timetables, cost and productivity
- Construction projects that have a fixed duration, causing stress for the project team when trying to focus on what they need to finish within the stipulated deadline
- Construction projects that vary in size and complexity, with various organisations working in a single workplace at the same time

All these factors, and more, make the construction industry one of the most dangerous places in which to work because of a lot of fatal accidents (Maloney & Cameron, 2003). Since construction projects are highly labour-intensive, labourers have to perform a wide range of construction-project activities that carry with them a number of associated risks (Awwad, El Souki, & Jabbour, 2016). Safety must be a

priority for everything done at all stages of the construction process. The safety of labourers is a major concern when starting a construction project. Construction-safety authorities should take the necessary steps to enhance labour wages, education, and skill levels.

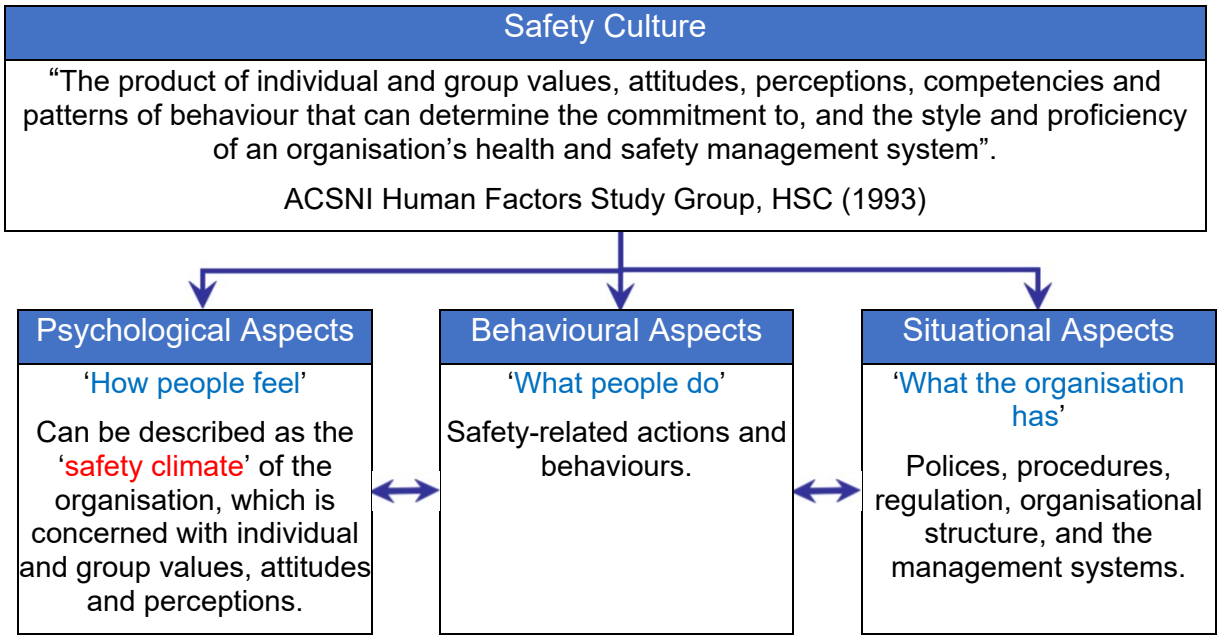

Figure 2.1: A Three Aspect Approach to Safety Culture (Source: HSE, 2005).

2.2 Safety Culture and Safety Climate

A useful framework presented by HSE (2005) based on Cooper (2000) study to distinguish between safety culture aspects (Figure 2.1). The Chernobyl nuclear plant disaster in 1986 contributed greatly to our understanding of workplace safety, as International Safety Advisory Group (1991) noted, and played a large part in our understanding. According to Flin et al. (2000), one of the biggest revelations following this disaster was the reportedly 'indifferent attitude' among the plant's workforce at the time—later cited as a contributing factor in the disaster—toward health and safety behaviour. Despite these findings, it can be said that there is still a long way to go in terms of our understanding of health and safety standards. Notably, according to Choudhry, Fang, and Mohamed (2007), Guldenmund, Cleal and Mearns (2013) and Mohamed (2002), 'both the definition of safety culture and its relationship to organisational culture (are) something that is not yet agreed on'.

It is important to note two key focus areas when examining workplace health and safety, according to Glendon, Clarke and McKenna (2006). It is important to examine workers' general attitudes toward health and safety as well as wider cultural approaches, both of which tend to be expressed through employee behaviours. That is, while examining employees' behaviours can often uncover their attitudes toward health and safety, one must not discount wider workplace factors that come into play—factors that often go a long way toward explaining why people behave as they do. The way that behaviour is rewarded or acknowledged throughout the wider organisation influences behaviour in the first place. Mohammadi, Tavakolan and Khosravi (2018) expanded on this by stating that the ways in which health and safety is perceived in the workplace is a key factor when it comes to how staff perform within that workplace. This has been used throughout research as a way to determine the overall understanding of health and safety in the workplace.

Safety culture refers to how health and safety are enacted throughout an entire organisation, especially how worker safety is prioritised and relayed throughout all organisational levels. Safety culture also concerns the lengths to which individuals will go to ensure their own and others' safety, how they communicate with each other and how they seek to educate themselves, as well as change and adapt on both individual and organisational levels. Safety culture also concerns how individuals demonstrate a willingness to change when faced with mistakes and take pride when they do. The very definition of safety culture seeks to highlight individual commitments, personal responsibility and workplace communication not only at the senior management level, but also throughout the organisation as a whole. Examining behaviours indicates the company's overall approach to workplace safety, although the wider notion of safety culture looks more deeply into how attitudes are adopted and acted upon.

Numerous definitions of safety climate have been put forth, e.g., Zohar (1980), one of the pioneers of safety climate research, once stated that a safety climate is 'a summary of molar perceptions that employees share about their work environment' (Zohar, 1980). Cox and Flin (1998) sought to summarise this by stating that, if an organisation incorporates a 'way we do things around here' attitude, then by examining these practices, this will highlight the importance level given to health and

safety at any given moment. Choudhry, Fang and Lingard (2009) stated that the notion of a safety climate is actually a picture of the wider safety culture taken at a specific moment in time. A number of researchers have also suggested that the safety climate reflects the safety culture (Choudhry et al., 2007; Mohamed, 2003; Petitta, Probst, Barbaranelli, & Ghezzi, 2017), and many people deem this to be the key factor determining high-performance safety. The safety climate thus represents the individuals' opinions regarding the company's safety management (Mohamed, 2003; Schwatka, Hecker, & Goldenhar, 2016). Surveys are a common tool for assessing the safety climate, and these entail a number of climate-related items, such as how much time management commits to ensuring safety, safety rules and procedures, safety training, employees' involvement, and safety behaviour (Alruqi, Hallowell, & Techera, 2018). The collated survey scores for each dimension generate an overall safety-climate score for the company and ultimately demonstrate the safety performance of the company. Next, the subject of safety rules and procedures in the construction industry is explored.

2.3 Safety Rules and Procedures

Safety procedures and rules are an integral aspect of safety management systems. They play a huge role in determining safety levels in workplaces (Wu, Song, Wang, & Fang, 2015). Construction safety values should include protective equipment and clothing so that injuries and accidents can be reduced. Safety procedures and rules can either reduce the impact of or even prevent accidents (Feng, 2013; Feng, Teo, Ling, Low, 2014). Safety procedures and rules must be clearly defined to increase safety compliance and bring about a strong safety climate that will lead to a reduction in the number of accidents. When workplace safety practices are not followed strictly, the work environment could become one where individuals that flout safety practices go scot free, and other innocent workers become injured (Neal & Griffin, 2006). Staff who behave in an unsafe manner can create a high level of workplace danger that could increase the odds of accidents occurring. In general, the policies of the organisation's general approach to safety includes practices and objectives that maintain the health of the people of the organisation. These comprise the commitment by the organisation in order to ensure the safety of the people, the employees and the consumers. Safety policies like these also specify the responsibilities of the people and the department.

In each stage of a specific construction project (i.e., before, during, and after its completion), ensuring employees' health and welfare tends to characterise safety in the construction industry environment (Zohar & Luria, 2003). Safety procedures vary across countries. Thus, in the UK, for example, every construction company must adhere to the equivalent standards delineated in the Six Pack Regulations and the 1974 Health and Safety at Work Act (Stranks, 2005). Meanwhile, both state-owned and private companies in the US need to adhere to the health and safety principles, determined by Occupational Safety and Health Administration (OSHA) (Holt, 2008). Private- and state-initiated safety strategies may be distinguished in relation to health and safety. For example, construction projects or any other activity that may produce environmental effects are subject to the regulations within the 1982 Environmental Protection Standards and the 2001 General Environmental Law, introduced as state-initiated policies (Cameron & Quinn, 2011).

The adoption of safety standards by the international construction industry, especially across the Middle East, has been the focus of various studies. For example, a further investigation has proposed that global, standardised health and safety regulations should be introduced (Zhu, Fan, Fu, & Clissold, 2010). Similarly, it has been advocated that further construction industry health and safety activities should be based on global principles, mainly because of the growing effects on business of internationalisation, globalisation, and liberalisation (Cooper, 2000). In the same vein, the establishment of bodies that is absent to guarantee adherence to safety principles and further promotion of the international village concept is considered the strength of this approach to safety. Nevertheless, the construction industry tends to face differing health and safety problems according to country-specific circumstances. Therefore, to enable states to draw on their context-specific estimations—rather than complying with uniform international health and safety standards—particular recommendations have been offered to manage the construction industry (Fishback, 2000). Next, the safety best practices are discussed.

2.4 Safety Best Practices

As Geller (2010) states, safety best practice is the attitude, value, commitment and competency required to create an accident-free site by focusing on making crucial

decisions that emphasise the quality of safety. Furthermore, Maloney and Cameron (2003) claims that the construction industry finds it difficult to ensure best practice in terms of safety and health; this may be because there is extensive work being conducted simultaneously in the construction industry, resulting in a frenzied and busy environment in which proper precautionary measures are difficult to implement. Vasconcelos et al. (2011) support this finding, stating that the construction industry has seen and continues to experience tragic and deadly accidents that may have been avoided if effective best practice methods had been implemented. Hence, it is important that an effective safety system ensures safety training, as well as identifies and improves the limitations of safety practice. It is important to note that the view that the construction industry's present health and safety practice is terrible is a gross misjudgement. Despite the unfortunate safety statistics, the construction industry strives to effectively implement safety in its projects. The construction industry's safety practices, however, still fail to match the level of safety implemented in other industries. Thus, construction practitioners must mainly focus on using the required safety success indicators to benchmark, as well as measure the level of compliance with safety practices (OSHA, 2009).

Benchmarking can be implemented for comparing an organisation's performance with other industry leaders' performances; this comparison can then help to determine the company's strengths and weaknesses. As Stapenhurst (2011) argues, observing the industry leaders' practices can help to learn about what the best practices are to ensure superior performance. Moreover, as Taggart and Carter (1999) states, perception surveys and safety inspections should be used to benchmark safety performance, as benchmarking can help in enabling continuous performance improvement. Comparing performances can help to examine the reasons behind the successes and failures of best practices and provide suggestions for learning, improving and innovating (Mohamed, 2003). Safety performance can be greatly improved by implementing the assessment framework for benchmarking contractors' safety performance of contractors.

Clarke (2010) states that with the high accident rate in spite of safety policies, several questions remain unanswered. Several scholars have observed that numerous factors have led to the compromising of safety in the construction industry, with the major reason being lack of commitment to safety culture and best

practices (Bavafa, Mahdiyar, & Marsono, 2018; Sawacha, Naoum, & Fong, 1999). Accordingly, safety problems would be rare in an organisation that rigorously implements best practice. Further, it is clear that a construction system that ensures its operations are aligned with a safety culture will be successful. Moreover, although companies have begun noticing that a multicultural workforce can create difficulties, Bukman, Tijsmans and Visee (2010, cited in Starren et al., 2013) argue that companies often do not consider this factor when examining occupational safety policies. Bukman et al. (2010, cited in Starren et al., 2013) studied best practices of companies and found that very few companies that employ migrant workers implement specific safety measures, most of which relate to language problems. And according to Laharnar, Glass, Perrin, Hanson, and Kent Anger (2013), although several countries have developed precise safety policy initiatives, these measures fail during the initial implementation stages due to lack of commitment regarding best practices, particularly when companies wish to ensure fast production or cut costs (Geller, 2010). Due to safety procedures not being effectively implemented, this has also resulted in increased risks of work-related injuries and illnesses. Another reason for policy implementation stagnating is a lack of skilful and timely planning.

As the Institution of Occupational Safety and Health [IOSH] (2010) states, the global best practice regarding health and safety in construction projects is represented by the UK's CDM, particularly for designers and clients. A major objective of CDM Regulations is to minimise the risk involved in the construction process. For this, CDM implemented a strategic approach in project design, incorporating health and safety, and prepared and executed these plans so that health and safety were effectively co-ordinated throughout the process. They also ensured that resourceful and skilled professionals were employed to improve construction work management. Next section will explore the relationship between human factors and safety.

2.5 Humans Factors and Safety

Unsafe behaviour by humans is the primary cause of accidents in organisations. According to by Garavan and O'Brien (2001), most occupational accidents were caused by people rather than unsafe environments. According to Gordon (1998),

past accidents in industrial environments were examined from a technological point of view instead, and human factors were largely ignored. But the frequency of technological failures has reduced, and human factors are now more prominent than ever. In a complex socio-technological system, accidents are caused by several factors, like organisational, environmental, human, social, managerial and technical factors (Cullen, 1990). Psychologists, human factor specialists and reliability engineers stated that the human factor was the root cause of accidents (Gordon, 1998).

According to Khdair, Mohd Shamsudin, and Subramaniam (2011), the human factor is an important aspect of safety behaviour. The failure or success of safety systems in chemical plants depends on human factors (Abu-Khader, 2004). A study by Konstandinidou, Nivolianitou, Kefalogianni, and Caroni (2011) on the Greek petrochemical industry revealed that human related factors could cause a lot of unwanted scenarios. The study focused on injuries, material damage, accidents and absence of work.

Human error and human factors are two terms that are often used interchangeably without regard to their nuanced meanings. Human error is defined as acts by humans that deviate from reference acts as judged by others. These acts vary and are subjective (Gordon, 1998). Human factors refer to the logical study of the interaction between machines and humans. At an organisational level, several factors can cause accidents, like poor communication between worksites and cost–cutting measures (HSE, 2005). At the group level, interactions between workers and supervisors and between members of a group and the management style of a leader can affect safety. At an individual level, factors that could affect safety are stress, ergonomics, clarity of work instructions, workload, motivation, experience and training affect safety. Therefore, the next sections discuss in more detail safety performance and its different measurement tools.

2.6 Safety Performance

Safety performance means to work safely over a period of time (Atak & Kingma, 2011). Conversely, if the number of incidences occur more often, then this can be described as a poor safety. Safety constitutes many factors in a culture. And reflects

the behaviour, conduct and attitudes of the workers involved. The employees of an organisation may not always report their interaction with a risky situation or incident. They can assume that they may face a loss of incentives if they do so (Dejoy, Schaffer, Wilson, Vandenberg, & Butts, 2004; Probst & Brubaker, 2001). Furthermore, the authors illustrate that the declination in the accident statistics ensures sufficient measures of safety in that culture. This can only be done if the employees are honest with the organisation and do not hesitate to report an incident that has happened so that precautionary measures can be taken to get a hold of the matter. This also demonstrates the active participation of the employees of an organisation within that organisation or any other workplace. Cheyne, Cox, Oliver, and Tomás (1998) stated that the indicators that are insufficient comprise the reactive measures that are taken in response to a situation that are determinants of the safety performance.

According to Abdul-Hamid, Abd-Majid, and Singh (2008), an accident is an undesirable, uncontrolled, unexpected and unwanted event. An accident may not lead to injury as it could, instead, cause damage to equipment and materials. But accidents that lead to injuries are often paid the most attention (Hinze, 1997). No matter the level of loss or damage, all accidents should be taken seriously and shown concern. All accidents even if do not cause injury to workers or damage materials and equipment can be used to predict future accidents (Abdul-Hamid et al., 2008).

Injury and accident statistics have been frequently used as a criterion measure instead of self-reporting (Griffin & Neal, 2000; Mearns, Whitaker, & Flin, 2003; Zohar, 2000). Clarke (2006) opines that when the rate of incidents and accidents is reduced, the best possible positive safety w measure has been contributed. But various sources like (Glendon, 1995) have questioned the use of accident data as an indicator of safety performance. This is because the relevant means to evaluate the exposure are not present, and they are often not sensitive as incidents are rare (Glendon & Litherland, 2001). In recent times, companies made use of safety measures, like increasing the percentage of workers that receive a lot of safety training, frequency of events held to communicate safety, and increasing the number of safety audits and inspections (Mayze & Bradley, 2008; Tremblay & Badri, 2018). When all the safety outcome measures and safety compliance, safety

participation are combined to assess the conceptual model that was used in the study at the worksite level of a construction project.

The safety outcome construct has been measured in various ways by several safety climate studies. Safety outcome has been measured by

- Self-reported safety behaviours at the workplace
- Safety performance ratings from supervisors, regulators and management
- Accident statistics from a company that examines low and high rates of accidents in workspaces that are factory-based
- Self–reported accidents and incident involvement at the workplace

These measures have their pros and cons. Accident statistics in a construction company can be affected by arbitrary actions, and it can be subject to variations in reporting. Under-reporting of accidents could also occur. These company–generated statistics could be rendered unusable due to insurance issues, competition and limited variance. But self–reported measures can also be unusable due to bias when reporting. Yule (2003) argued that, if these reports are collected anonymously, they might showcase the true state of things better than organisation–generated statistics. Mearns et al. (2003) argued that self–reporting measures of accident participation is a trustworthy method to measure organisation safety outcomes in terms of injuries and accidents.

In contrast to what one would typically expect, a firm's safety performance cannot be ascertained simply on the basis of its accident rates. This stems from the well-known fact that accident reporting may not reflect reality as well as the fact that the restriction of variance is relevant when acknowledging how statistical data, particularly for unlikely events, may not be precise (Thompson, Hilton, & Witt, 1998). Further as to the idea that certain accidents within firms are not reported, Probst and Estrada (2010) after examining accident under-reporting from 425 employees in 5 industries found that, on average, 2.48 unreported accidents occur for every reported accident. In a multi-industry study, Van Der Schaaf and Kanse (2004) sought to determine why many employees fail to engage in accident reporting. Their findings drew attention to four principal factors, listed here in order of importance:

firstly, employee anxiety, arising from organisational blame cultures, about the prospect of being subject to disciplinary processes; secondly, the perspective, frequently linked to macho culture in particular industries, that occupational risks are inevitable and unpreventable; thirdly, employee apathy regarding the impact of accident reporting in prompting managerial responses; and finally, the belief that management and data collection are time-intensive, complicated activities.

Near misses, as the term implies, are incidents or unanticipated events which could have resulted in death, injury, illness or damage to property, but did not do so due to sheer luck or an unexpected break in a chain of events. Jones, Kirchsteiger, and Bjerke (1999, cited in Thoroman, Goode, & Salmon, 2018) argued that, a large number of companies analyse near misses and view them as major factors that reveal how the company is performing in terms of safety. Reason (1997) stated that since near misses occur more often than accidents, they can be used to evaluate areas of safety management that need to be upgraded. The company safety culture can be reinforced if near misses are used to judge safety management (Cooper, 2000; Winkler, Perlman, & Westreich, 2019), particularly when the workforce is motivated to participate in recognising, analysing and coming to an understanding of the near misses and why they occurred (Thoroman et al., 2018). Near miss reporting may result in adverse outcomes, particularly in situations whereby the primary focus is on issues of lesser significance to the detriment of more serious difficulties (Kjellén, 2000). This can result in information overload, thus challenging managers' ability to respond appropriately. Consequently, guidelines and clear criteria on near miss reporting systems should be developed, which identify areas of primary concern and the types of near misses which are worthy of further investigation.

Lee's (1998) findings supported the existence of a negative, significant, and directly proportional relationship between accident probability and an individual's behaviour. The accident history was measured by surveying the total number of injuries, accidents that required treatment and lost time (Lee & Harrison, 2000). A study was conducted by Probst and Brubaker (2001) to evaluate the relationship between safety outcomes and job insecurity. 237 employees in a food processing plant were studied, and it was found that when the staff perceived that their jobs were not secure, their safe work practices decreases, thus causing increased injuries and

accidents. Three items were used by the study to investigate accidents in the workplace based on self-reporting during the previous year. The study asked how many accidents did accidents that the participants of the study reported to their supervisors. They also asked for the number of near–miss accidents, where injuries almost occurred but did not, and number of unreported accidents (Probst & Brubaker, 2001).

Accidents and injuries in the workplace are usually self-reported in nature. An attempt was made by Lusk, Ronis, Baer, and Professions (1995), to outline the most useful method to evaluate workers' use of hearing protection in the workplace by comparing various indicators of behaviour. Observation, self-reporting and supervisor reporting were the three measures used. The results show that there was a high correlation between self-reporting and observation with minimal differences between them. The results show that self-reporting is a sufficient measure when there is a restriction of time and human resources (Lusk et al., 1995). Rundmo (1996) shared a questionnaire with workers in an offshore oil installation. The questionnaire was designed to analyse the relationship between risk–taking behaviour and safety outcomes like near misses and accidents. Rundmo (1996) found a relevant correlation between risky behaviour and safety outcomes. Self-reporting accidents has been proposed as a good model by which safety outcomes can be measured (Mearns et al., 2003).

Varonen and Mattila (2000) undertook a study to describe the structure of safety climate as perceived by workers and the relationship between accident rates and safety climate in a company at two different time periods. The study involved workers from two parquet plants, two plywood factories and four sawmills and evaluated work accidents that happened within a five–year period. The results showed that the accident rates corresponded with safety climate construct. So, a better safety climate of an organisation will result in a fewer accidents that occurred in the company (Varonen & Mattila, 2000).

Vinodkumar and Bhasi (2009) conducted a study that focused on employees in the Indian chemical industry, used various self–reported accidents as safety outcomes to show the safety climate level on ground. Jiang, Yu, Li, and Li (2010) proposed a model that specified the correlation between perceived safety knowledge of a

colleague and safety climate to safety participation, safety compliance and safety outcomes (near misses and accidents). Employees were asked about safety outcomes, how often they had been injured in the previous year and the total number of near misses that they had experienced in the previous year.

Fogarty and Shaw (2010) and Atak and Kingma (2011) have described that the findings of safe working logs across a particular time duration are typically considered to form the basis of safety performance. Bad safety effectiveness may be diagnosed if there are numerous logged safety events. Morrow, Kenneth Koves, and Barnes (2014) have noted that safety culture and other variables serve to influence safety performance. Therefore, Öz, Özkan, and Lajunen (2013) emphasise that institutional safety effectiveness can be influenced by the extent to which employees conform to the safety measures, which are significantly affected by their activities, behaviours, and perspectives. Bellamy, Geyer, and Wilkinson (2008) stated that all firms within a specific industry may have their events and accidents tallied to determine the industry's overall safety effectiveness. The dedication of assets to improving safety effectiveness logs may be imposed on a company if they have a history of ineffectiveness, with enhanced safety effectiveness considered to rest significantly on variables such as overall human characteristics, management perspectives, and employees' proficiency (Fogarty & Shaw, 2010). Legislative punishments, health-associated experiences, and legal expenditure may all influence safety effectiveness information alongside the basic volume of accidents (Kontogiannis & Malakis, 2009). As Gangolells, Casals, Forcada, Roca, and Fuertes (2010) have emphasised, business expenditure will inevitably increase for the organisations in the construction industry that have negative safety records, which is indicative of ineffective safety regulations throughout the production and service processes.

The rationale behind the encouragement of safety within the construction industry and the means of implementing it have been researched by Cheung, Wong, and Lam (2012). Their findings suggest that considerable revenue may be gained if safe employment conditions are provided. Chan and Chan (2011) has detailed how the formulation of an improved safety culture within an institution is possible when the factors shaping working conditions may be fundamentally altered, allowing continued strengthening of safety characteristics. Researchers have noted that a

dependable safety culture tends to characterise the firms with robust safety records. Nevertheless, the principles, conduct, and perspectives of project staff and management may still be problematic in terms of their choices and activities. As Molenaar, Brown, Caile, and Smith (2002) have pointed out, a firm's safety culture may thus be undermined.

Hinze, Thurman, and Wehle (2013) have outlined some of the established measurements of safety efficacy, for example death rates, incident rates, total recordable injury frequency rate, and other lag variables. However, Guo and Yiu (2013) have expressed scepticism about these indicators, given that the anticipation of incidents is not possible and their fundamentally reactive nature is not particularly helpful. This is because the reduction of variables and hazardous conduct, which otherwise result in construction workplace incidents, should be sought through the measurement of safety efficacy as an imperative objective. However, measurement of safety efficacy has begun a transition towards the adoption of leading indicators. Strengthening safety measures within companies, encouraging safe work practices among employees, and providing performance data for an organisation may all be beneficial outcomes of safety measures.

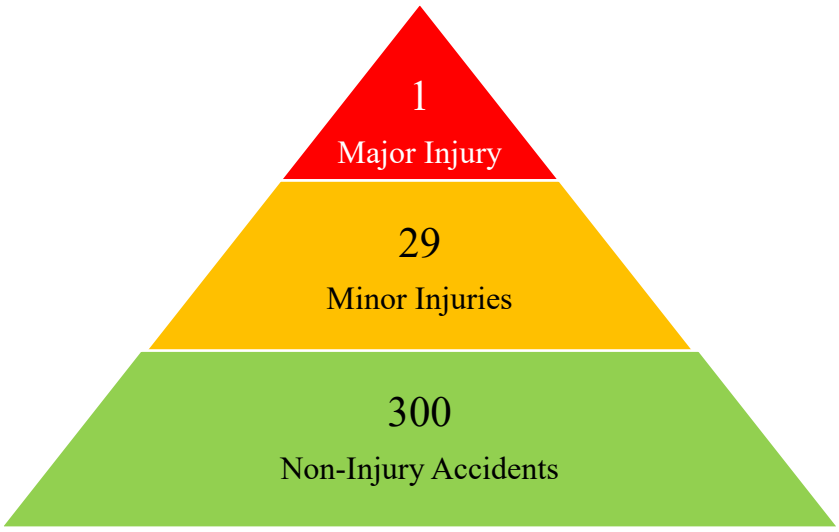

Figure 2.2: Heinrich's safety triangle.

In this regard, Heinrich's (n.d.) safety triangle has proposed that casual variations, hazardous practices (e.g., at-risk conduct), hazardous circumstances (e.g., dangerous contexts or tools), and near-accidents collectively indicate how likely it is

for an incident or harm to occur. As part of the safety triangle's explanation, the occurrence of a single severe event necessitates the occurrence of an array of seemingly trivial events (e.g., at-risk conduct and risky circumstances). The estimation of safety performance and the avoidance of construction site deaths or severe accidents are considered possible using the assessment of leading indicators and slight injuries.

HSE (2006) has outlined how active or reactive monitoring may be applied to performance measurement. Active monitoring involves pre-event or accident appraisal of safety efficacy, while reactive monitoring involves recognising and declaring accidents so that errors may be improved. Meanwhile, Hallowell, Hinze, Baud, and Wehle (2013) have stated that leading indicators and lagging indicators may be distinguished as safety efficacy metrics. Øien, Utne, Tinmannsvik, and Massaiu (2011) have explained that reactive monitoring and lagging indicators are typically connected, involving the inability to attain a safety result or failure of being identified. In contrast, Fearnley and Nair (2009) have commented that the effective running of risk management infrastructure as anticipated may be actively regulated through leading indicators. Toellner (2001) has distinguished between the time when the results of an incident or injury are assessed by lagging indicators and the time when the more precautionary activity is connected to leading indicators.

As OSHA (2013) has stipulated, workplace incidents must be logged by construction firms. However, Flin et al. (2000) have discussed the reasons why the causes of incidents, their seriousness, and whether they have been countered effectively are not detailed by such measures, which are defined as lagging indicators. Conversely, Hallowell et al. (2013) have noted that when stipulations for adopting leading indicators are in place, estimating prospective outcomes and measuring performance-related circumstances, actions, and procedures are possible with leading indicators. Construction Industry Institute [CII] (2012) has remarked that the efficacy of safety within the construction industry is affected by circumstances, where activity and conduct may be evaluated through leading indicators. Krause, Groover, and Martin (2010) have cautioned that ongoing hazardous circumstances may end in death or grave harm to an individual, if severe risks linked to heavy building apparatus and near-accidents are not dealt with effectively.

Safety efficacy estimators can take the effective form of safety performance leading indicators. Øien, Utne, and Herrera (2011) have stated that the attainment of the intended safety results rests crucially on such indicators being adopted as inputs. As Hinze (2005) has distinguished, a focus on safety management procedures and direct connection to a planned project characterises leading indicators, whereas previous schemes' historical safety performance measures take the form of lagging indicators. Furthermore, Hinze et al. (2013) have noted that, once a shortcoming in a safety agenda has been identified, the prospect of immediate amendments being possible as part of a safe scheme is signalled by leading indicators. Both active and passive leading indicators may be distinguished in relation to assessing safety performance. Training, safety familiarisation, housekeeping, stop work authority, employee monitoring, and near-accident logging are the typical leading indicators of the construction industry.

Fernández-Muñiz, Montes-Peón, and Vázquez-Ordás (2007) have noted that the extent to which a safety culture is noticeable within an institution may be analysed through alternative approaches to determining safety effectiveness, offered by the sectors of engineering, occupational health, and safety and management. The researchers have also stated that a fall in measured events and accidents can be suggestive of a robust safety culture. Nonetheless, losing inducements may be a concern among workers, deterring them from declaring near-accident events. Although Dejoy et al. (2004), and OSHA have advised that every ailment or work-associated injury sustained by workers must be logged by private companies in the US, this largely rests upon staff members' truthfulness in this regard.

Non-declaration of ailments and accidents has been recognised as a problem. Probst and Brubaker (2001) have suggested that a poor understanding of guidelines may be a reason behind the non-declaration of the sustained injuries. Moreover, altering employment conditions can make monitoring work-associated ailments difficult. To address these issues, OSHA has evaluated staff members' effective and ineffective work site adherence to safe conduct; these measures are normally used for measuring good safety behaviour. Both OSHA and Cheyne et al. (1998) have stressed the inadequacy of the safety effectiveness measures, which are essentially responsive assessments of accidents.

More focus should be on the accidents self-reporting in Kuwait construction industry where a lot of quick changes occur. These changes make it tough to make historical evaluation methods. Also, most construction industries in Kuwait do not have recorded data. And even if they do have recorded data, the recorded data is not released due to insurance complications and competition (Al-Humaidi & Tan, 2010; Al-Tabtabai, 2002; Kartam & Bouz, 1998; Kartam et al., 2000). Next section will explore the relationship between safety performance and safety climate.

2.7 Safety Performance and Safety Climate

The validity of safety climate measures brought forward by Zohar (1980) was assessed by Brown and Holmes (1986). They used American data to improve the model by using an exploratory approach to build a factor analysis model. Three major factors were acquired from this improvised model. They include the perception of employees about how active management was in responding to this concern, the perception of employees about physical risk, and the perception of employees about how concerned managers were about their wellbeing.

Hofmann and Stetzer (1996) used various factors to review industrial aspects, as they are also an important aspect of safety. These factors include three group level factors, which are safety climate, group process, and the intent to approach other team members involved in unsafe activities. The factors also include an individual factor, called the perception of role overload. Data was acquired by 21 groups and 222 workers a chemical processing plant. The individual and group level factors were connected to behaviours that were deemed unsafe. The study also showed that risky behaviour is mediated by the intention to move towards other team members that were engaged in unsafe activities. Safety climate and unsafe behaviours were linked to real accidents. These safety concerns are at an individual level (Hofmann & Stetzer, 1996).

Hayes, Perander, Smecko, and Trask (1998) carried out various studies to create a solid measure of precepting work safety called work safety scale. The studies recommended that safety measures should comprise various aspects, including safety practices for supervisors, safety practices of co-workers, safety practices for management staff, satisfaction with safety programs, etc. Safety procedures by

management and supervisors supersede others in their potential to affect how accidents occur. The studies by Hayes et al. (1998) ended with various models of industrial accidents. The models used variables—like behaviour of employees, social environment of a person, personality variables and others—that affect workplace accidents.

A model of safety climate was tested by Zohar (2000) at a group level to improve the supplemental organisational level model. Perceptions of climate were used to examine safety management practices instead of organisational policies and procedures. 53 work teams were integrated to manufacturing firms during the course of the study. The study revealed that the climate perception of individuals in these work teams predicted micro–accident reports throughout a five–month recording phrase after climate measurement when the impacts of group level and individual risk factors were controlled. An empirical relationship was found between injury data and safety climate (Zohar, 2000).

Safety climate was studied by Lee and Harrison (2000) by investigating various attitudes, behaviours, beliefs, values, risks and perceptions of employees at three different nuclear power stations using a questionnaire that contained 120 items. The questionnaire covered eight safety areas. Their study focused on attitudes and behaviours in an organisation by using various metrics like management style, work pressure and safety. The findings of this study revealed that personal safety surveys could be used to conduct a comprehensive, economical and multi-faceted evaluation of safety culture or safety climate. The surveys could also be used to discover the dynamic interworking of various working parts (Lee & Harrison, 2000).

Ten offshore installations were examined by Mearns, Flin, Gordon, and Fleming (1998) with a questionnaire. 722 offshore workers in the United Kingdom responded to the questionnaire. The study instrument contained items to measure risk perception, safety satisfaction, safety attitudes, work clarity, work pressure, safety behaviour, and job communication. The research aimed at examining organisational and human factors affecting safety in the UK’s oil and gas industry. The attitudes showed the level at which employees agreed or disagreed with statements about the prevention of accidents in safety and work issues. The behaviours showed suitable behaviour within workplaces. The results obtained from the questionnaire

revealed that workers on various oil installations had mixed opinions about safety attitudes issues and the prevention of accidents. These varying attitudes and beliefs were determined by various factors, like age, the shifts they worked, the work they did, their positions and other things (Mearns et al., 1998).

Gillen, Baltz, Gassel, Kirsch, and Vaccaro (2002) conducted a study to assess the perceptions of injured construction workers toward decision latitude, co–worker support, psychological job demands and workplace safety climate. Two instruments were used to evaluate how severe injuries were—a job content questionnaire and a safety climate questionnaire for workplaces in the construction industry. Their study showed that a positive correlation between safety climate scores and severity of injuries. Furthermore, it showed a positive correlation between safety climate scores and union status. There were a lot of significant differences between the answers of union and non–union workers. Union workers were more likely to:

- Have regular meetings about job safety
- Know that risk-taking is not part of their jobs
- Recognize supervisors and managers as caring for their safety
- Be conscious of hazardous work
- Receive safety instructions when they are hired

Workers who were well informed about how safe their workplace is perceived co–worker support and level of management as higher. There is a need to identify possible interventions in the workplace that can reduce the severity of accidents and the occurrence of accidents, yet remain flexible enough to meet various necessities like deadlines and client requirements (Gillen et al., 2002).

A study was conducted by Michael, Evans, Jansen, and Haight (2005) to investigate outcomes that were not related to safety but resulted from a personal commitment to safety. About 640 production employees who worked at three wood manufacturing plants filled out surveys. The respondents were asked about how dangerous they perceived their position to be, withdrawal behaviours, the commitment of their organisation to safety, and how they perceived managerial commitment to safety. The results of the study indicated that outcomes varied, depending on how employees perceived the management safety commitment. Job satisfaction, organisational commitment, and job performance had positive links to

the management safety commitment. The study suggested a negative link connecting withdrawal behaviours of employees with their commitment to safety. The researchers concluded the study by opining that the emphasis of management on safety and the perception of employees about the concern of management for their well-being led to good results that surpassed improved safety performances. Therefore, it can be proposed that a managerial commitment to safety can improve safety behaviours in employees.

Mearns et al. (2003) over various years surveyed a thirteen offshore oil and gas installations using a safety climate surveys. Questionnaires were distributed every year to collect data on safety management practices on about 8 installations. A series of hypotheses were used to analyse the link between management practices and climate scores on official accident statistical records and self–reported accidents. The safety management practices in each installation were analysed by a safety management questionnaire. The safety management questionnaire included things like auditing, safety and health policies, the commitment of management to safety, and programs held to promote safety and health. Relationships were found between recordable accidents, safety climate and safety proportion of participants that informed officials about accidents in the previous year. Links were established between the skills and abilities with fewer respondents reporting accidents and the official recorded accident rates (Mearns et al., 2003).

The relationships between work environments, industrial accidents, organisational variables and psychological variables were studied by Oliver, Cheyne, Tomás, and Cox (2002) using the structural equation modelling of nested frameworks to explain the links between the various given variables. In Spain, data was acquired from various industrial sectors through interviews. 525 completed questionnaires were analysed, and they reveal a framework that links all the various variables to provide the most accurate data representation. The framework also helped to support the hypothesis that organisational and psychological variables influenced the accidents that occurred. The framework also helped to describe how the variables functioned at an individual level, like health and safety behaviour, and how indirect influences affect organisational variables. The model examined individual safety behaviour, even when it is linked to the contribution of an organisation to safety. The study also showcased how important it is for management to commit to safety–related issues.

The model also opined that the stress process relieves the effect of organisational and environmental variables (Oliver et al., 2002).

The criterion–related validity of the relationships between workplace accidents and injuries, safety behaviour and safety climate was investigated by Clarke (2006). Clarke (2006) used meta-analysis to support the hypotheses of the study that linked safety climate to the safety performance of employees, like compliance and participation. The study revealed that there were a weak relationship with involvement in accidents. The results of the study also concluded that there was little evidence of the operation of moderators and situational specification in the relationship between safety performance and safety climate.

Goldenhar, Williams, and Swanson (2003) conducted a study that evaluated the link between job stressors and injuries, as well as several near miss scenarios among construction workers, using a questionnaire. Stressors at work were classified into three groups, and they were indirectly or directly linked to the influences of psychological and physical symptoms of near misses and injuries that were self-reported. Ten out of twelve work–related stressors had a direct correlation with injury and near misses. These stressors include safety climate, demand for jobs, safety responsibility for other people, underutilisation of skills, job tenure, number of hours of exposure, training, job certainty and job control (Goldenhar et al., 2003).

In the research published by Zacharatos, Barling, and Iverson (2005), a pair of studies were implemented to examine the connection between high-performance work systems (HPWSs) and the variable of occupational safety. Drawing on data collected from a sample of safety directors and human resource personnel from approximately 140 firms, the findings from one of the studies suggested that a positive relationship exists between HPWSs and occupational safety. In the second study, the researchers gathered data from nearly 190 frontline employees in two firms, reporting that the connection between organisational safety performance and HPWSs is moderated by perceived safety climate and trust in managerial personnel. In the two studies, organisational safety performance was proxied by orientation to personal safety (as suggested by attitudes towards safety compliance, safety knowledge, and safety-promoting activities) as well as safety incidents. Altogether, the research project, in identifying organisational rather than individual factors,

emphasised the criticality of organisational safety and, alongside this, emphasised the complexity and limits associated with the application of certain constructs (e.g. HPWSs) in psychological systems.

A study was conducted by Zohar and Luria (2004) to examine the role of safety climate as a social cognitive that mediates between environmental factors and the outcomes caused by these environmental factors. The participants of the study were 2,024 soldiers in 81 units who performed routine operational duties according to their military roles, which were different from civilian roles. The study by Zohar and Luria (2004) revealed a model that specified supervisory safety practices as being responsible for forecasting the level and strength of safety climate. Leadership quality was used to moderate this. The findings of the study showed that the safety climate level could be predicted using the simplicity of script and cross–situational variability. The study also showed that safety climate can be used to mediate the relationship between the safety practices and safety climate.

Siu, Phillips, and Leung (2004) examined the relationships between safety performance in terms of self-reported accident statistical rates and injuries, psychological strain and safety climate. This data was collected using interviews and surveys at several construction sites in Hong Kong. The hypothetical model was tested using a path analysis that linked safety performance, safety climate and psychological strain. The results obtained by Siu et al. (2004) presented limited support for the study model, because psychological distress predicted rates of accidents, and safety attitudes predicted occupational injuries. Psychological distress was seen to be a mediator for the relation between accident rates and safety attitudes.

Christian, Bradley, Wallace, and Burke (2009) proposed a theoretical model to combine past and present research results. The study used theoretical models of performance and work climate to integrate the safety literature by analysing the situation and antecedents of safety outcomes and behaviours. Safety knowledge and safety motivation are closely related to safety performance. Following these two were psychological safety climate and group safety climate. Support was provided for the hypothetical theoretical model by the tests of a meta–analytic path that directed the overall investigation. The results of Clarke (2006) were compared with

those of Christian et al. (2009), and it was seen that the safety outcomes correlated positively with safety climate. But the estimate by Clarke across all levels was not significant in any way. The difference was likely because Christian et al. (2009) sample size was larger.

The safety climate literature consists of three different models:

- a perception–based model that focused on how employees see the work environment, safety practices and policies.
- an attitude–based model that focused on classifying the attitudes of employees in terms of safety.
- mixed models that use a mixture of attitudes and perceptions, which are often extended to other variables, like attitudes to work, belief, and job satisfaction and dispositions.

2.8 Safety Behaviour

Workplace safety behaviour is a relatively new concept since it only emerged officially in 1930 in the wake of statistics showing that most accidents within occupational settings were the result of unsafe employee activities (Geller, 2001). More recently, analyses of safety behaviour have revealed that the construct is informed by variables such as organisational safety commitment (Zohar, 2002; Michael, Guo, Wiedenbeck, & Ray, 2006), safety culture and organisational safety climate (Neal & Griffin, 2006; Clarke, 2006; Cooper, 2009), and personality (Hinze et al., 2013). In Neal, Griffin, and Hart's (2000) research project, a pair of studies were conducted, the results of which indicated that organisational safety climate and workplace safety behaviour were positively correlated. These results were consistent with the later study by Zohar (2002), which reported that safety behaviour and accident reduction could both be improved by safety-centred communication between leaders and followers. More recently, scholars such as Cooper (2009) have further strengthened these early results.

According to the findings of Mullen and Kelloway's (2009), poor safety behaviour within a firm can be accounted for by organisational and social factors. Additionally, the study indicated not only that employee safety behaviour and safety attitudes are

affected by early safety society agents and processes but also that the negative impact of performance pressure on safety behaviour can be attenuated through employee training, resource availability, and the removal of unsuitable time constraints. Consistent with these results, Cooper's (2009) research project, which explored the connection between safety behaviour and organisational safety climate, indicated that effective safety training is a fundamental predictor of safety behaviour. Another noteworthy study, namely that published by Andersen, Karlsen, Kines, Joensson and Nielsen, (2015), analysed the various ways in which safety behaviour is affected by social identification and social media categorisation. Importantly, the findings suggested that when employees on a worksite are resistant to safety protocols, social identification may be playing a role.

The behaviour of the employee also impacts the safety culture. The employee safety behaviour also relates to the feelings that the employee feels regarding different matters that are present. This is also associated with the personality of the employee. These greatly impact the actions of the employees. The employee can have either a negative or positive attitude in regards to the actions. Such behaviours can be said to be subjective, differing from person to person. The strength of an individual refers to his attitude and behaviour, and it mostly relates to the intentions of that person. The attitude of the employee greatly depends upon the safety measures he/she has been provided with (Ajzen, 2005).

In their study of the effects of safety climate on perceptions of safety performance in terminal container operations in Taiwan, Shang and Lu (2009) suggested that the use of safety performance is subjective to tiles. They also explained that some measures of performance—like subjective, responsive and perceptual—are more appropriate than financial and cost statistics when safety studies are being discussed. This is because for most accidents that are injury free or near misses, the scenario is almost always unreported. So, the consequences of these accidents are usually omitted from objective performance measures. Glendon and Litherland (2001) opine that objective performance measures suffer from uncertain accuracy, not enough sensitivity and do not reflect risk exposure.

To provide an account of employee performance with respect to the concept of safety behaviour, Borman and Motowidlo's (1997) research drew attention to the

following elements: firstly, task performance, and secondly, contextual performance. Based on the literature, one way to think about safety behaviour is by considering the degree to which employees comply with organisational protocols along with the organisation's engagement with safety activities and safety schemes (Neal & Griffin, 2006). Several studies indicate that within the construction industry, safety compliance, which refers to the level of adherence among individuals or organisations to existing protocols and regulations, is frequently ignored (Alper & Karsh, 2009). This is a highly consequential issue, not least because low levels of safety compliance are reflected in higher accident and injury rates, but also due to the questionable – yet regularly made – decision among managers and supervisors to promote efficiency at the expense of safety and to value productiveness more than safety compliance (Reason, 1997; Cox, Jones, & Rycraft, 2004).

According to Griffin and Neal (2000), a clear distinction exists between safety compliance and safety participation. This is because the latter is voluntary, encompasses non-formal roles and responsibilities, and can be considered the firm-based analogue of good citizenship. Hofmann, Morgeson, and Gerras (2003) found that when managerial personnel demonstrate a strong commitment to employee well-being and safety, employees themselves are likely to demonstrate safety participation. This finding is consistent with the large body of literature which highlights the important role that managerial personnel play in establishing safe occupational environments since safety commitments among managers initiate a virtuous cycle, wherein top-down safety protocols and regulations promote safety compliance and safety participation among employees (Flin et al., 2000). This can be considered a form of participatory motivation, which, along with safety knowledge, has been identified as a key antecedent to safety participation (Griffin & Neal, 2000). It is also noteworthy that commitments to safety reduce employee turnover and promote productiveness, primarily due to the way they create trust, heighten emotional loyalty, and prompt safety participation rather than mere safety compliance. Furthermore, when managerial initiatives provide visible evidence of safety commitment, employee trust in management typically increases, and rates of accident and injury tend to decline.

Due to the reasons mentioned above, subjective safety performance measures were put in place to measure and reflect safety behaviour in this study. With the

definition of task performance, safety compliance will be used to explain the major safety–related activities that must be implemented in a worksite for optimum safety. Using the definition of contextual performance, this study represents behaviours—like participation and voluntary safety activities—as safety participation. The behaviours mentioned above may not affect workplace safety in a straight manner, but they can improve the development of a conducive safety environment.

2.9 Behavioural Based System

Human behaviour has been identified by HSE (2009) as the most common cause of accidents, where in some instances they are deliberate, while in others they are totally unplanned. As Cooper (1998) has explained, hazardous behaviour and activity are responsible for between 80% and 95% of incidents, despite attempts at completely limiting workplace incidents. Therefore, it would be logical to conclude that error minimisation also results in fewer accidents occurring. The HSE (2009) contend that even though people's risk awareness levels can be high, they can sometimes make catastrophic decisions. Furthermore, people's capacity to effectively evaluate risk can be limited. The latter also highlight the multifactorial nature of safety performance, as well as advising against concentrating only on one single determinant, such as human behaviour. Hence, it is better to adopt a holistic approach in the form of effective occupational safety and health management systems (OSHMS), as opposed to relying solely on a unidimensional solution.

Traditional safety index frameworks are, according to Choudhry (2014), more likely to adopt a retrospective analysis, while tending to disregard internal determinants, for example, the safety attitudes, behaviours, culture and general environment in which people operate. In addition, the inclusion of injuries and illnesses in performance measurement systems, or their alignment with reward systems, can result in a number of construction firms failing to report less serious issues in an effort to preserve their overall positive ratings. Therefore, the movement away from incident-related indictor usage, due to their associated limitations, occurred at the same time as when a greater focus was being placed on OSHMS.

According to Reason (1997), the establishment of OSHMS, coupled with their incorporation into the concepts espoused in total quality management, have

prompted greater attention being placed on person-based safety management. The latter author contends that this has created opportunities for the exploration of human-oriented theories, for example, human elements. Through concentrating on construction locations and hazardous conduct in a methodical manner, the attainment of enhanced safety and a decline in accidents may be possible, according to Choudhry and Fang (2008). Martínez-Córcoles, Gracia, Tomás, and Peiró (2011) have suggested that, in contrast to other variables, the evidence of workers' safety principles may be logged and clearly seen through behaviour-based safety (BBS). McAleenan and McAleenan (2017) stated that the implementation of BBS programmes was a different perspective to understand safety failures despite the initiated strategic approaches to health and safety in the construction industry. Later work conducted by Martínez et al. (2011) expanded the focus to include safety perceptions and attitudes, as well as BBS. In the last number of years, a social system approach has emerged, which specifically examines safety performance. The key recommendation is that a human-machine-environment system is more likely to achieve maximum effect when a positive safety culture is promoted organisationally, along with ensuring that active participation and collaborative working relationships are fostered (Flin et al., 2000). Additionally, in a rigorous analysis of BBS, Choudhry (2014) identified considerable strengthening of safety effectiveness through the appropriate measurement of safety conduct, the establishment of aims, and offering of appraisal.

Goetsch (2010) states that, BBS and safety behaviour are often interchangeable terms used to denote the behavioural approaches for improving safety performance in the workplace. BBS employs a bottom–up approach. It focuses on specific safety behaviours that are performed by employees. The monitoring of staff behaviour and seeking to identify and evaluate hazardous conduct through measurable time ratings are the objectives of the BBS system. As Choudhry et al. (2007) have explained, undertaking remedial activity to tackle hazardous conduct should be pursued by holding meetings with the transgressing employees and recording the ratings. Conformance with safety instructions and guidelines is encouraged by BBS, to which workplace safety can be added. Bolton and Kleinsteuber (2001) have explained how BBS determines employees' conduct and activities, which, in the majority of the instances of application, it may pose hazards. For example, Cooper (1998) observed that successful work site safety enhancements in Hong Kong were

brought about through BBS. Furthermore, Bolton and Kleinsteuber (2001) have noted that BBS offers employees an appropriate welfare strategy. Through co-worker observation, the identification of and actions against hazardous activities or circumstances will become possible, facilitating conduct prediction through robust BBS infrastructure. The significance of beneficial outcomes will expand as the sophistication of BBS infrastructure strengthens, an example of which includes appraising employees via observation and graphical depiction of statistical indices. Lastly, as Cooper and Phillips (2004) has elaborated, a decline in accident-related expenditure and enhanced safety conduct will ultimately stem from the diminished level of harm, negative events, or accidents, emanating from the effective application of BBS. However, BBS will not work effectively if workplace risks are not appropriately comprehended by construction employees (Lingard & Rowlinson, 1997).

HSE (2009) claims that there is a need to differentiate between active failures, which impact immediately, as compared to latent failures, where their effects may not become clearly evident at the time. Frontline workers, such as unskilled labourers, ground staff and painters, are more likely to precipitate active failures, whereas latent failures are typically the result of managerial errors, for example, by directors, managers and designers. Active failures can include the improper use of or neglecting to wear PPE, lack of compliance with on-site traffic management procedures and reversing without the assistance of a vehicle banksman. Latent failures can comprise ineffective communication, insufficient training, unsafe work practices and substandard supervision. BBS programmes seek to address both types of errors. However, the HSE (2009) argue that latent failures tend to be habitually hidden, despite the fact that they are more likely to lead to adverse outcomes, as compared to active failures.

The determination of safety as a behaviour problem that may be most effectively tackled through a behavioural strategy was proposed by Stare (2012), drawing on the behaviourist theory of change. Nevertheless, the interlinking of the behavioural model of safety with different models is possible through Stare's (2012) approach, mainly because it is not a distinct method. According to Petersen (2004), accountability is a key element among the majority of the behavioural safety strategies. Hence, safety is established when every party fulfils their specific

responsibilities through a culture of engagement, thus forming the foundation of BBS. A complete understanding of the positions that various parties should fulfil to guarantee safety is apparent among the vast majority of the interested parties in standard construction firms, such as supervisors, managers, staff, and consumers, as discovered by Sarkus (1996) field questionnaire outcomes. Therefore, it is evident that behaviour, which encourages the application of safety knowledge among interested parties, is the fundamental issue responsible for poor safety. However, near instantaneous improvements to safety behaviour have been found to stem from construction firms' logging of safety-linked behavioural alterations (Narcisse & Harcourt, 2008). This is mainly because personal responsibility for safety will be taken on by the interested parties, meaning that direct activity aimed at strengthening safety will be undertaken rather than committing great time to guaranteeing that all employees are compliant. Additionally, management and supervisory conduct are also included in the remit of BBS system. Next section will explore the relationship safety behaviour and safety climate.

2.10 Safety Behaviour and Safety Climate

Safety climate can be used to predict the outcomes that are related to safety, like injuries and accidents (Brown & Holmes, 1986; Zohar, 1980). The behaviour and attitude of employees can highlight the safety climate in a work environment (Cox & Flin, 1998). Zohar (1980) was one of the first researchers to link safety performance with safety climate. Zohar (1980) ranked safety practices and programs for preventing accidents using safety climate scores. A study by Glennon (1982 cited in Zhou, Fang, & Wang, 2008) evaluated safety climate scores and traditional safety measures. He regarded accident–based performance as problematic, and he discovered that safety performance was related to safety climate. Donald and Canter (1994) opined that safety behaviour and safety climate were linked to each other. The perceptions of construction workers regarding safety was assessed by Che Hassan, Basha, & Wan Hanafi (2007), using workers from the Malaysian construction sector. These researchers found that worker safety behaviours and safety climate dimensions had a significant relationship, corroborating previous research. Furthermore, construction employees' views of safety seemed to be impacted by these individuals' views on procedures and rules pertaining to safety, management, and risk-perceptions (Ali, Abdullah and Subramaniam, 2009).

The response of co-workers and supervisors to hazards and the attitudes of workers can be utilised to the extent that safety behaviour could be predicted (Oliver et al., 2002). The perception of workers about their work environment can affect safety performance (Neal, Griffin, & Hart, 2000). Mohamed (2002) investigated construction sites in Australia and discovered that positive links existed between safe work behaviour and safety climate by focusing on the effects that safety and risk systems and workplace management had on safety climate. The studies above concluded that there is a relationship between safe work behaviour and positive safety climates. Also, workplace safety behaviour is affected by how workers perceive workplace management, risk, safety procedures and safety rules. Next section will explore the influence of national culture on safety.

2.11 Safety and National Culture

Although Oswald, Sherratt, Smith, and Hallowell (2018) study was not focused on examining specific national cultures in terms of safety, he noted that cultural influences create challenges in managing safety. These results suggest that it is crucial to gain a better understanding of the skills necessary for a safety advisor and that soft skills management tools are needed to bridge the gap between national culture power distance dimension for multinational projects. Such findings help to develop safety management systems that are particular to multinational projects to ensure that cultural differences are considered. However, Oswald et al. (2018) does not claim that worker engagement in the UK is the best or most appropriate method: rather, he claims that it is important to be flexible in developing a system that caters to various cultural characteristics for particular project teams while considering the host-country's legislative requirements.

Given that risk perception is affected by knowledge or information on safety, the correlation between these two has been the focus of an investigation by Starren et al. (2013), who concluded that the cultural backgrounds of information recipients have a significant impact on the degree to which safety in the work environment is affected by particular actions. Although language barriers can be tackled by demonstrating risks and (un)safe behaviour through pictograms instead of written instructions, it must be remembered that individuals' comprehension of pictograms can differ according to their cultural background. Furthermore, difficulties may arise

when implementing health and safety training initiatives dealing with various aspects, such as participative actions, role-playing, and toolboxes, for individuals from different countries.

Table 2.1: Summary of national culture and safety literature.

Author	Industry	#Countries	#Participants	Methodology	Framework
Alshahrani et al. (2013)	Petrochemical	1	407	Questionnaire	Hofstede
Burke et al. (2008)	Several Industries	14	68	Data review	Hofstede
Casey et al. (2015)	Oil and Gas	1	562	Questionnaire	Hofstede Index
Frazier et al. (2017)	Several Industries			Meta-analysis	Hofstede Index
Goh and Sa'adon, (2015)	Construction	1	50 observation 5 interviews 40 questioners	Mixed methods	
Hallowell and Yugar-Arias (2016)	Construction	1	17	Focus group	Hofstede
Lu et al. (2012)	Shipping	13	773	Questionnaire	Hofstede
Lu, Hsu and Lee (2016)	Shipping	2	322	Questionnaire	Hofstede
Mearns and Yule (2009)	Oil and Gas	6	845	Questionnaire	Hofstede
Helmreich and Merritt (1998)	Aviation	23	15,454	Questionnaire	Hofstede
Mohamed et al. (2009)	Construction	1	140	Questionnaire	
Noort et al. (2016)	Aviation	21	13616	Questionnaire	Hofstede Index
Okolie and Okoye (2012)	Construction	1	180	Questionnaire	Hofstede
Power et al. (2015)	Several Industries	24	1,453	Questionnaire	GLOBE
Perez-Floriano and Gonzalez (2007)	Several Industries	2	220	Questionnaire	Schwartz
Reader et al. (2015)	Aviation	17	6406	Questionnaire	Hofstede Index
Schubert and Dijkstra (2009)	gas and chemical industry	1	10	Interviews	
Taras et al. (2011)	Several Industries			Meta-analysis	Hofstede Index
Tear et al. (2018)	Aviation	21	13,573	Questionnaire	Hofstede Index
Yayla-Kullu et al. (2015)	Aviation	77	85-134 dataset	Data review	Hofstede's and the GLOBE

As Table 2.1 presents, most studies employs Hofstede's cultural framework to explicate cultural differences. Safety was the characteristic linked to national culture in the majority of such investigations. Several studies considered accident information in relation to Hofstede's country scores, while a limited number considered multicultural work environments and information relating to persons of varied nationalities. Residents of different countries provided research data in most of the investigations, with between one and twenty-three nations being investigated.

Linking Hofstede's established country ratings (Hofstede index) to aspects of safety culture was commonplace in the research, particularly in studies considering aviation. The country ratings established by Hofstede were adopted on the basis of avoiding bias in the research method in studies focusing on air traffic control and considering the correlation between safety culture and national culture (Noor et al., 2015; Reader et al., 2015; Tear, Reader, Shorrock and Kirwan, 2018). In contrast, Mohamed (2009), Lu et al. (2012) and Lu et al. (2016) are examples of fairly recent studies that have determined the influence of national culture based on Hofstede's framework. Regardless, safety culture and national culture dimensions were still identified as having a significant correlation. Schubert and Dijkstra's (2009) investigation is indicative of qualitative research concerning accident inquiry, finding that chemical and gas industry incidents are affected by national culture.

A country-based assessment involving a minimum of two countries for score comparison was the approach in the majority of studies, what Hofstede (2001) terms ecological analysis. One study considered six countries in an individual-level assessment (Mearns and Yule, 2009), whereas a focus on a specific country for individual-level assessment was carried out in a limited number of studies (see Alshahrani et al., 2013; Mohamed et al., 2009; Okolie and Okoye, 2012). As analysts such as Taras et al. (2011) have posited, national culture, particularly within close-knit cultures, may be accurately conveyed by individual cultural positioning, thus justifying individual-level assessments as undertaken in the business and management field, although such an approach is an "ecological fallacy" according to Hofstede et al. (2010). The reliability and validity of Hofstede's questionnaires have been questioned when an individual-level analysis of national culture is undertaken. Mohamed et al. (2009) employed the questionnaire with clarified psychometric characteristics, the only individual-level assessment to do so,

with Alshahrani et al. (2013), Mearns and Yule (2009) as well as Okolie and Okoye (2012) neglecting to do so. The aspects of Hofstede's cultural framework were analysed by Mohamed et al. (2009) through their formulated questions. Power distance, ambiguity avoidance, collectivism and masculinity were the four dimensions they revealed.

Lu et al. (2012) and Lu et al. (2016) investigated the correlations between safety culture and national culture with regard to the shipping industry and found that human error and safety attitudes were affected by national culture. Reduced levels of human failures were linked to collectivism and strong uncertainty aversion, as well as to lower power distance (Lu et al., 2012). Subsequently, safety attitudes were found to be detrimentally affected by masculinity yet positively affected by long-term orientation, while safety conduct was positively linked to long-term orientation, collectivism, ambiguity avoidance and power distance among other national cultural dynamics (Lu et al., 2016). Furthermore, the impact of national culture on safety has been demonstrated in relation to water transport industry incident analysis. Certain incidents were linked to social loitering, itself connected to workers' cultural distinctions, thus indicating that safety culture is affected by a particular person's national culture despite a multicultural context.

The aviation industry and the impact of national culture on safety culture was the focus of five studies. Given that strengthening safety has been the industry's ongoing aim, this might explain such a focus. Perspectives regarding service operations quality outcomes (Yayla-Kullu, Tansitpong, Gnanlet, McDermott, & Durgee, 2015), safety culture (Reader et al., 2015; Noort et al., 2016; Tear, Reader, Shorrock and Kirwan, 2018) and safety perspectives (Helmreich & Merritt, 1998) were investigated in relation to national culture. In accordance with Yayla-Kullu et al., (2015) national cultures where uncertainty avoidance is high and that are individualistic would likely perform poorly.

The various countries' aviation incident information was most often investigated in accordance with Hofstede's country ratings in order to determine national culture's impact. Concerning the crucial principle of adherence to the aviation industry's standard operating procedures, Helmreich and Merritt (1998) identified that safety was positively correlated with strong uncertainty avoidance. Moreover, safety culture

was linked to national culture by research such as that by Noort et al. (2016) and Reader et al. (2015) concerning flight traffic control. Thus, safety culture was negatively linked to immediate-term positioning, uncertainty avoidance, collectivism, femininity and power distance. The relation between national culture and organisational hierarchy, the relation to power distance, and the impact to safety culture perceptions was assessed and examined by Tear, Reader, Shorrock, and Kirwan (2018). In their study, these authors used a total of 13,573 workers from 21 nations, all of whom were air traffic control workers, to corroborate the view that frontline staff do not see safety culture as positively as managerial staff do, according to research observations. Furthermore, the study found that workers are less positive if they are from nations with an established power distance safety culture and hierarchy, compared to workers in nations of a low power distance. Differences between perception of higher-position and lower-position workers towards safety culture within national contexts increased due to national environment and context, concerning those examples with greater power distances.

The correlation between safety culture and national culture within the oil industry was explored in two studies (Casey et al., 2015; Mearns & Yule, 2009). They investigated risk-taking conduct, which is a sub-category of safety culture, in six countries and found that national cultural differences could influence safety procedures when transmitted between countries. Although the insignificance of power distance arose when safety was promoted by managers, safety continued to be significantly linked to masculinity. Casey et al. (2015) investigated how the national culture of employees affects safety behaviour and safety–related perceptions. The study compared Southern Asian and Anglo workers in an international oil and gas company. The researchers discovered that three factors—the willingness to report errors, safety support by supervisors and production pressure by supervisors—were less strong among workers of Southern Asian origin than those of Anglo origin.

Hallowell and Yugar-Arias (2016), Mohamed, Ali and Tam (2009), as well as Okolie and Okoye (2012), focused on the construction industry, in US, Pakistan and Nigeria respectively, with regard to the correlation between safety behaviours and national culture. Hallowell and Yugar-Arias (2016) discovered that Hofstede national culture dimensions are helpful in highlighting the foundational divergences in

behaviour between Hispanic employees and other ethnic groups. Unsafe activities and working conditions can be influenced by these cultural dimensions: high power distance, weak uncertainty avoidance, and a short-term orientation where in Okolie and Okoye's study. This was supported by the research of Mohamed et al. (2009), who found that several effects on safety culture. The conclusion from this work was that workers are safety conscious and strongly believe in implementing safety in the workplace in collectivist and high UAI cultures.

A study was created to determine the cognitive behaviours that affect unsafe behaviour when working at heights. Their study revealed that the subjective norm—which is affected by national culture—is the major variable that influences the decision of a worker to hold down the safety anchor (Goh & Sa'adon, 2015). Nielsen et al. (2015) discovered that there is a relation between safety outcomes and the masculinity factor of a national culture. Taras, Steel, and Kirkman (2011) culminated the results drawn on this topic from over thirty years of research. After a comprehensive appraisal, the paper concluded that many factors such as attitudes, behaviour and performance in the workplace can be deduced from analysing the relevant national culture.

Burke et al. (2008), examined the function of national culture and organisational environment on the effectiveness of an organisation's safety training. This research showed that the national culture dimension of uncertainty avoidance (UA) performs a role in reducing accidents and injuries. In North Holland, Schubert and Dijkstra (2009) conducted a study focusing on the challenges of improving safety performance. The results showed that cultural difference was one of the main problems encountered. Perez-Floriano and Gonzalez (2007) used Sao Paulo, Rio de Janeiro, and Buenos Aires (three cities in two different nations in South America) for the investigation of workers regarding cultural values. This study looked into the way differentiation relates to how individuals interpret and see risk and how they consider the definition and meaning of 'danger'. This study used 220 line-worker participants, and the researchers concluded that the aforementioned cultural values are linked to how individuals see and consider risk, as well as to their reactions and responses to risk-management schemes.

A comprehensive meta-analysis of both the outcomes and the antecedents of psychological safety was undertaken by Frazier, Fainshmidt, Klinger, Pezeshkan and Vracheva (2017). This meta-analysis was intended to provide further understanding of the impact of national context on psychological safety validities. The authors of this study revealed that there was a significantly stronger impact on psychological safety among those cultures of a high UAI from the following antecedents: work-design characteristics, positive personality traits, and a supportive working setting and context. The research also revealed an unexpected finding, namely, that the impacts of positive leadership relations were shown to be weaker in high UAI cultures. The results of the study revealed that the significance of psychological safety might be increased with a higher UAI, impacting working outcomes. Workers in countries with a high UAI culture are not as likely to take risks in the workplace. Accordingly, the construct of psychological safety, which was developed in nations that have cultures of low UAI norms, might be cultivated and fostered in environments where going against the status quo is rare or abnormal, and psychological safety is of greater importance among these cultures. The findings of this study evidence, at least initially, that psychological safety is potentially affected by culture.

When focusing on the region of the Middle East, fewer studies could be found which possessed findings related to the current work. Mellahi, Demirbag, and Riddle (2011) note how national culture can play a significant role with regard to project management within the construction industry, particularly while taking place on the Arabian Peninsula. The work of Kartam et al. (2000) highlights the importance of assessing research challenges in greater depth, as findings continually demonstrate how an ignorance of the role of national culture can lead to setbacks and low levels of communication, which can be costly for the firms involved. Furthermore, Alshahrani, Panuwatwanich, and Mohamed (2013) studied the role of national culture on safety behaviour among petrochemical employees in Saudi Arabia and noted how both the greater emphasis on masculinity and the long–term orientation level are connected to greater standards of safety; in contrast, it also highlighted how placing greater emphasis on individualism is connected to lower standards of safety. Next section will explore the association between social identity theory and national culture.

2.12 Social Identity Theory and National Culture

Collectivism is important because of its powerful effect on the culture of a group, nation or region, as well as on the choices that a group makes, its endurance and the way it operates. Policymakers and managers should therefore be careful to take into consideration the cultural differences between themselves and the people who are the subjects of their policies. Tajfel (1978) advises that Social Identity Theory (SIT) indicates that the sense of belonging to a group is as a result of affective components and categorisation. Gaertner and Dovidio (2009) explained that when individuals identify with a group socially, it provides a sense of comfort that leads to positive outcomes, including agreement and information sharing when they interact with the group. Moreover, Jackson and Smith (1999) argued that the construct of social identity helps people avoid negative issues, such as poor decision-making, peer pressure and hatred between groups.

Social identities can allow individuals to discern which behaviours are appropriate, according to Hopkins and Reicher (2011), who contended that these behaviours may be different in different social contexts. Returning to Hofstede's (2010) research, it is clear that different cultures view power and group membership in diverse ways across the world; thus, identity may emerge in a variety of ways, depending on the local culture. While there are some discrepancies in terms of theory and structure, the notion of social identity has become increasingly popular in both research and practice. SIT has been identified in contemporary studies as an appropriate method for integrating various frameworks, including cross-cultural work in psychology and diversity (Ferdman & Sagiv, 2012).

Social identity refers to feelings towards a group membership, while self-identity concerns an individual's feelings towards themselves. When describing their social identity, it is common for individuals to include their social membership in a number of groups, which clearly vary from person to person and may comprise multiple categories. Sevig, Highlen and Adams's (2000) study indicated that when describing themselves, more than eighty-one percent of their sample identified more than one identity. If culture is considered to be a significant behavioural motivator, it therefore follows that differences in social-identity development and structure result from different cultural orientations. The concept of social identity is not yet entirely cross-

cultural, although Gibson and Zellmer-Bruhn's (2001) study identified various metaphors across cultures in regard to the notion of teamwork, and the authors indicated that the conceptualisation of constructs varies according to different cognitive frameworks. It could therefore be assumed that cultural diversity in terms of experiences and contexts leads to a varied conceptualisation of social identity. For example, Finkelstein (2010) pointed out that people from individualistic cultures tend to favour social affiliations that are career-related, while those from collectivist cultures are more likely to have affiliations that are related to altruistic concerns. In addition to these diverse motivations for social affiliation, cultural orientation can also drive positive attitudes and a sense of belonging, which is consistent with a definition of social identification that refers to the role of social affiliation to the self (Brewer, 2001). It could therefore be assumed that collectivist individuals would relate more to this affective component than those from individualistic cultures.

2.13 Summary

This chapter provided an all-encompassing literature review that relates to the salient concepts of safety activities from various theoretical perspectives. The definitions and descriptions of safety culture, safety behaviour, safety climate and their influences on safety outcome were reviewed. The literature review showed the relationship between safety outcome, safety climate safety behaviour and national culture. The studies that were cited demonstrated that the perceptions of safety climate are related to safety behaviours, and safety behaviour is inversely proportional to accidents. Fishbein and Ajzen (1975) and Neal et al. (2000) have suggested that a clear distinction should be made between behaviours (safety compliance and safety participation) and outcomes. So, in this present research, safety outcome refers to the rate at which injuries and accidents occur in a workplace within a specified period and the number of days off caused by injuries, while safety behaviour refers to safety compliance and participation.

The role of national culture was also considered and reviewed, which the researcher considers a key concern; organisations ignore cultural differences at their peril because they are significant contributing factors to conflict and misunderstanding. A range of other factors that impact on health and safety were also assessed, together

with its broader dimensions and the notion of safety behaviour. Safety behaviour and cultural conditions combine to influence health and safety practices and the researcher suggests that this would be a valid subject for further research, particularly with regard to Kuwait's construction industry. It is essential that employees avoid accidents in the workplace by accepting health and safety requirements and this study has added a unique element to the research on this subject. Therefore, the next chapter discusses in more detail different national culture models.

3.0 National Culture Literature Review

3.1 Culture

Baptista and Oliveira (2015) assert that culture is a term which is open to numerous definitions, while Gallivan and Srite (2005) argue that culture cannot be viewed as an entity, but must be understood by looking at values, meanings and customs—which makes it problematic to access. The literature offers various definitions of culture—worldviews, beliefs, traditions, customs, and practices—to name but a few elements. In contrast, O'Sullivan, Hartley, Saunders, Montgomery and Fiske (1994) stated that culture is the expansion and growth of social consciousness and social skills. Hofstede (2001) provides a comprehensive definition of culture, stating that it is made up of customs, religion, traditions, languages and art, and that it functions as a system of communal values which separates an individual of one group from an individual of another.

Cultural backgrounds affect how people view, are affected by and deal with actions that carry a degree of risk or uncertainty, and this characteristic embodies the cultural standards that are learnt by people in their own social environment. Therefore, large-scale factors in relation to the national cultural, political and economic undertones must be considered when signifying the importance of safety within the construction industry. Ignoring cultural differences can have disastrous consequences for companies (Steenkamp, 2001). Sui Pheng and Yuquan (2002) agree, adding that if differences are discounted or dealt with incorrectly, they will retain or motive employees with difficulty and promote misunderstanding of the possibilities of cross–border partnerships, which will lead to mistakes in marketing and advertising as well as a lack of success in creating sustainable bases of competitive advantage. Steenkamp (2001) argues that it is difficult to understand the concept of culture by simply looking at a number of its aspects. Hofstede (2001) agrees with this view, stating that the studies of national culture are collected from a wide range of disciplines.

According to Hofstede definition culture is "the collective programming of the mind that distinguishes the members of one group or category of people from another." (2001, p.9). This is the most widely recognized definition of culture by Hofstede.

Bhaskaran and Gligorovska (2009) point out that the term national culture derives from the belief that every country is home to people who share a history and experiences, and that this homogeneous culture produces a national culture. Hofstede (2001) proposed that a collective national character is shared by people and represents their mental and cultural programming, such as: their behaviour, perceptions, expectations, assumptions, beliefs and values. Collective programming happens at the organisational and national levels. Organisational culture, in contrast, refers to a set of values that exist within an organisation and are shared by employees. Furthermore, organisational culture is distinguished from national culture; one employee differs from another in the organisational culture, whereas the national culture differentiates people of a certain nation from another (Hofstede et al., 2010). In a national culture, people belonging to a certain society or nation share same practices, values and beliefs. These values are demonstrated through workplace, family or school behaviour. Moreover, as far as business, family and education are concerned, governmental laws and societal policies are reinforced by these behaviours. Be that as it may, culture is an exceptionally broad idea, and the definition differs depending upon the utilisation and nature in which how it is perceived. Culture is not simply about ethnic groups and nationalities; it also involves systems, such as organisations and communities (Hofstede, 2001). Evidently, culture is an unpredictable arrangement of connections, and each one of us is a part of various cultures simultaneously, as there are subcultures for each culture. The following section evaluates the various theoretical frameworks that have been designed—based on the categorising and classifying of countries into several cultural dimensions—in a bid to make it easier to determine the differences that exist between countries.

3.2 Models of National Culture

Cross-cultural psychology has long been concerned with expressing or defining cultural variation, along with its various dimensions, in terms of the operations used to conceptualise it. This aim has stood at the centre of research in the field primarily because of the utility it affords when attempting to formulate a uniform framework through which attitudes, behaviours, and other empirically observed phenomena can be understood (Hofstede, Hofstede, & Minkov, 2010). From such a framework, it is possible to hypothesise about and, ultimately, to explain the nature of important

dimensions of cultural variation from country to country. Given this, scholarly investigations centring on culture have accelerated in recent years, and De Mooij and Hofstede (2010) predicted that this trend will continue in the coming years, especially in view of the proliferation of globalisation and the rise of multinational corporations. To express, define, and conceptualise national cultural variation, a range of frameworks has been designed, including the Hofstede model, Hall's model, research conducted by Schwartz and Bilsky, the Global Leadership and Organisational Behaviour Effectiveness (GLOBE) model, and Trompenaars' model. As detailed by De Mooij and Hofstede (2010), the Hofstede model is the most frequently used, although the recently created GLOBE model is also popular in the field.

3.2.1 Inkeles and Levinson's Model

Inkeles and Levinson (1969, cited in Peterson, 2007) formulated an empirical framework that could be applied to gain systematic insight into national character. The researchers' overarching tenet was that aspects of commonality relating to personality should be extracted and collated from a generalisable demographic sample, with the objective being to distil a model of national character. The researchers conceptualised national character as being founded on the repeatedly observable psychological features of the population in question, with those features then being applied to the dimensionalisation of a national-character model. As a crucial part of the framework, the researchers delineated relation to authority, conception of self (including masculinity and femininity concepts), and the nature of primary dilemmas or conflicts as the three fundamental analytical units undergirding understanding of the dimensionalisation of national character (Hofstede et al., 2010). It is noteworthy that despite Inkeles and Levinson's current status as the effective fathers of the study of national culture, the theoretical nature of their suppositions about a model of national culture should not be overlooked. In addition, as noted by Peterson (2007), the significance of their proposal has been considerably undermined by the fact that they designed the dimension framework from an analysis of psychology and anthropology papers.

3.2.2 Hofstede's Model

Hofstede began by studying IBM personnel posted in 72 countries from 1967–1973, and although his dimensionalisation of national culture was comparable to that of Inkeles and Levinson, the result of Hofstede's investigation was a framework containing the following four dimensions: power distance; uncertainty avoidance; masculinity versus femininity; and individualism versus collectivism. In subsequent collaborative research with Bond (1991, cited in Bhagat & Steers, 2009), Hofstede extended the model into a five-dimensional framework by adding long- versus. short-term orientation. Hofstede further extended the model by adding indulgence versus restraint. From its initial formulation to the present day, Hofstede's (Figure 3.1) work has had a powerful effect in the field of cross-cultural psychology.

Cultural Dimensions	Scale Anchors	
Power Distance: Beliefs about the appropriate distribution of power in society.	Low power distance: Belief that effective leaders do not need to have substantial amounts of power compared to their subordinates. Examples: Austria, Israel, Denmark, Ireland, Norway, Sweden.	High power distance: Belief that people in positions of authority should have considerable power compared to their subordinates. Examples: Malaysia, Mexico, Saudi Arabia.
Uncertainty Avoidance: Degree of uncertainty that can be tolerated and its impact on rule making.	Low uncertainty avoidance: Tolerance for ambiguity; little need for rules to constrain uncertainty. Examples: Singapore, Jamaica, Denmark, Sweden, UK.	High uncertainty avoidance: Intolerance for ambiguity; need for many rules to constrain uncertainty. Examples: Greece, Portugal, Uruguay, Japan, France, Spain.
Individualism-Collectivism: Relative importance of individual vs. group interests.	Collectivism: Group interests generally take precedence over individual interests. Examples: Japan, Korea, Indonesia, Pakistan, Latin America.	Individualism: Individual interests generally take precedence over group interests. Examples: US, Australia, UK, Netherlands, Italy, Scandinavia.
Masculinity-Femininity: Assertiveness vs. passivity; material possessions vs. quality of life.	Masculinity: Values material possessions, money, and the pursuit of personal goals. Examples: Japan, Austria, Italy, Switzerland, Mexico.	Femininity: Values strong social relevance, quality of life, and the welfare of others. Examples: Sweden, Norway, Netherlands, Costa Rica.
Long-term vs. Short-term Orientation: Outlook on work, life, and relationships.	Short-term orientation: Past and present orientation. Values traditions and social obligations. Examples: Pakistan, Nigeria, Philippines, Russia.	Long-term orientation: Future orientation. Values dedication, hard work, and thrift. Examples: China, Korea, Japan, Brazil.
Indulgence vs. Restraint: Mainly related to national levels of subjective happiness and life control.	Indulgent societies allow relatively free gratification of basic and natural human desires leading to enjoying life and having fun. Examples: Mexico, Nigeria, Sweden, Australia, UK.	Restrained societies suppress gratification of needs and regulate it by means of strict social norms. Examples: Italy, India, China, Russia, Egypt.

Figure 3.1: Hofstede's cultural dimensions (Source: Nardon and Steers, 2009).

Power distance (PDI) can be evaluated to understand and evaluate the hierarchy that is in place within a given organisation. According to Hofstede et al. (2010), in cultures in which the PDI is high, management authority is accepted and respected as a fundamental outcome of inequality. On the contrary, in low PDI cultures, the hierarchy is flatter, and the rules and expectations that are in place are designed to

facilitate close collaboration between equal subjects. As Schubert and Dijkstra (2009) stated, the PDI dimension can be of interest in health and safety management.

Individualism (IDV) relates to extent to which the people within a given group perceive themselves as an integral part of the group or an individual acting in isolation within the context of a wider group (Hofstede et al., 2010). People who exhibit individualistic behaviours tend to be more focused on individual advantages, and are likely to deal with themselves. Individualistic cultures typically foster contentious and confrontational rhetoric as opposed to harnessing official catchphrases and restrained hyperbole. In cultures of this nature, the projection of an individual's public impression is much more substantial compared to traditions and relationships. On the contrary, in collectivistic cultures, people view themselves as a member of a community as opposed to being an individual and their beliefs and values are formulated in the context of the wider group (Hofstede, 2001). In cultures of this nature, individuals are raised within large families, and a heavy emphasis is placed on social cooperation and loyalty. They place their focus on protecting the group's interests, and their beliefs and opinions replicate those of the wider group.

Masculinity versus femininity (MAS) is a dimension that refers to the way roles are distributed among the two genders within a society. A society that places emphasis on performance, achievement and competition is a masculine society, while a society that values quality of life, rewards, and relationships is a feminine society (Hofstede et al., 2010). The two extreme sides of MAS can lead to contrary outcomes in terms of employees' abilities to manage challenges (Mearns & Yule 2009). Some studies have found that MAS may have an influence on safety culture to some extent. For example, Tharaldsen, Mearns, and Knudsen (2010) examined the effects of national culture on organisational safety. They found that that masculine cultures exhibit a more calculative approach to safety than feminine cultures.

Uncertainty avoidance (UAI) refers to the degree at which a society tolerates uncertainty and ambiguity (Hofstede et al., 2010). Individuals who seek high UAI societies prefer working in environments, institutions, and relations that are

structured and predictable. They associate uncertain situations with anxiety and rules, and stringent codes help to remove any uncertainty and, subsequently, anxiety. Similarly, researchers have found that there is a strong positive correlation between UAI and knowledge development; as knowledge is perceived as a means by which it is possible to reduce any uncertainty (Burke et al., 2008).

Short–term orientation is a society that supports virtues that are related to the past and respect tradition, including satisfaction of social obligations and preservation of face. Long–term orientation (LTO) is a society that supports virtues that are related to future rewards, thrift, perseverance and adaptation (Hofstede et al., 2010; Mascarenhas, Dias, Prada, & Paiva, 2010). In 2001, it has been formulated that the answers of students from a sample size of 23 countries Chinese Value Survey by (Bond, 1988). This dimension was greatly dependent upon the values of the East. It was discovered that these students have great qualities of persistence and thrift. They have respect for tradition and stability. Fostering the virtues and qualities one has and continuing to retain them while moving towards the future is regarded as long–term orientation. Whereas, the short–term orientation describes the virtues that are somehow related to the past or present (Hofstede et al., 2010).

Indulgent Versus Restraint (IVR) is a sixth dimension that represents the control of basic and natural human desires over the gratification that is connected to the enjoyment of life. This construct is known as the indulgent versus restraint dimension, and it was first presented as a concept by Hofstede et al. (2010). This refers to the requirement to curb the basic needs of human beings and is also related to enjoying life and having fun (Hofstede, 2011). It has been credited as a complementary construct. According to Hofstede, the society that is restrained shows no freedom of speech, because strict norms have been imposed upon them. This type of society has a few people that are happy; conversely, the indulgent society gives more value and importance to free time and tends to pose positive emotions.

In discussing the model's strengths, Steenkamp (2001) cited the close correlation between Hofstede's cultural dimensions and those presented in Schwartz's more recent model. In addition, in responding to critics, Hofstede (1998) emphasised that the only practicable ways to detect, assess, and reflect on aspects of cultural

dissimilarity are those related to national culture. Although it is clear that no national culture is homogenous, the present author sees Hofstede's argument as viable in view of the fact that each fragment of a national identity is definitively associated with a definable point of intersection with the other groups in the nation. Furthermore, Hofstede emphasises the functional nature of the model: rather than seeking to gain insight into national cultures absolutely, the model's purpose is to facilitate cross-cultural comparison based on broad political boundaries. Hence, distinctions among national cultures are the centrally important outcomes of the model. Given that these distinctions are not subject to dramatic change over time, the Hofstede model's dimensions and their implications for national cultural rankings remain relevant. In addition, Hofstede (2011) drew on a wealth of confirmatory evidence for his findings to further emphasise that national culture is not a volatile construct. Moreover, he argued that even the introduction of a novel technology is not destabilising to the degree that it facilitates a notable change in a country's ranking.

In accounting for the voluminous nature of the criticism of Hofstede's model, perceptively attributed a substantial proportion of it to the inaccurate application of Hofstede's cultural dimensions, scores, and survey instrument. Invariably, when a useful theoretical framework is misapplied, it is likely to generate unreliable and largely ineffective results. However, the research conducted to replicate Hofstede's cultural dimensions has produced a wealth of confirmatory evidence for Hofstede's forecasts from numerous domains. Given that numerous research projects in fields such as these have relied on the theoretical value of Hofstede's studies, it is reasonable to conclude that the instruments they used were characterised by a considerable degree of validity and reliability (Christie, Kwon, Stoeberl, & Baumhart, 2003).

A prominent critique levelled at the detractors of Hofstede's model is that evidence confirming the model has been produced by numerous researchers in an equally rich number of domains of cross-cultural research (Triandis, 2004). Indeed, Hofstede (2003) stated that Hofstede's (2001) second edition of *Culture's Consequences* cites more than 200 replications and comparative examinations of independently conducted research projects that have confirmed the model's dimensions. In addition, (Hofstede, 2003) summarised 400 significant relationships,

thereby further supporting the model's validity. Hofstede (2001) emphasised, it is difficult to conclude that the model is other than reliable when considering the wealth of confirmatory research. In particular, unreliable tests do not produce scores significantly associated with external data.

The key limitations of Hofstede's model have been identified as the following: 1) its analytical depth; 2) the potentially arbitrary nature of its supposition that political dividing lines equate to cultural dividing lines; 3) the degree to which its findings are generalizable; 4) the degree to which its survey instrument is valid; 5) its over-stability and essentialisation; 6) its preoccupation with national culture rather than smaller or larger units of culture; and 7) its supposition that national cultures are homogenous (Blodgett, Bakir, & Rose, 2008; Fougère & Moulettes, 2012; McSweeney, 2002; Sivakumar & Nakata, 2001). Furthermore, regarding the time-orientation dimension in the GLOBE model and in Hofstede's model, Hofstede's survey instrument evaluates past versus future orientation, and the GLOBE instrument evaluates present versus future (Venaik, Zhu, & Brewer, 2013). This disparity in how each model's survey instrument evaluates the time-orientation dimension makes it unclear how conceptualisation of the definition should even take place. Another notable weakness is the ecological fallacy in Hofstede's model (Grenness, 2012), which is based on the fact that the model's conclusions do not take into consideration the presence of individual variation.

One of the most notable features of Hofstede's model is that while it has expectedly—and justifiably—been subjected to rigorous critiques over the years, it has persisted as a central framework in the domain of cross-cultural studies (Furrer, Liu, & Sudharshan, 2000). Ultimately, this is testimony to its significant explanatory power and the valuable way in which it illuminates national cultural differences (Jones, 2007). The framework's highly influential nature is not to be undervalued (Jones, 2007), and its penetrating straightforwardness and applicability to comparative examinations have yielded useful findings in numerous domains of inquiry (Twati, 2006).

3.2.3 The GLOBE Model

Cultural Dimensions	Scale Anchors	
Power Distance: Degree to which people expect power to be distributed equally.	High: Society divided into classes; power bases are stable and scarce; power is seen as providing social order; limited upward mobility.	Low: Society has large middle class; power bases are transient and sharable; power often seen as a source of corruption, coercion, and dominance; high upward mobility.
Uncertainty Avoidance: Extent to which people rely on norms, rules, and procedures to reduce the unpredictability of future events.	High: Tendency to formalize social interactions; document agreements in legal contracts; be orderly and maintain meticulous records; rely on rules and formal policies.	Low: Tendency to be more informal in social interactions; reliance on word of people they trust; less concerned with orderliness and record-keeping; rely on informal norms of behavior.
Humane Orientation: Extent to which people reward fairness, altruism, and generosity.	High: Interests of others important; values altruism, benevolence, kindness, and generosity; high need for belonging and affiliation; fewer psychological and pathological problems.	Low: Self-interest important; values pleasure, comfort, and self-enjoyment; high need for power and possessions; more psychological and pathological problems.
Institutional Collectivism: Extent to which society encourages collective distribution of resources and collective action.	High: Individuals integrated into strong cohesive groups; self viewed as interdependent with groups; societal goals often take precedence over individual goals.	Low: Individuals largely responsible for themselves; self viewed as autonomous; individual goals often take precedence over societal or group goals.
In-Group Collectivism: Extent to which individuals express pride, loyalty, and cohesiveness in their organizations and families.	High: Members assume they are interdependent and seek to make important personal contributions to group or organization; long-term employer-employee relationships; organizations assume major responsibility of employee welfare; important decisions made by groups.	Low: Members assume they are independent of the organization and seek to stand out by making individual contributions; short-term employer-employee relationships; organizations primarily interested in the work performed by employees over their personal welfare.
Assertiveness: Degree to which people are assertive, confrontational, and aggressive in relationships with others.	High: Value assertiveness, dominance, and tough behavior for all members of society; sympathy for the strong; value competition; belief in success through hard work; values direct and unambiguous communication.	Low: Prefers modesty and tenderness to assertiveness; sympathy for the weak; values cooperation; often associates competition with defeat and punishment; values face-saving in communication and action.
Gender Egalitarianism: Degree to which gender differences are minimized.	High: High participation of women in the workforce; more women in positions of authority; women accorded equal status in society.	Low: Low participation of women in the workforce; fewer women in positions of authority; women not accorded equal status in society.
Future Orientation: Extent to which people engage in future-oriented behaviors such as planning, investing, and delayed gratification.	High: Greater emphasis on economic success; propensity to save for the future; values intrinsic motivation; organizations tend to be flexible and adaptive.	Low: Less emphasis on economic success; propensity for instant gratification; values extrinsic motivation; organizations tend to be bureaucratic and inflexible.
Performance Orientation: Degree to which high performance is encouraged and rewarded.	High: Belief that individuals are in control of their destiny; values assertiveness, competitiveness, and materialism; emphasizes performance over people.	Low: Values harmony with environment over control; emphasizes seniority, loyalty, social relationships, and belongingness; values who people are more than what they do.

Figure 3.2: GLOBE's cultural dimensions (Source: Nardon and Steers, 2009).

From 1994–1997, House, Hanges, Javidan, dorfman, and gupta (2004, cited in Bhagat & Steers, 2009) laid the groundwork for the Global Leadership and Organisational Behaviour Effectiveness (GLOBE) model by examining the way in which culture—particularly its organisational and societal dimensions—affected

leadership styles, national economic performance, and individual well-being. After studying more than 17,000 managerial personnel from 62 countries, the researchers designed a framework containing the following 9 dimensions (Figure 3.2): power distance; uncertainty avoidance; humane orientation; institutional collectivism; in-group collectivism; assertiveness; gender egalitarianism; future orientation; and performance orientation. As will be clear to the reader, many of these dimensions are augmentations of Hofstede's dimensions, but inclusion of the performance and humane orientations is a notable addition. Societies centring on performance emphasise the importance of performance, outcomes, and individual characteristics conducive to effective performance, while humane societies emphasise the importance of benevolence, kindness, and selflessness.

As noted by Minkov and Hofstede (2011) in their critique of the GLOBE model, where distinct measures of uncertainty can be applied to generate variable outcomes, these measures are clearly not measuring the same thing. In addition, Minkov and Hofstede (2011), highlight an error in terminology made by House et al. (2004): defining socially favourable conduct as 'values' when it should have been referred to as 'norms'. Perhaps the most crucial criticism of the GLOBE model is that its nine-dimensional framework is not the product of empirical investigation; most prominent in this regard is that many of the participants in the survey portion of the research lacked adequate knowledge of their own national culture (McCrae, Terracciano, Realo, & Allik, 2008; Minkov & Blagoev, 2011, cited in Minkov & Hofstede, 2011).

3.2.4 Schwartz's Model

As a modification of Hofstede's theoretical approach to the structure of cultural values, Schwartz (1999, cited in Bhagat & Steers, 2009) produced a seven-dimensional model by considering a group of items that could assess the nature of cross-cultural values (themselves the precursors of 'norms'). The dimensions in this model (Figure 3.3) include: 1) harmony; 2) embeddedness; 3) hierarchy; 4) mastery; 5) affective autonomy; 6) intellectual autonomy; 7) egalitarianism. In addition, embeddedness refers to both collectivist and social relationships, wherein a conservative operating philosophy is highlighted. In hierarchy versus egalitarian commitment, the former refers to inequitable distribution of the necessities of life in a

society, and the latter refers to their equitable distribution. In the final dimension of Schwartz's model, mastery versus harmony, the former refers to self-assertion and the latter to the perceived value of coexisting with others compatibly.

Cultural Dimensions	Scale Anchors	
Conservatism-Autonomy: Extent to which individuals are integrated in groups.	Conservatism: individuals are embedded in a collectivity, finding meaning through participation and identification with a group that shares their way of life.	Autonomy: individuals are autonomous from groups, finding meaning on their own uniqueness. Two types of autonomy: Intellectual autonomy: (independent pursuit of ideas and rights) and Affective autonomy (independent pursuit of affectively positive experience).
Hierarchy-Egalitarianism: Extent to which equality is valued and expected.	Hierarchy: cultures are organized hierarchically. Individuals are socialized to comply with theirs roles and are sanctioned if they do not.	Egalitarianism: Individuals are seen as moral equals who share basic interests as human beings.
Mastery-Harmony: Extent to which people seek to change the natural and social world to advance personal or group interests.	Mastery: individuals value getting ahead through self-assertion and seek to change the natural and social world to advance personal or group interests.	Harmony: individuals accept the world as it is and try to preserve it rather than exploit it.

Figure 3.3: Schwartz's cultural dimensions (Source: Nardon and Steers, 2009).

Most commentators while comparing this model to Hofstede's have conceded that commonalities exist regarding the models' strengths, explanatory powers, and weaknesses. In terms of weaknesses, both models fail to draw on up-to-date information, and, as highlighted by Ng, Lee, and Soutar (2007), both use ineffective samples, with Schwartz using educational personnel and Hofstede using IBM personnel. In addition, since Schwartz's model sprang from a theoretical position, its survey items have been accused of being flawed, specifically of overemphasising hypothesised dimensions (Steenkam, 2001, cited in Ng et al., 2007). Nevertheless, the Schwartz model's strengths have also been the subject of much discussion, including by Drogendijk and Slangen (2006), who drew on research by Brett and Okumura (1998) and (Steenkamp, 2001) to outline the model's methodological, conceptual, and theoretical points of value.

3.2.5 Trompenaars' Model

The seven-dimensional model of national culture (Figure 3.4) formulated by Trompenaars (1994, cited in Bhagat & Steers, 2009) extended the models of Hofstede and Schwartz and included the following: universalism versus particularism; specific versus diffuse; neutrality versus affectivity; individualism

versus collectivism; achieved versus ascribed; inner versus outed directed; and sequential versus synchronic. In this model, universalism versus particularism denotes the degree to which individuals in the society engage with both regulations and interpersonal connections. Individualism versus collectivism refers to whether the prevailing tendency in the society is to preserve individual or group interests and objectives. Specific versus diffuse refers to whether individuals in the society conduct their lives in specific or several areas. Neutrality versus affectivity refers to whether individuals in the society act in a neutral or expressive way. Achieved versus ascribed refers to status as being based either on individual performance or social hierarchies. Inner versus outer refers to whether individuals' behaviour is individually or socially regulated. Sequential versus synchronic refers to the degree to which societal activities are conducted simultaneously or sequentially.

Cultural Dimensions	Scale Anchors	
Universalism-Particularism: Relative importance of applying standardized rules and policies across societal members; role of exceptions in rule enforcement.	Universalism: Reliance on formal rules and policies that are applied equally to everyone. Examples: Austria, Germany, Switzerland, US.	Particularism: Rules must be tempered by the nature of the situation and the people involved. Examples: China, Venezuela, Indonesia, Korea.
Individualism-Collectivism: Extent to which people derive their identity from within themselves or their group.	Individualism: Focus on individual achievement and independence. Examples: US, Nigeria, Mexico, Argentina.	Collectivism: Focus on group achievement and welfare. Examples: Singapore, Thailand, Japan.
Specific-Diffuse: Extent to which people's various roles are compartmentalized or integrated.	Specific: Clear separation of a person's various roles. Examples: Sweden, Germany, Canada, UK, US.	Diffuse: Clear integration of a person's various roles. Examples: China, Venezuela, Mexico, Japan, Spain.
Neutral-Affective: Extent to which people are free to express their emotions in public.	Neutral: Refrain from showing emotions; hide feelings. Examples: Japan, Singapore, UK.	Affective: Emotional expressions acceptable or encouraged. Examples: Mexico, Brazil, Italy.
Achievement-Ascription: Manner in which respect and social status are accorded to people.	Achievement: Respect for earned accomplishments. Examples: Austria, US, Switzerland.	Ascription: Respect for ascribed or inherited status. Examples: Egypt, Indonesia, Korea, Hungary.
Time Perspective: Relative focus on the past or the future in daily activities.	Past/present oriented: Emphasis on past events and glory. Examples: France, Spain, Portugal, Arab countries.	Future oriented: Emphasis on planning and future possibilities. Examples: China, Japan, Korea, Sweden, US.
Relationship with Environment: Extent to which people believe they control the environment or it controls them.	Inner-directed: Focus on controlling the environment. Examples: Australia, US, UK.	Outer-directed: Focus on living in harmony with nature. Examples: China, India; Sweden, Egypt, Korea.

Figure 3.4: Trompenaars' cultural dimensions (Source: Nardon and Steers, 2009).

Despite Trompenaars' attempt to collate the findings of other models to produce a more secure, viable framework, his research has received significant criticism for, in effect, reproducing the earlier models (Hofstede, 1996). One of Hofstede's (1996) central criticisms was methodological (namely, regarding the content validity of the data-collection instrument), and he also identified a lack of support in the database

for the research theory. To vindicate their work, Hampden-Turner and Trompenaars (1997) aimed to provide clarifying evidence for the seven-dimensional model and emphasised that conceptual similarity to Hofstede's model should not be confused with suppositional similarity. Ultimately, they argued that Hofstede's model and their own were equally valid but not equally appropriate, depending on the research objective.

3.2.6 Kluckhohn and Strodbeck's Model

These researchers (1961, cited in Bhagat & Steers, 2009), building on the findings of the Harvard Values Project (1940–1959), designed a five-dimensional cultural-orientation framework (Figure 3.5) whose key purpose was to outline points of cultural variance regarding distinct cultural groups. A total of five cultural orientations were each associated with three descriptive values, as follows: 1) human nature (conceptualised as good, evil, or natural); 2) man-nature relationship (conceptualised as dominant, subordinate, or harmonious); 3) time sense (conceptualised as past, present, or future); 4) activity (conceptualised as doing, becoming, or being); and 5) social relations (conceptualised as hierarchical, collateral, or individual). The Kluckhohn and Strodbeck model was intimately linked to the *value orientation* method assessment's survey instrument, the intention of which was to allow individual entities within cultural communities to register certain reactions to the orientations, thereby formulating conceptualisations of their overall cultures. As noted by Gallagher (2001), the *value orientation* method performed effectively when used in several cross-cultural contexts, including university-level education, primary- and secondary-care institutions, and conflict resolution for public-resource management.

Cultural Dimensions	Scale Anchors		
Relationship with Nature: Beliefs about the need or responsibility to control nature.	Mastery: Belief that people have need or responsibility to control nature.	Harmony: Belief that people should work with nature to maintain harmony or balance.	Subjugation: Belief that individuals must submit to nature.
Relationship with People: Beliefs about social structure.	Individualistic: Belief that social structure should be arranged based on individuals.	Collateral: Belief that social structure should be based on groups of individuals with relatively equal status.	Lineal: Belief that social structure should be based on groups with clear and rigid hierarchical relationships.
Human Activities: Beliefs about appropriate goals.	Being: Belief that people should concentrate on living for the moment.	Becoming: belief that individuals should strive to develop themselves into an integrated whole.	Doing: belief on striving for goals and accomplishments.
Relationship with Time: Extent to which past, present, and future influence decisions.	Past: In making decisions, people are principally influenced by past events or traditions.	Present: In making decisions, people are principally influenced by present circumstances.	Future: In making decisions, people are principally influenced by future prospects.
Human Nature: Beliefs about good, neutral or evil human nature.	Good: Belief that people are inherently good.	Neutral: Belief that people are inherently neutral.	Evil: Belief that people are inherently evil

Figure 3.5: Kluckhohn and Strodtbeck's cultural dimensions (Source: Nardon and Steers, 2009).

3.2.7 Hall's Model

In attempting to address the comparative significance of situations in which cross-cultural communication takes place, Hall (1981, cited in Bhagat & Steers, 2009) designed a theoretical framework for the cultural context of communications (Figure 3.6). The central implication of Hall's model is that each society differs with respect to the level of its orientation (for example, high-context versus low-context). In cultures with high-context communication, clear-cut textual and spoken communication is used, while in cultures with low-context communication, gestural, facial, and cue-related communicative activities are used to a greater extent. In addition to this high-context versus low-context orientation, Hall's model relies on monochronic versus polychronic time, which is similar to the sequential versus synchronic dimension of Trompenaars' model. A notable distinction is that in Hall's model, a key characteristic of cultures with polychronic time is that they have a comparatively less-intense focus on strict planning. The high territorial versus low territorial orientation in the model contrasts individual ownership with collective ownership. The final dimension of the model is fast versus slow, referring to the speed at which information is conveyed in the culture. A fundamental strength of Hall's model is its use in the domain of communications research.

Cultural Dimensions	Scale Anchors	
Context: Extent to which the context of a message is as important as the message itself.	Low context: Direct and frank communication; message itself conveys its meaning. Examples: Germany, US, Scandinavia.	High context: Much of the meaning in communication is conveyed indirectly through the context surrounding a message. Examples: Japan, China.
Space: Extent to which people are comfortable sharing physical space with others.	Center of power: Territorial; need for clearly delineated personal space between themselves and others. Examples: US, Japan.	Center of community: Communal; comfortable sharing personal space with others. Examples: Latin America, Arab States.
Time: Extent to which people approach one task at a time or multiple tasks simultaneously.	Monochronic: Sequential attention to individual goals; separation of work and personal life; precise concept of time. Examples: Germany, US, Scandinavia.	Polychronic: Simultaneous attention to multiple goals; integration of work and personal life; relative concept of time. Examples: France, Spain, Mexico, Brazil, Arab States.

Figure 3.6: Hall's cultural dimensions (Source: Nardon and Steers, 2009).

As detailed by Yaveroglu and Donthu (2002), although Hall's model addresses far fewer dimensions than other prominent models of national culture and general values, cross-cultural scholars have often found it useful when combined with Hofstede's model. Nevertheless, as with every model in this discipline, particularly those that are widely used, Hall's model is frequently critiqued on the basis of its restricted scope, its tendency to simplify complex matters, and its initial assumption of a culture's favoured approach to communication. In discussing this last limitation, Cardon (2008) noted the model's methodological issues, criticising Hall's dimensions as being derived almost exclusively from qualitative data, particularly anecdotal and observational data. The subsequent section presents an account of the critique garnered from the extant literature regarding national culture.

3.3 National Culture Critique

Hofstede's (2001) research suggests that a nation's institutional infrastructure is mutually understood by the individuals in a society; this is mainly because the concept of national culture is theoretically founded on the supposition that culture can be justifiably mediated by nationality. Nationality helps a country's population to hold shared and comparable principles and morals. However, as anthropological research has emphasised, nation is not synonymous with culture (Myers & Tan, 2002). With consensus lacking on this issue, it is apparent that the comprehension of mutually held cultural principles is deemed to be more effective through the lens of personal ethnic identification. A homogenous culture based on a single ethnicity is considered to be present if culture is mediated by nation. Baskerville-Morley (2005) has emphasised that, from the anthropological perspective, culture will be

viewed too basic and subjective. Similarly, an equivalent assessment of cultural aspects at the personal level may arise, as both collectivism and individualism are dynamic. Indeed, Bond (2002) has posited that the misapplication of particular terminology relating to dynamics at varying assessment levels may ensue. Thus, an individualistic or collective orientation may be determined in a particular person.

Nonetheless, a particular person or group should not be identified as collective or individualistic on the basis of a country being determined as such. Such substitutable conclusions are not permitted, mainly because they involve analytical and measurement processes, although ‘collective’ and ‘individualistic’ are both terms relating to personal- and state-level analyses. One example of this is how, at the state and personal level, UAI may be identified as a prominent feature. Even so, people residing in a particular nation may not be measured or evaluated according to the UAI concept, because nations are supposed to be measured and explained on the basis of national culture. As Yoo, Donthu, and Lenartowicz (2011), and Brewer and Venaik (2012) have explicated, a nation and the population residing in it may not be both described as distinct analytical levels according to the same dimension, if that dimension was developed empirically in relation to a specific analytical level. But even with warnings from Schwartz, GLOBE, Hofstede and other researchers, national culture scores have been used to create stereotypes about individuals (McSweeney, 2009). According to Patel (2013), the authors themselves carry out this mistake where they use stereotypes in discussions that link frameworks with several individual concepts, like consumer behaviour, personality and self.

Meanwhile, it has been suggested that the specific culture of a nation and its population may not be fully comprehended on the basis of theoretical developments at the level of the nation, rendering the national culture and the related concepts redundant. Several studies have exemplified the significant body of research on culture at the national level (Yaveroglu & Donthu, 2002; Yeniyurt & Townsend, 2003); thus, such criticisms are strong for these types of multicultural studies. According to Robinson (1950), this explains the fallacy of assuming that relationships of the same kind are present in various levels of national and individual analysis. The theories on national culture that utilised these scores were obtained from national responses that were collected, and if they are used to make

inferences about inhabitants of the same country, the process becomes meaningless and does not serve any purpose (Patel, 2013). This non—isomorphic nature of national constructs was questioned by Fischer, Vauclair, Fontaine, and Schwartz (2010) in situations when the theoretical aspects of societies and individuals can affect each other in an interchangeable manner. Finally, according to Fischer and Poortinga (2012), homogenous national culture is taken for granted and thus is the sole foundation for postulating that individual and national-level culture are interconnected; this is mainly because a multivariate assessment of both levels within one research study has not been undertaken by either Hofstede or Inglehart.

Additionally, according to Hofstede, different advertising approaches may be explained by the cultural dimensions model. De Mooij and Hofstede (2010) have proposed that in Japan an individual will convey their social standing through seeking highly reputable brands, because one's looks and attire are typically the basis on which an individual evaluates other people, while uncertainty avoidance and strong power distance characterise the culture. Elsewhere, Hofstede (2011) has suggested that, within the Muslim sphere, the dimension of restraint tends to dominate. Hofstede has proposed that limited happiness and a low chance of recalling positive feelings are typical characteristics of these cultures and the individuals residing in them. Baskerville (2003) has observed that, despite Hofstede's emphasis on combined measures of national-level culture as opposed to the personal, the latter level is something the science of psychology should focus on. It is worth noting that the related academic journals have revealed 540 citations for *Culture's Consequences* since 1998. Furthermore, the majority of the national cultural models are obtained from a survey for individuals that is made up to measure personal self-perception. These items are then aggregated up to the national level. Chan (1998) opined that when the average of the group is computed, you will get the average tendency alone, and this will indicate how individuals, rather than the group, perceive themselves. It is only when it is possible to assess the agreement within groups that the decision to use a collective construct can be justified and applied to the entire group. Dorfman, Javidan, Hanges, Dastmalchian, and House (2012) have also stressed that the potential subjectivities emanating from participants' self-reporting in questionnaires, which explore national culture, have not discouraged their adoption; rather, interest in them has grown substantially

alongside investigations into a wider community, subsumed under personal self-perception.

Harrison and McKinnon's (1999) study is indicative of the numerous investigations that have suggested perceiving culture as a sole factor; however, not all these studies sufficiently address the complexities involved in culture. From an anthropological point of view, culture as a phenomenon may only be partly and insufficiently comprehended when it is isolated as a variable. Hence, Baskerville (2003) believes that Hofstede's dimensions should be rejected because they do not allow making cultural distinctions. Most of the time, national cultural dimensions do not succeed in capturing all culture related aspects. Culture in terms of a constantly evolving dynamic is ever– evolving, and when such typologies and dimensions are emphasised, a minimal view or a bare glimpse of the true situation of a country is acquired (Jacob, 2005). There can be cultural diversity in a single nation. Generations of people in these countries are shaped by the events and happenings in their time. So, these countries do not have a culture identity, as there are several ethnic groups found in a given region or country. This can result in both acculturation, which is the learning of the cultures of the host country, and enculturation, which is the learning of one's home country's culture (Daghfous, Petrof, & Pons, 1999). People that also come from the same ethnic group are constantly changing identities as they get older (McSweeney, 2013). Craig and Douglas (2006) have posited that national culture is a highly inappropriate concept, given that countries have interconnections between them, while being home to numerous ethnic groups. What also needs to be considered is the effect of cultural adulteration through contact with different cultures as well as fragmentation of markets. Indeed, Yoo et al. (2011) have expressed scepticism about the assessments that use an entire nation as their basis. In essence, during studies of personal behaviour, the utility of a measurement at the level of national culture will be inadequate to explain or evaluate the conduct of specific individuals. Thus, research focused on culture necessitates deeper inquiry; for example, Bhimani (1999) has suggested that case studies could be used to build on data collected from a comprehensive personal questionnaire method.

Overall, the extant research continues to identify national culture as a useful cultural variable for analysis, regardless of the scepticism expressed in certain studies.

Rather than attending to individual plants, it is the garden that Hofstede (1995) compels us to study in his justification for assessments of national culture. An array of norms are ascribed to by the proponents of the theory of national culture as a foundation for its justification. As Lenartowicz and Roth (1999) have outlined, the collective characteristics of a population are assumed to indicate culture, which itself is perceived as tangible and unchanging, with the relevant cultural model considered to be underpinned by values.

3.4 Rationale for Choosing Hofstede's Model

Table 3.1 presents a concise view of the extant national cultural models explored in this chapter. The fundamental rationale for choosing Hofstede's model rather than any of those described previously relates to the fact that it is the sole model containing values regarding its dimensions that are broadly available and pertinent worldwide, especially in the countries constituting the Arab world (Hofstede, 2001). Hence, while the Hall, Trompenaars, and GLOBE models are viable in the sense that their cultural dimensions offer a degree of utility for the proposed investigation, they are not as widely applicable in the international sphere. In addition, as noted in the discussion of the model's strengths, Hofstede's cultural dimensions have been cross-validated to such a degree that the model's robustness is virtually indisputable (Hofstede, 2001; Murphy, 1999). Hofstede's dimensions of culture make up the most complete and relevant groundwork for understanding and evaluating safety within the workplace, particularly with respect to the role of national culture (Alshahrani et al., 2013; Hallowell & Yugar-Arias, 2016; Mohamed et al., 2009; Okolie & Okoye, 2012). Furthermore, as also discussed, Hofstede's avoidance of a multi-company approach when formulating his cultural dimensions mitigated against the corporate-cultural disparities that detract from the reliability and validity of other models (Steenkamp, 2001). However, despite its importance, influence, and popularity, Hofstede's framework has also been subject to a number of criticisms (Blodgett, Bakir, & Rose, 2008; Fougère & Moulettes, 2012; McSweeney, 2002, 2009; Minkov, 2017, 2018; Sivakumar & Nakata, 2001).

Table 3.1: Summary of national culture models.

Author	Dimensions	Method & sample	Limitations
Inkeles & Levinson	Relation to authority Conceptions of self Primary dilemmas or conflicts	Analysis of psychology and anthropology papers	Missing empirical validation
Hofstede	Power distance Uncertainty avoidance Masculinity vs. femininity Individualism vs. collectivism Long vs. short term orientation Indulgence vs. restraint	IBM quantitative Questionnaire to over 100,000 employees from 72 countries	Survey instrument validity; its over-stability and essentialisation; its supposition that national cultures are homogenous
GLOBE	Uncertainty avoidance power distance Institutional collectivism In-group collectivism Gender egalitarianism Assertiveness Future orientation Performance orientation Humane orientation	Quantitative questionnaire to 17,000 middle managerial personnel in local organisations from 62 countries	Complex; ineffective sample; replication and elaboration of Hofstede model
Schwartz	Harmony Embeddedness Hierarchy Mastery Affective autonomy Intellectual autonomy Egalitarianism	Quantitative questionnaire to schoolteachers and college students from 73 countries	Ineffective sample; overemphasising hypothesised dimensions; failed to draw on up-to-date information
Trompenaars	Universalism vs. particularism Individualism vs. communitarianism Neutral versus affective Specific vs. diffuse Achievement vs. ascription Attitude to time Attitude to environment	Quantitative questionnaire to 15,000 middle managerial and secretarial personnel from 50 countries	Ineffective sample; content validity of the data-collection instrument; replication and elaboration of Hofstede model
Kluckhohn & Strodbeck	human nature Orientation man-nature relationship Orientation time sense Orientation activity Orientation social relations Orientation	Mixed method Sample of 106 persons for the quantitative questionnaire from 5 groups in the USA	General analysis; deals with values rather than attitudes; small sample size
Hall	Low-context vs. high-context	Observations, qualitative interviews with 180 employees and managers from economy sector	Methodology and data collection being derived from qualitative data, particularly anecdotal and observational data; tendency to simplify complex matters; restricted scope

Furthermore, a major study carried out recently (Minkov, 2017, 2018; Minkov et al., 2018; Minkov et al., 2017) has made important changes to Hofstede's dimensions. Data collected from a survey conducted in 56 countries and with over 50,000 participants, as well as secondary data obtained through the World Values Survey, has shown that when the cultural dimensions of masculinity–femininity and uncertainty avoidance are replicated, the results are not significant, although power

distance was found to be a major dimension of individualism–collectivism, rather than a separate dimension. The research strongly confirmed that individualism–collectivism was an important and existent spectrum and suggested that it should be used as an additional measure, since statistically it seemed to outperform Hofstede's index. It is important to note that the only other dimension of Hofstede's framework that was supported in the recent research was long-term orientation, although this was actually reconceptualised and re-labelled as a flexibility–monumentalism scale. The conceptualisation of the new dimension varies slightly from Hofstede's long-term orientation, because it has no focus on time orientation, perseverance, or thrift; rather, it concentrates on self-enhancement and self-stability. Personal duality and changeability are not considered to be important. Flexibility can be defined as a cultural tendency to ensure a modest self-regard, duality, and changeability. Monumentalism refers to the cultural motivation to act as a monolithic entity, i.e. to be proud, consistent, and strong (Minkov et al., 2019). The researchers believe that this dimension is more useful than Hoftsede's long-term orientation because, despite its statistical similarity, it is theoretically more focused and coherent (Minkov et al., 2018). This thus provides good reasons for its use within triangulation. The researchers also highlight the salience of this new dimension because it shows the key differences between East Asia, Africa, and Latin America, which are all at different extremes.

Regardless of its inadequacies, Hofstede's work is still highly influential in the field of international business research (Kirkman et al., 2006; Li et al., 2017). Because the dimensions that Hofstede uses are centuries old (Hofstede, 2002, 2011), it will require a very long time or extreme external circumstances for any basic cultural changes to invalidate his theory. However, the model was revised in 2017 (Minkov, 2017; Minkov et al., 2018). At present, more time is needed to understand the extent to which the modification will be recognised or accepted, particularly in comparison to the original version (Minkov, 2017; Minkov et al., 2018). The original and revised models both possess exemplary academic rigour and are easy to understand, but the revised version has limited coverage. This, in addition to the low recognition and acceptance of the revised version, means that the original Hofstede model is often the most preferred.

The age of the IBM data forms the basis of another criticism levied against the Hofstede model: the claim that the age of the data makes them outdated. However, a vast number of researchers have replicated Hofstede's dimensions without any loss of validity, which suggests that the cultural differences contained in his dimensions are minimal and enduring (Beugelsdijk, Maseland, & van Hoorn, 2015). In 1980, 2001 and 2010, Hofstede carried out comparative studies of cultures in different countries, and these have been highly influential within the field of management research (Kirkman, Lowe, & Gibson, 2017; Leung, 2006; McSweeney, Brown, & Iliopoulou, 2016; Tung & Verbeke, 2010). His findings have also been broadly accepted throughout practical work in the field, as well as in policy and teaching (Brewer & Venaik, 2014; Venaik & Brewer, 2016). Hofstede's work (1980, 2001, 2010) has become fundamental to debates throughout cross-cultural management research (Hofstede et al., 2010; Javidan et al., 2006; Peterson & Søndergaard, 2011; Taras, Steel, & Kirkman, 2011; Venaik & Brewer, 2016). A report relating to empirical studies, using sources from 40 publications from 1980 to 2002, shows that Kirkman, Lowe, and Gibson (2006) were responsible for carrying out 180 studies and that Hofstede's dimensions were effectively able to estimate inter-country similarities and differences between cultures and organisations. *Culture's Consequences* has been quoted over 50,000 times and is one of the top 25 most-cited books in the social sciences (Beugelsdijk, Kostova, & Roth, 2017; Devinney & Hohberger, 2017). Hofstede's model has undeniable practicality when it comes to exploring culture phenomena quantitatively, regardless of its numerous limitations, and it has consistent utility and popularity across the fields of cross-cultural management and international business (Reader, 2019). It is thus unsurprising that Hofstede's model is now one of the most developed frameworks within the international business literature and is used as a standard tool for assessing cultural differences in a variety of business-related fields (Breuer, Ghufran, & Salzmann, 2018; Karolyi, 2016; Nadler & Breuer, 2017). One commonality of all such studies is that they show the significant effects that Hofstede's model has had on a number of disciplines, such as cross-cultural management, international business, comparative management, and cross-cultural psychology (Beugelsdijk et al., 2017; Beugelsdijk, Kostova, Kunst, Spadafora, & van Essen, 2018).

Venkateswaran (2019) methodically inspected Hofstede's framework while using methods from the philosophy of science. Venkateswaran studied the ontological and epistemological factors and offered some significant associations for investigators and managers. He determined that the consideration of vacating this substantial quantity of research is too premature; rather, it should be used cautiously henceforth. Although recent criticism suggests that Hofstede's model is not completely in line with real national cultures, it serves as a valuable tool because social science knowledge is so complex in nature. It is too early to think about replacing this body of knowledge; the focus should be on ensuring that it is used carefully. Since the model is popular, this is crucial for both academics and managers. Hofstede's scholarly journey provides a great deal of insight regarding the challenges and opportunities related to cross-cultural research. Better awareness of its fundamental limitations and ontological and epistemological assumptions as well as of the problems with generalising in social science will likely improve its applications in future research (Kirkman, Lowe, & Gibson, 2006).

Moreover, the wealth of confirmatory evidence in support of Hofstede's model speaks to that model's conceptual utility for the proposed research. Confusion in the levels of analysis—which Hofstede describes as ecological fallacy—occurs when using his model; this is discussed in section 2.11. The author is aware that the reliability and validity of Hofstede's questionnaires have been questioned whenever individual-level analyses of national culture take place. In line with Hofstede's recommendation, the current study will test a country's mean scores, rather than individual scores (Hofstede & Minkov, 2013). This recommendation is based on the fact that the VSM13 looks to measure aspects at a country-wide level, rather than individual-level character and value aspects (Hofstede & Minkov, 2013). Next chapter will discuss the methodology used to address the research objectives alongside the utilised research strategies and sampling methods.

4.0 Methodology

Humanity has attained scientific knowledge through numerous modes of study. The trial and error method applied in empirical research has been the most fundamental and efficacious technique for facilitating new learning historically. Nevertheless, the error cost can be considerably great and the number of trials needed can be restrictive. The development of the human faculty of reasoning has rendered inference a crucial tool for attaining new knowledge. Reflection, abstract thinking and theoretical logic techniques deemed admissible by researchers worldwide for establishing future paths of success and practice. Research development and expansion are constantly advancing; as a result, research methodologies have become more organised and complex, ensuring the success of proposed programs. This chapter will outline the research design, as well as providing reasons why these were considered the most suitable for addressing the research questions. The following sections will discuss the research design and provide a linear presentation of its phases. Subsequently, the chosen epistemology will be discussed. These sections will identify the objectives, methods, approaches and strategies applied in the research. The data collection method will also be discussed.

4.1 Research Design

Research design purpose is to outline the required stages and provide approaches to help address the research question. An effective research design considers the underlying philosophy, approach, methodology and research strategy of the study, and will consider those techniques that will help accomplish the research objectives (Bryman, 2015). It is crucial that the research design is both coherent and consistent, because a selected philosophy must align with the select methodology to address the research question. Figure 4.1 presents research onion (*Saunders et al., 2015*) that will guide this study, which will be discussed in more depth in subsequent sections.

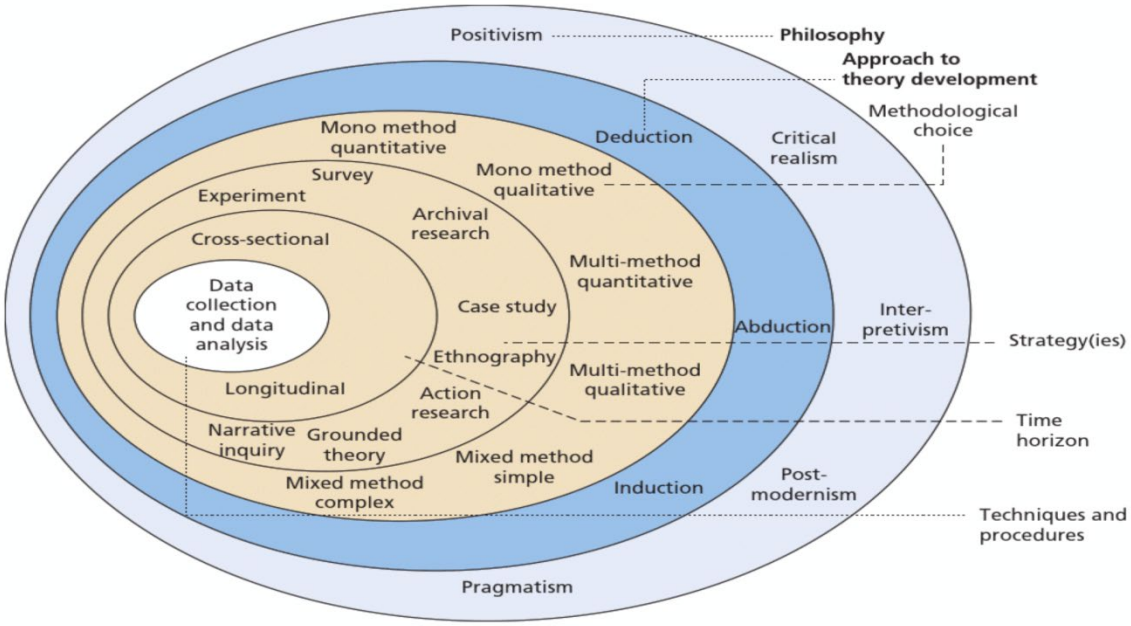

Figure 4.1: Research Onion (Source: Saunders et al., 2015).

A researcher must select methods that are most suitable to the study. Harrison (2013) asserts that the chosen methods must effectively provide results for the research question. To achieve this, the researcher must initially consider the research methods available, weigh the options and justify their selection. Metaphorically speaking, the research methodology is the house, and the methods are the rooms inside the house. Methodologies tend to have a broader scope than methods. Bell (2014) points out that the logic and reasoning behind method choices, and the disregard of certain methods, constitutes the overall methodology. By using a methodology, specific research methods will be available to the researcher. A key step towards addressing the research objectives is identifying the nature and objectives of the research topic. This will ultimately help the researcher select an appropriate philosophy, methodology and relevant research methods. The following section will discuss the various purposes that researchers can select for their studies.

4.2 Research Purpose

The research purpose must be identified to select the most appropriate or suitable elements in the research design. Saunders, Lewis, and Thornhill (2015) asserted that the most frequently applied research purposes can be sub-categorised as

exploratory, explanatory or descriptive.

Exploratory research is most often used when there is a need to further understand the research problem. The researcher begins with little knowledge of the topic and desires to learn more about it. Harrison (2013) pointed out that a literature review and the use of unstructured interviews or focus groups can be effective means of accomplishing this purpose. Exploratory research great advantage is the flexibility and adaptability to change (Saunders et al., 2015), because the researcher begins with a wide focus, and gradually narrows down throughout the course of the research.

The purpose of descriptive research is to gain insight into the research problem. This requires a researcher to collect data about the research topic. It is also known as informative research because it tends to focus on new and unexplored issues. On the other hand, Bryman and Bell (2015) pointed out that researchers often advise that descriptive research be used along with explanatory research to provide a holistic approach to research.

The focus of explanatory research is the relationship between variables and usually identifies causal relationships within specific phenomena. Creswell (2014) asserted that explanatory research explains and explores relationships between variables, beginning with a hypothesis to find data that either supports or contradicts the hypothesis.

The present study is exploratory in nature as it will be conducted to investigate the influence national culture has on safety performance in Kuwait oil and gas sector. Statistically analysing this relationship evaluates the consensus in the literature that it exists.

4.3 Research Philosophy

In general, research simply means the search for knowledge. According to Williams (2007) a crude view of research treats it as the search for information through previously collected data, the documentation of facts and the gathering of information. By contrast, research involves the process of collecting, analysing and

interpreting data to gain an understanding of a phenomenon (Leedy, 2010). The process of research is scientific because it systematically involves the definition of the research objective, the evaluation of the collected data and the documentation of the findings. This process occurs within the established frameworks and according to the existing guidelines. It also follows a predetermined procedure (Fellows, 2015; Saunders et al., 2015).

These guidelines and frameworks help researchers to develop an idea of what to add to or exclude from the research as well as the type of inferences to be drawn from the evaluation of the collected data. The process of research begins, at the least, with enquiring about a particular occurrence of interest. Utilising a research question, the researcher directs his or her efforts, thoughts and attention towards deciding the best and most suitable approach to answering the research question and making sense of the event of interest. The most important assumptions regarding a researcher's perspective of the world around them is within a research philosophy. Such assumptions essentially set the foundations for the research strategy and the methods that a researcher will use in a particular study (Saunders et al., 2015). It is therefore crucial to explore the assumptions, as they underpin the research. A researcher is required to discuss the philosophical approach utilised and provide the answer to the research question, the latter of which contributes to the validity of the research outcome. The research philosophy refers to a researcher's perception of the world and the foundation on which the researcher builds the research procedure. According to Crossan (2003), the nature of philosophical questions truly illustrates the value of studying philosophy. Crossan (2003) asserted that the innocent manner and uncomplicated style of philosophical questioning invites significant instability and confusion to the human assumptions and ideas related to the world. However, this kind of challenge contributes to the benefits of the study of philosophy. Crossan (2003) stressed that since the circular nature of philosophical questioning encourages in-depth thinking and reflection and prompts the asking of further questions related to some topic under consideration, philosophical questioning is valuable. Saunders et al. (2015) explained that there are three key types of research philosophies: epistemology, ontology and axiology. Epistemology is acceptable knowledge within a given research field (Saunders et al., 2015), whilst ontology focuses on the nature of reality and axiology on judgments regarding the value of the knowledge (Saunders et al., 2015).

Furthermore, Saunders et al. (2015) add that a research philosophy is an umbrella term associated with the development and nature of knowledge. Several researchers argue that having sufficient knowledge of the research philosophies is crucial to being able to use them correctly.

Epistemology explores the constitution of knowledge (Bryman & Bell, 2015). Saunders et al. (2015) describe epistemology as being primarily concerned with the nature of acceptable knowledge within the given research field. Grix (2010) defines epistemology as a fundamental branch of philosophy based on the theory of knowledge, with a particular focus on its methods, validation, and the techniques employed to collect information regarding social reality. Recently, Easterby-Smith, Thorpe, and Jackson (2008) simplified the definition, stating that epistemology primarily focuses on finding the most effective ways of researching the nature of the physical and social worlds. The questions set by the researcher determine which knowledge is acceptable or important. Epistemology denotes ‘how’ the researcher has attained knowledge about reality and assumptions about how knowledge should be accepted and attained (Pathirage, Amaratunga, & Haigh, 2007). According to Easterby-Smith et al. (2012), while failure to analyse the philosophical problems on which the research study is based may not be absolutely critical, it can still greatly affect the quality of the research outcome that is the main objective according to which the research is designed. Three key forms of epistemology were identified by Saunders et al. (2015), namely positivism, realism and interpretivism.

Positivism is an approach that uses scientific methods to identify empirical facts relating to the world. Positivists assume that research involves measuring quantifiable variables. They also believe that findings must be sufficiently validated to enable a researcher to generalise them to the entire target population (Bell, 2014). In discussing positivism, Bell (2014) indicated that positivism measures a social phenomenon and its variables through quantification. Positivism also considers aspects of the social sciences and ensures accordance between itself and the methodological techniques related to the natural sciences. Thietart (2001) stated that the positivist paradigm proposes that physical matter and humans be portrayed similarly to one another and that the same procedures of measurement be used in the varying studies that support the same argument. Moreover, Easterby-Smith et al. (2012) adds that positivist researchers take the assumption that reality

is objective and can be measured independently of the researcher, their tools, and their opinions. As opposed to interpretive studies, positivist research tries to test theories as a means of improving the predictive understanding of topic at hand. Practically speaking, the typical assumption is that the units of analysis constituting a reality may be objectively categorized according to subjects and predicates. Researchers frequently use subjects to define entities or objects (Easterby-Smith et al., 2012). To achieve this, they create propositions that convey the topic through a set of independent variables and dependent variables, with the focus on exploring the relationship between them (Easterby-Smith et al., 2012; Saunders et al., 2015). Saunders et al. (2015) assert that when a researcher employs a positivist philosophy, they focus more on obtaining facts that opinions. In this perspective, the researcher must collect data in a value-free manner as much as possible. Easterby-Smith et al. (2012) emphasise that the fundamental principle underpinning positivism is that the social world exists external to social actors' minds. Thus, it is crucial to use objective techniques to measure its properties instead of using subjective inferences obtained through feeling, intuition, and reflection. Realism like positivism, as it uses a scientific approach to answer the research question. Nevertheless, as Saunders et al. (2015) asserted, its key difference is that social structures and actors are of paramount importance in research. Finally, Creswell (2014) argues that, as a philosophical tradition, pragmatism purports to minimise the differences that exist between the current approaches, which place greater emphasis on freewheeling and naturalistic techniques, than on earlier works, which focused more heavily on science and structuralism.

Interpretivism, on the other hand, as defined by Bryman (2015), concerns the stance that an applied strategy must consider the differences between people and the objects of natural sciences. This, thus, requires the social research to explore and understand the subjective meaning of a phenomenon. Easterby-Smith et al. (2012) explain that, whilst positivist research tries to test theories to enhance predictive understanding of phenomena, interpretive research tries to explore a social issue and their subjective meanings to people. The researcher listens to the ideas of participants in order to create an image of the overall situation, which is not possible to achieve when exploring the subject matter from the outside. Instead, the researcher must explore a social or cultural subject from the inside in order to understand it. Kura (2012) asserted that, in the quest to understand human

behaviours and actions, people have defined and constructed social practices using human gestures and languages. The main aim of the interpretivist paradigm is to analyse the text in order to learn the established meanings. Hussey, Hussey, and Rouse (1997) argued that positivists ignore certain concepts that interpretivists consider, such as freedom of choice and consciousness. The most fundamental difference between interpretivism and positivism is its emphasis on the perception of the research problem (Bell, 2014). This approach does not promote any single solution to a research problem, but rather focuses on the idea that there are many ways to understand the world. The measurability of variables is not necessarily of importance to interpretivists, since they are more concerned with understanding aspects relating to often unquantifiable subjects. As indicated by Kura (2012), interpretivists acknowledge the aim of analysing and explaining particular life encounters and happenings comprehensively to understand circumstances based on social reality. In addition, the primary focus of the interpretivist approach is on the ways through which the human senses perceive a certain incident as it takes place rather than on the predefinition of independent or dependent factors (Bell, 2014).

One key defining trait characterising pragmatism is that it refuses to differentiate between realism and anti-realism. This stance lies at the heart of discussions pertaining to the use of positivist, rather than interpretivist, research paradigms within the social science field. While pragmatists clearly acknowledge the existence of reality, they nevertheless contend that it is in a continuous state of flux as a result of the various activities in which we engage. Pragmatists are unwilling to entertain more controversial metaphysical notions, most notably, reality and truth. Alternatively, Creswell (2014) argue that this approach advances the idea that a single objective reality, or multiple realities, exist, a notice that can be subjected to empirical analysis. Therefore, pragmatism is founded on the premise that objective reality occurs outside the context of the human experience. Notwithstanding this, Morgan (2014) posits that our reality is shaped by the environment to which we are exposed and that this reality can only be experienced through human interaction. Furthermore, Creswell (2014) argues that one of the central tenets of pragmatism is that knowledge and reality are built upon socially constructed views and practices. While most pragmatists concur with the notion that knowledge is socially constructed, differences can emerge in that some forms can align more closely with human experiences than others do.

Those espousing positivist beliefs contend that objective knowledge can be obtained by conducting an analysis of empirical evidence and by undertaking hypothesis testing. According to Morgan (2014), such knowledge is gathered and presented at a central point along a broad spectrum based on the investigative methods adopted, rather than reflecting polar opposite views presented as either subjective or objective. Conversely, constructivists suggest that people construct their own knowledge of the world, and it is based on a complex reality. Accordingly, this approach tends to draw upon both a qualitative research design and the use of inductive reasoning, whereas postpositivists generally employ deductive reasoning and quantitative analysis. Creswell (2014) argues that pragmatists display greater reflexivity and fluidity, thus placing them in a better position to answer a research question through the application of the most suitable research design and methodological approach. In addition, they generally engage in abductive reasoning, which alternates between deductive and inductive reasoning. Morgan (2014) suggests that this not only assists in the formulation of theories, but also ensures that researchers are actively engaged in the data production process.

Research that focuses specifically on construction management sits at the interchange of social and natural sciences. While social sciences are concerned with human experiences and perceptions, natural sciences are concerned with facts that operate in isolation from such perceptions (Love, Holt, & Li, 2002). A review of existing literature related to the studies that have been implemented in the context of construction management indicates that two paradigms are commonly employed in this domain: Interpretivist and positivist approaches (Love et al., 2002).

As has been mentioned, although each of the criticisms levelled against Hofstede's model is valid to a degree and, as such, should be addressed appropriately, the fact cannot be overlooked that the model constitutes a fundamental tool in the field of cross-cultural psychology and, moreover, one with considerable explanatory power. In addition, the method prescribed by Hofstede's model is highly compatible with practical limitations of time and resources. Furthermore, the model chosen must be reliable, valid, and be empirically based, making Hofstede's model fundamentally pertinent. In a project-management scenario in a culturally diverse context, the dimension-list method is a digestible, implementable, and largely practicable way to underscore key areas of interest. Moreover, given that Hofstede's IBM sample was

cross-cultural and that the model assessed values associated with professional life and established a platform that could identify cultural distinctions regarding a group of dimensions, the model is immediately relevant to the proposed study, as there are foundational points of similarity, the proposed study being situated in an organisational context and seeking to investigate cultural values associated with professional values. As a result, the most relevant theoretical framework is Hofstede's model on national culture. The research approach employed will be based on Hofstede's Value Survey Model 2013 (VSM13).

There are many differences between the positivist and interpretivist approaches, including varying axiological bases and epistemological and ontological assumptions (Thietart, 2001). According to Sekaran and Bougie (2017), the positivist approach differs from others because it assumes that the objective measurement of any kind of social behaviour is possible. Positivists disregard any practices if they are not measurable. Moreover, positivists encourage the use of scientific methods to analyse social behaviours. As concepts such as culture are hard to understand, positivist philosophy aims at quantifying their complex relationships. The subject of culture gives rise to a debate between interpretivists and positivists. Critics have rejected this theoretical approach to culture due to its lack of accordance with the interpretivist approach, stating that culture cannot be understood through positivist philosophy (Jacob, 2005).

Ontology, as a philosophical perspective, focuses primarily on the nature of reality and contains various assumptions held by the researcher regarding the functioning of the world around them and their commitment to this view (Saunders et al., 2015). This philosophical position can be applied to various types of social phenomena, the conditions of their existence, and the connections between them (Saunders et al., 2015). Ontology, thus, also concerns the nature of reality and existence (Easterby-Smith et al., 2012). Saunders et al. (2015) referred to the opposing ends of the philosophical spectrum within ontology, which are objectivism and subjectivism. Saunders et al. (2015) describes an objectivist as someone who believes that social entities exist external to social actors. Thus, an objectivist believes that social phenomena, and the attached meanings, exist independently from the social actors (Grix, 2010). Subjectivism, on the other hand, predicates on the assumption that social phenomena exist due to the perceptions and resulting actions of social actors

who are interested in their existence (Saunders et al., 2015). Saunders et al. (2015) add that social interactions between actors are part of a continual process, ultimately meaning that social phenomena continually undergo revision and updating, and thus exploring a situation specifically with regard to its current reality, which is crucial in understanding the reality of it.

Axiology is a research philosophy that focuses on exploring judgements about value (Saunders et al., 2015). The researcher's value is crucial to the whole research process, especially if they want to obtain credible results. This often impacts the administration of the research, since the philosophical approach demonstrates the researcher's values and affects the data collection methods selected (Saunders et al., 2015). Saunders et al. (2015) suggests that values guide all human action, and thus researchers can show axiological skill through the articulation of their values, which can serve as a foundation upon which judgements about the study under investigation, and how to research it, can be made.

The chosen ontological stance of the present research is a subjectivist approach for the qualitative study and objectivist approach for the quantitative study. Although it appears that the two opposing ontological stances are contradictory, they will actually complement each other. The pragmatism epistemological position, as described earlier, is deemed the most suitable approach to conducting this real-world research. Such a position does not favour any particular research philosophy to answer the research question. The pragmatic epistemological position is applicable here, as mixed methods from both qualitative and quantitative paradigms are used to answer the research question, without applying any traditional research approach. The primary aim is to sufficiently answer the research question, which is likely best achieved by applying a number of research methods. The next section covers data collection methods, as well as appropriate research methods pragmatic research.

4.4 Research Methods

Qualitative and quantitative methods are the two main categories of research methods, namely. Dolowitz, Buckler, and Sweeney (2008) defined quantitative methods as collecting numerical data such as scales, ratings, and scores.

Researchers using such methods typically understand the world through statistical data from which they formulate solutions that address their research question. Given that statistical-based findings might be transferrable to a broader population, quantitative studies typically employ a positivist philosophy. Qualitative methods, on the other hand, tend to be used by interpretivists, since they deal with data that is not easily coded numerically. Potential methods in this approach include recordings and physical observations of a specific phenomenon in context. Dolowitz et al. (2008) asserted that there are various types of non-numerical variables that can be used, including pictures, sound bites, and texts.

Williams (2007) pointed out that quantitative methods may be categorised into three groups—descriptive, experimental, and quasi experimental methods. Descriptive research methods investigate and describe a specific phenomenon as is. The experimental research uses study groups and findings are based on those experiments. Quasi experimental (causal comparative) research allows investigators to use methods that help them understand the causal relationship between the dependent and independent variables. Quantitative methods include techniques that collect data numerically. A questionnaire is a common method and will be applied in this research.

Examples of qualitative methods include ethnography, grounded theory, case studies, narrative approaches surveys and observations. Matthiesen and Binder (2009) asserted that interviews may vary in duration, style and number of participants. Following interviews, researchers must transcribe what was said and analyse the information in order to reach conclusions. Focus groups work in a similar way, but have less structure. In focus groups, there is a flowing conversation between the participants and the researcher, generating discussion-based data. Case studies also enable researchers to investigate unknown phenomena. These allow for in-depth exploration related to the research question. On the other hand, Creswell (2014) argued that case studies are too time consuming since they tend to be detail-oriented, and are predominantly used to explore a single aspect within a specific issue. Observational research is a method similar to case studies. This method requires researchers to make and record observations. Creswell (2014) pointed out that this research must be conducted without any interaction or interference by the researcher. Ethnographic studies are another qualitative method,

which are ultimately studies of participants who hold the same beliefs and values (Williams, 2007). When using this method, a researcher inserts him or herself into a specific community to gather primary data from the members of that community (Saunders et al., 2015). This data may pertain to the group's values, beliefs and attitudes.

A mixed-method approach is employed in the present study. This means that both quantitative and qualitative methods will be used to collect and analyse data. The key objective is to explore the effects that NC has on safety behaviour and to identify the factors affecting safety performance throughout the Kuwait construction industry. Qualitative and quantitative methods can be applied collaboratively if a researcher believes it will enhance a study. Saunders et al. (2015) referred to this as mixed-method research. The advantage of mixed methodology is it utilizes the strengths of both approaches (Williams, 2007). In the present research, the researcher utilises both qualitative and quantitative data collection methods to address different aspects of the issue, to lower the number of reasonable alternative conclusions produced by the data collected, and to verify the results (Saunders et al., 2015). The researcher will employ interviews and questionnaires to gather background information and to construct the research. The questionnaire will serve as the quantitative methods, while scores pertaining to behavioural, and cultural dimensions will offer a better understanding of the relationship between safety performance levels and national culture. Interviews will be employed as a qualitative method for the purpose of this research. According to Gubrium and Holstein (2003), interviews represent an extremely common approach to data collection that can yield very reliable empirical data that is based on the responses people give to questions that are designed to elicit information about their perceptions or opinions. However, Gubrium and Holstein (2003) also stressed that it is imperative that the effectiveness of a given questionnaire depends on the quality of the questions and the respondents'. A triangulation method will be used in this research, meaning that more than one method will be applied to address the research objectives.

The triangulation approach was used in the present study, under which qualitative and quantitative research methods are combined. Confidence in the study's findings is enhanced by triangulation. Moreover, by combining qualitative and quantitative approaches, the inherent limitations of each approach are compensated for by the

other approach; it also reduces the bias associated with each approach. In the work of Bryman (2015), reasons for using both quantitative and qualitative research methods were presented. First, there is triangulation, which allows the merging, confirmation, and agreement of the results produced by the different methods. Second, there is complementarity, where further explanation and more in-depth descriptions of the results can be achieved by using the two methods together. Third, the results collected from one method will allow the development of the results produced by the other method, where development might involve sampling and implementation. Fourth, there is expansion, as the intention is to increase the extent of the research through the use of different methods for separate inquiry aspects.

With these justifications in mind, the current study implements the triangulation option, which allows the merging, confirmation, and agreement of the results produced by the different methods. In order to successfully reach the research objectives of this paper, different paradigms (pragmatic paradigm) and a mixed methods approach (triangulation of methods) were selected. Quantitative data from numerous oil and gas construction projects in Kuwait was gathered through a questionnaire survey, which has a robust response rate. The research sample was selected after careful consideration, while the questionnaire was planned to elicit the highest possible response rate. A pilot test was used in order to establish whether the research instruments were sufficiently accurate and reliable. The quantitative methods were used to assess the relation between the participants' safety behaviour and their national culture. Furthermore, interviews were arranged in order to support the quantitative findings and give the opportunity for participants to present different ideas to the researcher about safety performance in Kuwait oil and gas construction projects.

In the present study, a separate analysis was performed, after which the data were combined. The quantitative data gathered in the first study were used to assess the relation between national culture and safety behaviour. Moreover, the data gathered in the qualitative stage helped to find factors affecting safety performance. Incidentally, the qualitative stage enabled the numerical data obtained in the quantitative stage to be explained.

4.5 Research Approach

There are two types of research approaches, deductive and inductive. Saunders et al. (2015) explain that the deductive approach allows the researcher to develop hypothesis and to create a research strategy suitable for testing the hypothesis. Additionally, Saunders et al. (2015) describe the deductive research approach as being the most commonly used approach in the natural sciences, wherein laws demonstrate the basis of explanation, which enables the prediction of phenomena, so ultimately allowing for them to be controlled. On the other hand, inductive research approach is when a researcher gathers data and builds a theory in accordance with the analysis of the gathered data (Saunders et al., 2015). As opposed to the deductive approach, which aims to establish cause and effect between given variables without truly understanding how social actors interpret the world around them, Saunders et al. (2015) describe the inductive approach as enabling a more profound insight into the phenomenon being studied, and this is a key advantage of using an inductive approach.

In terms of the methodological approach, this study uses the deductive method, namely, because it employed a positivist model that employed a scientific methodology by which the research steps were managed. This was the most appropriate approach, because the research is founded upon Hofstede's pre-existing national culture model. Deductive reasoning is research that begins by developing hypotheses from existing theories, and testing them through data analysis to either support or reject them (Bell, 2014).

In contrast to inductive research, deductive research has a completely opposing direction. The researcher begins by collecting the data, and, as Polsa (2013) explained, uses the results of data analysis to later form their hypothesis or theory. Bryman (2015) pointed out that deductive approaches commonly use quantitative methods, whereas inductive approaches tend to use qualitative methods. Since the present study's objectives and hypotheses were based on pre-existing theories, and empirical studies and quantitative methods will be used to support or reject the hypotheses, this study is deductive in nature.

The application of the aforementioned philosophical perspectives in the present research allows the researcher to gather information using a mixed method research approach. Furthermore, Creswell (2014) suggest that mixed methods are most suitable because they allow for a more in-depth insight to be obtained, which supports the use of a pragmatic approach in construction management research rather than conventional approaches.

4.6 Time Horizon

The limiting factor of time also needs to be considered in this study. For this reason (but not exclusively because of this reason), a cross-sectional study was chosen for its ability to provide a quick pinpointed view that would nonetheless address the study's purposes. Indeed, cross-sectional studies incorporate data from one section of the population at a particular moment in time (Saunders et al., 2015). Thus, the literature review in chapter two is centred on studies adopting this approach.

4.7 Research Strategy

Saunders et al. (2015) explain that the research strategy guides the general research direction, including how the research is conducted. Different research strategies have different characteristics. While conducting research, it is important for the researcher to adopt a lucid research strategy related to the manner through which he or she will answer the research questions (Saunders et al., 2015). Moreover, the research strategy should outline the general way of conducting the research (Bryman, 2015). The nature of the research study should accord well with the chosen research strategy. Before choosing a research strategy, the researcher should consider the objectives, subject area, resources, time needed, and research question (Saunders et al., 2015). As indicated by Easterby-Smith et al. (2012) and Saunders et al. (2015), in the area of construction management, the following research strategies can be used:

- Cohort study
- Controlled case study
- Ethnographic research
- Archival research
- Grounded theory

- Experiments
- Surveys
- Action research
- Case studies

Taking this study's research questions into account, while performing a literature review to determine a suitable research strategy. The most optimal method for gathering substantial quantitative data appeared to be the survey questionnaire method. The survey approach not only allows the collection of sufficient data but also limits costs. Researchers can use this strategy in research where time and money limitations exist, since the researchers do not have to gather data for the entire target population. Instead, they can use sampling to gather representative findings. As Petre and Rugg (2010) mentioned, researchers can incorporate various types of questions into the survey due to its flexible nature, which also allows them to address different types of research questions. Figure 4.2 presents the research design adapted for this study.

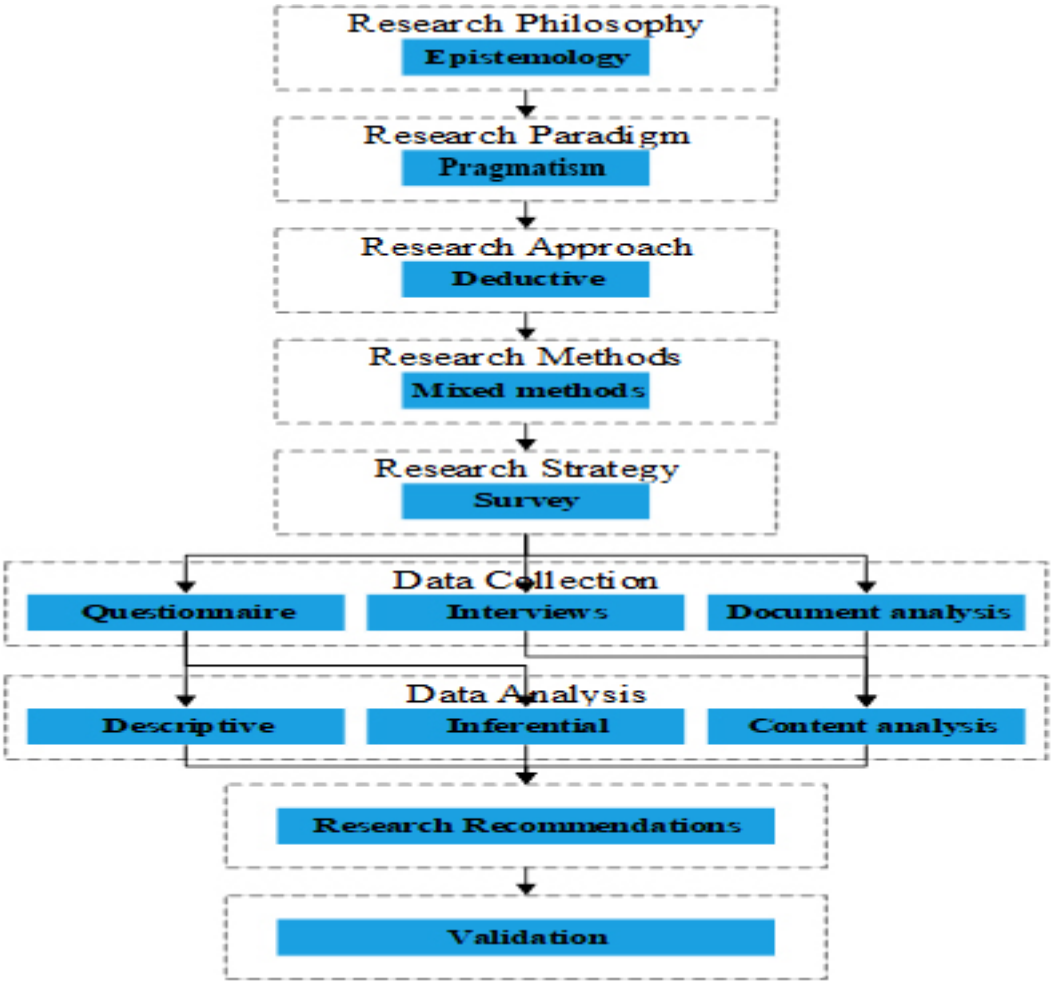

Figure 4.2: Research design adapted for this study.

4.7.1 Interviews

Yin (2014) outlines the importance of increasing the internal validity of the study by using more than one method to collect data, thus generating several data sets. Therefore, in addition to the questionnaires, interviews, documents and observations can also be used. In this study, semi-structured face-to-face interviews[1] were conducted. Semi-structured interviews allow for a certain amount of flexibility, meaning they can be tailored to each interviewee, responding or probing more deeply to answers that arise or clarifying responses, making them extremely effective for this research (Nicholson & Kiel, 2007). Using interviews, a researcher can gain profound insight into a person's interpretations and values, much more so than with questionnaires. The interviews were carried out face-to-face at times and locations chosen by the interviewees. This was done to ensure confidentiality and to enable participants to offer sensitive details, providing maximum insight into the health and safety situation at Kuwaiti building project sites. Despite the advantages of this flexibility, a guide was still required to ensure consistency across all the cases and to make sure the research questions were addressed. In addition, documents were also analysed in the form of safety rules and procedures.

4.7.2 Document Analysis

The initial stage – access – revolves around documentation, including the criticality of access to an organisation's documents, document sources, document requirements, and data collection (Forster, 1994). The degree to which a document is worth engaging with is informed by a project's research questions and objectives (Pershing, 2002), and from the perspective of the present researcher, the analysis of an organisation's documents is essential for understanding safety protocols within Kuwait's oil and gas construction projects. Of note, based on this research's first objective, evaluating organisational safety performance through document analysis is necessary.

[1] Refer to Appendix III for a list of interview questions.

Figure 4.3: Stages in accessing and analysing company documents.

Authenticity checking, which involves evaluating the credibility of collected documentation, is the second of Forster's (1994) five practical stages (Figure 4.3). At the outset, available documents should be categorised according to their status as primary or secondary sources, the trustworthiness of the authors, the accuracy of the contents, and the question of whether authentic (rather than inauthentic) copies of the documents have been obtained. Since this research project's documents were obtained directly from the participating organisations and, as such, are classified as primary sources, the reliability of the extracted data is greater. Unfortunately, the participant companies did not provide the researcher the required comprehensive accident statistical reports and withheld crucial information, making them unsuitable for the study. However, the researcher modified the research design and added another section to the research survey to assess the safety performance, which will be discussed in the next section. Information pertaining to each organisation's safety protocols and regulations was also identified in the obtained documents, but this information must be interpreted and assessed to ensure that differences to actual working conditions are identified.

The third stage involves understanding the documents, which necessitates decision making regarding the question of data interpretation and data triangulation. A merger of available sources occurs during the third stage to facilitate tallying and accurate interpretation. The focal point of this research project is to analyse the safety management policies of the participating organisations, and based on this, content analysis, which – through the implementation of coding – facilitates the compression of sizeable datasets into manageable categories, was utilised. Content analysis is a suitable method for this research due to its effectiveness in assessing

trends and patterns within textual data (Steve, 2001), and it can evaluate qualitative or quantitative data in both inductive and deductive or integrated as a combination of the two (Bradley, Curry, & Devers, 2007). However, the fact should always be borne in mind that the degree to which a research method is suitable depends on the study's overall objective, aim, and research question.

The aim of this study's document analysis initiative is to illuminate the safety policies that have been applied in a range of Kuwaiti organisations. To analyse the data, the bottom-up (i.e. inductive) approach was employed, and to ensure the precision and reliability of inductive content analysis, open coding, abstraction, and the establishment of categories are necessary (Bradley et al., 2007). Open coding involves creating headings and writing notes within texts in the course of reading any given document, producing higher-order headings, and finally assigning a complete description to every category (i.e. abstraction).

Forster's (1994) fourth practical stage is data analysis, which means that the research should move from a mental conception of the data to interpretation and data processing. At this point, researchers must determine what the results of the study are and, in turn, account for them. The present study's data analysis objectives were attained by comparatively examining the obtained results with those reported elsewhere in the literature, thus contextualising and explaining the primary data. As for the final stage, data utilisation, it is important to integrate analysis results back into the system by publishing the research findings. For this research project, document analysis was the main approach for satisfying the overall research objectives.

4.7.3 The Research Instrument

Because it was integral to the research process during data collection and had to collect suitable and accurate data, the questionnaire design—a series of written questions—was crucial (Schwab, 2013; Sekaran & Bougie, 2017). In this study, four-part questionnaire[2] was developed based on instruments published in previous studies that were relevant to this study's primary topic of analysis and it was considered essential to draw only the most relevant aspects from the existing

[2] Refer to Appendix II for questionnaire questions.

questionnaires, leaving out parts that crossed over those that were seen to be conceptually inconsistent for the present research topic. This weeding out of conceptual overlap further reduced the scope of the confusing effects of common method variance. As with the majority of questionnaires, a five-point Likert scale was employed to provide a measure for items on the questionnaire. Those aspects of previous questionnaires that had not used Likert scales were adjusted to fit this method of measuring items in order to ensure consistency and convenience when managing and analysing the data. Part A and B were from the VSM13. In part A, respondents' personal demographic related questions, like gender, age, nationality, education level and job type. Part B questions for comparing national culture differences. In part C, 14 questions were used to assess addressed safety outcomes, such as near-misses and day off rate and occupational injurie types rate during the past 12 months. The safety outcome part was determined by various measurement variables from research by Lee and Harrison (2000), Probst and Brubaker (2001), Oliver et al. (2002), Goldenhar et al. (2003), Siu, Phillips, and Leung (2003), and Jiang et al. (2010). It was modified to use PAM major accident types categorisations which is as follow: falling from a height, falling objects, heavy lifting, tools, materials, electric shock, burns and explosion, transportation means, and chemicals and gases. Finally, part D was about descriptions of behaviour relating to safety, such as safety compliance and safety participation, consists of 10 questions that were adopted from (Neal & Griffin, 2006; Vinodkumar & Bhasi, 2009).

4.8 Sampling Strategy

To select the present research sample, probability and non-probability sampling methods have been employed. Concerning quantitative research, probability stratified random sampling was used because it allows for the selection of participants from the relevant participant group (Bryman, 2015). In this research, we attempted to identify an identical sample from each country to distinguish the national variances among different countries. According to Hofstede, a comparison between countries should utilise matched samples that are similar in all respects except nationality to avoid affecting the outcome of the survey. To achieve this, stratified sampling technique was utilised by creating a subgroup for every sampled country. Non-probability purposive sampling was predominantly used for the qualitative study because it allows for the selection of participants who are most

likely to inform the research (Saunders et al., 2015). By employing purposeful sampling, the researcher can gain more detailed and relevant insight into the issue at hand in order to effectively identify the trends (Patton, 2015). Participants in the present study were selected based on their relevance to the research topic. This is because, as Saunders et al. (2015) points out, their interpretations will be most suitable for achieving the aims and objectives of the study.

4.8.1 Quantitative Data

Two different sampling techniques are probability sampling (representative) and non-probability sampling (judgmental). Probability sampling—which can include simple random, systematic, cluster, stratified random and multi-stage sampling—ensures that the entire population has an equal chance of being included in the sample (Saunders et al., 2015). Purposive, quota, self-selection, snowball and convenience are all techniques in non-probability sampling, where the entire population is not subject to being selected (Saunders et al., 2015). In quota sampling, researchers set the percentages, such as 35% females vs. 65% males (Matthiesen & Binder, 2009). In expert sampling, researchers select the participants who have the required skillset. Selecting the participants who are suitable for the research is called snowball sampling. Researchers also select other participants based on the recommendations of the participants (Matthiesen & Binder, 2009). In convenience sampling, researchers choose the nearest available sample. Researchers can use these methods according to the methods' relevance and ease of use, as well as the amount of time and resources available to the researchers. In addition, these sampling techniques are most helpful for the gathering of qualitative data.

In the pretesting phase of this study, non-probability sampling technique was used, particularly convenience sampling. Friends were selected to review the questionnaires, give their opinions and report any vague questions. The researcher did not have to explain the translated questionnaire, which the respondents understood on their own. In the final phase of this study, a probability sampling technique was used. Researchers can apply five different probability sampling techniques: multi-stage sampling, cluster random sampling, systematic random sampling, stratified random sampling and simple random sampling (Saunders et al.,

2015). For the multi-stage sampling technique, researchers use a combination of sampling techniques (Sekaran & Bougie, 2017). In cluster random sampling, the researcher divides the population into separate groups (clusters) and then simple random sample of clusters is selected. In systematic sampling, sample is selected according to a random starting point from a sample frame. In stratified sampling, the researcher divides the population into different subgroups or strata and then randomly selects a sample from the different strata (Bell, 2014). In simple random sampling, the same probability exists for every sample. In the final phase of this study, stratified sampling technique was utilised by creating a subgroup for every sampled country.

The sampling framework for the present study is the populations within the Kuwait oil and gas sector. Therefore, the sample will be restricted to workers at Kuwait oil and gas construction project sites. A sufficiently sized sample is required in order to ensure that the results will be generalisable. Therefore, Hofstede and Minkov (2013) noted that, in order to effectively utilise their national cultural dimensions model, an adequately-sized sample per country would consist of 50 participants. Hofstede and Minkov (2013) explained that an assessment of national culture simply requires that any standardised population sample must be taken from a country's general population. Furthermore, the participants' responses should be collated at a national level rather than by assessing individual responses. Hofstede (2011) referred to this as an ecological analysis, wherein sets of personal responses, not the individual responses of participants, are subject to factor analysis.

Sample size Formula:

In this study the approximate target population size is 150,000.

De Vaus (2014, cited in Saunders et al. 2015) proposed the following steps for calculation of sample size:

Step 1: $n = \frac{z^2 \text{ x } (p) \text{x } (1-p)}{c^2}$

Step 2: $n' = \frac{n}{1 + \frac{n}{N}}$

n = Minimum sample size

z = confidence level (e.g. at 95% confidence level) =1.96

p = population proportion (the percentage belonging to the specified category) (0.5 is the maximum possible proportion).

c = confidence interval (e.g. ±5%) = 0.05

N = Target population = 150,000

n' = Adjusted minimum sample size=?

Substituting these values in the formulae to get 383;

4.8.2 Qualitative Data

Purposive sampling was the methodology selected for this study This fundamentally non-probabilistic technique is described (Saunders et al., 2015) as being one where to ensure that only those most suited and able to provide information related to the research questions would be included. Before employing a purposive sampling approach, it is necessary to identify the factors that will be assessed and ensure that they represent a comprehensive model of the topic to be studied. Study examples are then selected using these factors. It is also possible to use different approaches for the sample selection, depending on the needs of the research study. For this study, a maximum variation sampling approach was chosen for each of the three target groups described above; this approach was selected in order to maximise the breadth and scope of the data that were collected (Saunders et al., 2015). Patton (2015) explained that it is important to ensure a broad range of different inputs in order to effectively identify the trends. Thus, one aim of the sampling strategy was to guarantee that all opinions would be collected, whether they were from dominant or marginalised members of society. To achieve this goal, a preliminary group of respondents was chosen; this group was then expanded using snowballing (Saunders et al., 2015).

Unlike quantitative analysis, qualitative studies do not require large sample sizes (Patton, 2015); rather, the emphasis is on the value of the data collected. Morse, Barrett, Mayan, Olson, and Spiers (2002) stated that the selected sample should be appropriate; thus, it should include respondents with a good understanding of the subject matter and whose views are representative of the entire population. A method often used for qualitative studies is to keep collecting information until the

data becomes saturated, as shown by measures of replication and redundancy. Once data saturation has been reached, any new data collected can be readily matched to the existing data categories and no new trends or categories can be determined. At that point, data categories can be said to be validated and well-established (Saunders et al., 2015).

Therefore, for qualitative analysis, the amount of data needed is only what is necessary to demonstrate data saturation. Morse et al. (2002) explained that a sample may be considered to be adequate once the breadth and depth of the collected data is sufficient enough to validate (or otherwise) all of the potential categories identified for the study. Guest, Bunce, and Johnson (2006) indicated that, for a homogenous sample, 12 in-depth interviews are sufficient to reach data saturation, although more interviews will be needed if the sample is heterogeneous.

4.9 Data Analysis

3.19 Validity and Reliability

It is crucial to assess both the validity and reliability data quality to establish the stability, credibility, and quality of the gathered data (Riege, 2003; Bell, 2014). Validity refers to the extent to which a measuring instrument produces accurate results, which is well within the boundaries of a positivist philosophical orientation (Easterby-Smith et al., 2012; Patton, 2015). Nonetheless, many scholars suggest that the researchers' opinions impact the validity of qualitative research (Riege, 2003). However, Silverman (2011) defines reliability as the extent to which findings are consistent with or assigned to, in certain occurrences, the same category by different researchers, or by the same researchers at different times.

Bell (2014) strongly advise testing for reliability and state that a researcher can deem a test reliable if the same results are found when the test is repeated. Likewise, the former, defined reliability as the production of similar results when carrying out the research multiple times or by two different researchers. Nonetheless, validity relates to the truthfulness of the gathered data and the relevant results analysis. The method for assessing validity will differ according to the type of research used, whether quantitative or qualitative. In terms of

quantitative research, researchers test validity according to the number of mistakes, statistics, sampling, and instrumentation. However, qualitative validity testing involves aspects of honesty, data and research depth, triangulation, and objectivity.

Generalisability, however, focuses on the potential of extrapolation, referring to the extent to which the findings from a sample can be extrapolated to the wider population. As the objective of qualitative research is to obtain the opinions, thoughts, perspectives, and attitudes of participants in specific contexts, it can often be challenging to prove generalisability. Nonetheless, qualitative research findings may be transferable and relevant according to the depth and richness of the data (Saunders et al., 2015). Lincoln and Guba (1985; cited in Nowell, Norris, White, & Moules, 2017), for example, created a research assessment criterion for use in qualitative research. This criterion includes a credibility and transferability test, as well as dependability and conformability tests.

Credibility explores the degree to which research results make sense, whilst transferability explores the specific context in which the research findings were collected and the extent to which such findings apply to other situations. Dependability refers to the milestones that lead the researcher to make specific conclusions and the extent to which they can be repeated and still produce the same findings. Finally, conformability assesses the extent to which research results are in line with findings of the same research when researchers apply different methods.

Triangulation is one type of conformability test applied in qualitative research. To ensure credibility, transferability, dependability, and conformability in qualitative research, researchers can do several things. These include member checking, implementation of rich descriptions, presentation of negative or discrepant information, triangulation, detailed descriptions of methodology, and the investigation of previous studies into the topic (Creswell, 2014). Researchers often employ expert opinions as a means of assessing the credibility of research results. To gain such opinions, researchers send the final report to selected research participants, who are tasked with establishing the accuracy of the findings. In the present study, the researcher sought expert opinions in order to evaluate the

credibility of the findings, since it allows participants to identify the extent to which the results are representative of reality.

4.9.1 Validity

Pretesting consists of an informal preliminary test of a questionnaire's validity before it is properly launched, with a view to eliminating the need for excessive external explanation later on. More than likely, it is a strategy used for a small, concentrated sample (Bell, 2014). It is a chance for the informant and the respondent to review the questions together and discuss any issues that may need further explanation. Given that the questionnaire was translated from English to different languages (Arabic, Chinese, and Hindi) as suggested by participated Kuwait Oil companies, this pretesting process was a necessary part of this study. Therefore, close colleagues and family members assisted in testing the questionnaire with the researcher in order to detect any confusion surrounding the understanding of its content and the clarity of the language used. Furthermore, this pretesting compared the original English version with the translated versions to determine the translation's accuracy and quality. To sum up, this process improves the test's reliability and offers an opportunity to make any necessary amendments before its launch.

To rectify all possible errors, the pilot testing method was used in the second last stage of the research. The purpose of pilot testing is to address any kind of issues encountered, including minor issues, such as difficulty in understanding the question as a whole, or even linguistic issues. It can also be useful for detecting and correcting formatting problems, such as those related to the font size or text style (Bell, 2014). The pretesting and pilot testing techniques differ from one another: the pretesting method is usually presented in an informal way and is limited to a small group of people, while the pilot testing method is more focused on the final survey sample. Additionally, the participants undergoing the pretesting are more concerned with finding any hidden flaws in the questionnaire. However, during the pilot testing stage, the participants need to provide answers to some questions, which the researchers will later discuss and analyse. This stage helps researchers to form an idea of what the final stage will look like. The piloting of questionnaire was determined unfeasible for several reasons. The proposed pilot was too big, as the

adequately-sized sample per country would consist of 50 participants to assess national cultural dimensions Hofstede and Minkov (2013). Given the study's limited timeframe, the VSM13 pilot would have been too costly and time consuming.

Frequency index: this consists of a formulation utilised to order major accident types based on how regularly an accident occurs as recognised by the research participant.

Frequency Index (FI) (%) = $\Sigma\ a\ \left(\frac{n}{N}\right) * 100/5$

a is the constant expressing weighting given to each response (ranges from 1 for never up to 5 for always)
n is the frequency of the responses
N is total number of responses.

4.9.1.1 Construct Validity

Yin (2014) explored four tests that can be used to assess validity and reliability. These tests are for construct validity, internal validity, external validity, and reliability. In the present study, the researcher considered 12 interviews sufficient, since carrying out any more than twelve posed a risk of data saturation. Yin (2014) explains that construct validity refers to the extent to which a measure is suitable for the study in question. In the present study, the researcher ensured construct validity at all stages, from the literature review through to the interviews and the questionnaires. The researcher provided interview transcripts to the interviewees to verify that the researcher recorded their opinions correctly. This verification is consistent with the recommendations made by Yin (2014).

Construct validity is a way of assessing what proportion of the survey instrument is measuring what it should (Sekaran & Bougie, 2017). It demonstrates the validity of the scales within the questionnaire, such as whether they are reflective of real scenarios. Their practical use, validity and accuracy are questionable if they are not applicable to daily life. Factor analysis—made up of two main approaches—can be employed to determine the underpinning instrument's validity and its correlation with the collected and observed variables. However, the first method, exploratory factor

analysis (EFA), tests the data with a view to construct theory (Williams, Onsman, & Brown, 2010) . The second method, confirmatory factor analysis (CFA), uses the data to confirm an existing theory (Williams et al., 2010). Hofstede was generating new, original model about the possible dimensions of national culture, meaning he used EFA. Subsequently, the CFA method was used to confirm Hofstede's model (Orr & Hauser, 2008). Where the present study is concerned, because of the small sample size (9 countries), exploratory and descriptive analysis were used to test the observed survey data against national culture dimensions and safety behaviour. This is because the scale of the study limits the possibility of more confirmation of the factor structure within both approaches.

4.9.1.3 Internal Validity

Yin (2014) explains that the purpose of assessing internal validity is to identify any causal relationships. Researchers primarily employed this evaluation tool in explanatory or causal research, and less so in descriptive or exploratory research (Yin, 2014). To address the unanswered questions that remained after the interviews, the researcher used a questionnaire to survey participants.

4.9.1.2 External Validity

Yin (2014) explains that the purpose of assessing external validity is to measure the generalisability of the research findings. In the present study, the external validity test is in the form of a literature review. Moreover, the researcher made comparisons between the literature findings at different stages during the interview and questionnaire administration processes.

4.9.2 Reliability

Reliability addresses whether the method of collecting the data is stable. If it will generate the same results repeatedly across random samples of participants, it is deemed reliable (Sekaran & Bougie, 2017). Theoretically speaking, the survey should demonstrate consistency whilst also addressing the question it has set out to answer. Of all the ways of testing a construct's reliability, Cronbach's alpha is used most often. According to Hofstede's recommendation, the country's mean scores should be tested with a reliability test, instead of individual scores (Hofstede &

Minkov, 2013). This recommendation is based upon the fact that the VSM13 looks to measure aspects at a country-wide level rather than individual aspects of character and values (Hofstede & Minkov, 2013).

4.9.3 Qualitative Analysis

While Yin (2014) cites the complexities of analysing the qualitative data of studies—not yet fully understood in the field—the data analysis stage of the research can be described as consisting of looking at the information, putting it into relevant groups and themes and presenting and tabulating it in a way that addresses the research questions.

Data collection and qualitative analysis are carried out in conjunction with one another because the analysis commences whilst the data is being gathered. Typically, this process begins with the first interview and proceeds for the duration of the research. A qualitative researcher will constantly compare new data with that which has been previously gathered. According to Pope and Mays (2006) and Bowen (2008), this facilitates timely amendments to research strategies and interview questions, thereby enabling more effective ongoing data collection.

Pope and Mays (2006) note that whilst qualitative research allows for analysis during the collection process, much further analysis is nevertheless required once the gathering stage has been completed. Polit and Beck (2018) provide three key outcomes of that analysis in that it allows the collected data to be organised and structured, and for meaningful conclusions to be drawn. As per Braun and Clarke (2006), most qualitative analysis can be described as thematic. Thematic analysis has been further described as process conducted within key qualitative conventions (Ryan & Bernard, 2000 cited in Braun & Clarke, 2006). According to Pope and Mays (2006), the type of research, its objectives and questions will determine the manner of data analysis.

Thematic analysis was chosen as the suitable method for this study which, as Braun and Clarke (2006) state, entails identifying common themes within the data. Thematic analysis does not set parameters for the length of text to code, meaning that codes can be allocated to lines, sentences, paragraphs or longer blocks of text,

if they continue to present the particular concept at hand. During the collection process, the raw data was reviewed to gain some insight into its scope and meaning. As per Braun and Clarke (2006), this is a crucial first stage of qualitative analysis. At this point, the researcher will make notes, registering the primary concepts and repeated topics, commenting on them and establishing the queries to be resolved. The process of writing memos is key for determining connections and making comparisons; Kodish and Gittelsohn (2011) argue that memoing is important for confirming the questions that must be asked and the direction that the research should take.

In this study, the interviews collected data was initially examined, and this facilitated a general overview of its depth and contexts; it was subsequently coded which then enabled its categorisation into significant segments for interpretation. The process of coding entails detailed assessment of the data to determine and label the chief concepts within it. Kodish and Gittelsohn (2011) assert that coding is a formal system of data organisation that distinguishes and records connections between concepts as they are identified. Codes are often referred to as tags or descriptive labels and are attached to data segments, thereby facilitating categorisation without altering original context (Bradley et al., 2007). Elsewhere, Braun and Clarke (2006) maintain that coding refers to the lowest level of data analysis that is appropriate for a study. Therefore, and as noted by Corbin and Strauss (2015), coding allows the researcher to arrange data into groups of similar codes and data.

According to Bradley et al. (2007), coding can be inductive, deductive or integrated as a combination of the two. This study employed an inductive approach in which the codes were primarily determined by the data. Braun and Clarke (2006) note that analytic induction is an example of the synchronicity between data collection and analysis in qualitative research. This study identified the recurring issues that came to the forefront during the coding process; these were either directly raised by participants or developed from their opinions and experiences.

Open coding is the examination of data to identify key concepts; this was performed during the initial coding phase and all possible codes were identified (Pope & Mays, 2006). To achieve this, an in-depth review of the data was carried out, and new concepts were assigned a code as they emerged. Whilst continuing to review data

and code new concepts, the next analytical stage was to develop and refine the codes to increase their suitability for the data (Bradley et al., 2007). Additionally, as described by Corbin and Strauss (2015), *in vivo* coding was used wherever possible, meaning that the interviewees' own words became the codes. On completion of the coding, a thematic map will be generated. Such mapping enables the various themes to be identified, the meaningful concepts to be determined and the relationships between them to be clarified in order to develop findings (Bowen, 2008).

4.10 Ethical Consideration

Ethics in the academic field concerns the appropriateness of an investigator's conduct with respect to individuals who are affected by or participate in their study (Saunders et al., 2015). Saunders et al. (2015) have suggested that interpersonal associations and decisions regarding conduct should be characterised by integrity, and ethics should act as a path for appropriate conduct. Therefore, prior to undertaking field research at the University of Salford, ethical approval was obtained from the Research Governance and Ethics Committee. Developing the study subject, drafting and planning the research, data obtainment and analysis, presenting results, and storing and handling processes all need to be rigorously carried out and governed in relation to the potential ethical problems. According to Creswell (2014) and Saunders et al. (2015), the rigour and moral justification of the research method are crucial aspects.

A raft of ethical problems and processes were identified in relation to this research. The privacy and anonymity of all the research subjects were guaranteed. In accordance with Saunders et al. (2015) advice, the anonymity of the respondents was assured throughout the study to hide their identity. To this effect, numbers were assigned to refer to the participants rather than their actual names; procedures to ensure the confidentiality of respondents' data were closely followed by the investigator. Prior to gathering data, each respondent was asked to provide their informed consent. Before each interview, the interviewee was read the consent form, which explained the study process and the type and objectives of the study in a language that was comprehensible to the interviewee; the participant's consent to proceed was then obtained. Engagement in research has been emphasised as

being completely voluntary. Furthermore, the decision to withdraw from research at any stage has also been stressed, especially if a participant's ongoing engagement would pose risks to their welfare. Additionally, Saunders et al. (2015) have noted that, during research, a fundamental concern is the researcher's commitment to do no harm.

4.11 Summary

This chapter elucidates the methodology used to address the research objectives and questions alongside the utilised research strategies and sampling methods. The researcher sufficiently justified each applied strategy and method. To investigate the correlation between national culture and employee's safety behaviour, the researcher primarily used a quantitative approach. Moreover, the researcher then employed a qualitative approach to assess the factors that effects Kuwait construction safety performance as well as to measure the validity of findings in various areas of the theoretical framework. The researcher, thus, used a pragmatic approach, combining both qualitative and quantitative aspects.

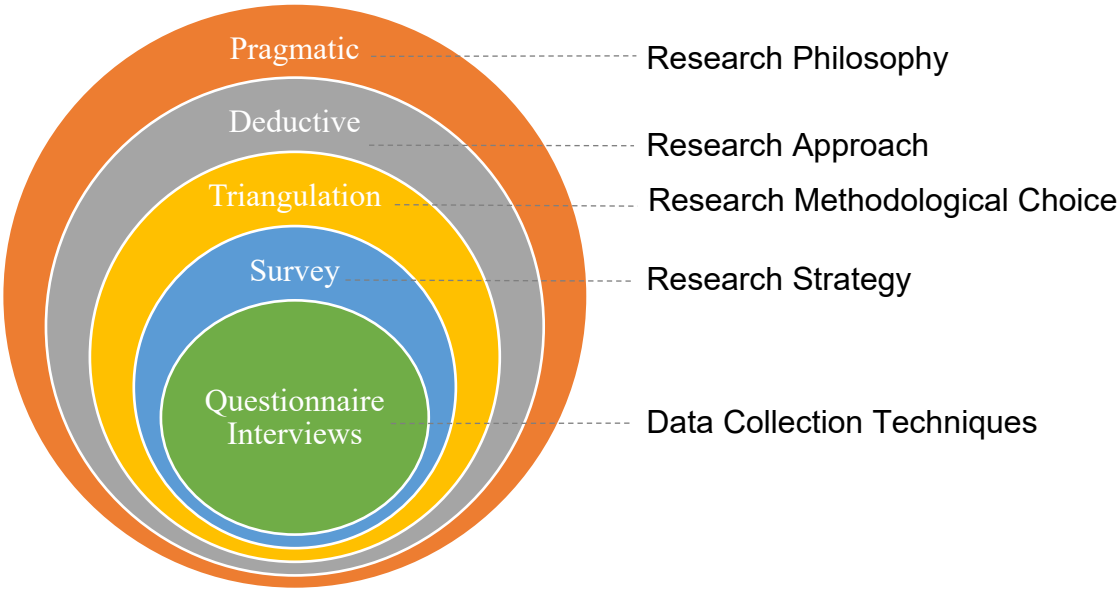

Figure 4.4: Research Onion adapted for this study.

In this chapter, the techniques and methods that will be used in this study have been profiled and this exploratory process has generated the chosen methodology. Figure 4.4 represents the research onion adopted for this study. The rationale

behind each choice has been explored in detail, so the following chapters will offer deeper insight into the chosen hypotheses, together with a detailed discussion about the data analysis. Quantitative analysis and the national culture model will be examined in the next chapter, which will consider the theoretical implications of the findings as well as an analysis of VSM13.

5.0 Quantitative Data Analysis

5.1 General Statistical Analysis

The researcher used a personally administrated paper-based survey which is according to Sekaran and Bougie (2017) has high response rate, can clarify doubts, and will enhance the ability to motivate participants. The population considered for this study was estimated to be 150,000, and the sample size was 383. Table 5.1 shows the data collection results from the 700 questionnaires that were distributed, 546 were collected; the response rate was 78% and 72.6% were fully completed. Of the 546 collected questionnaires, 508 were considered, 38 were disqualified because they were partially completed.

Table 5.1: Questionnaire response rate

Distributed Questionnaires	Collected	Response Rate	Completed	Response Rate
700	546	78%	508	72.6%

Out of the 508 respondents, 468 questionnaires were accepted to obtain the desired matched sample required for the national culture analysis. All the 468 respondents were unskilled or semi-skilled manual worker with 10 years or less of education and aged 31-40 and their nationalities are shown in Table 5.2. All the 508 completed questionnaires will be used to analyse the safety outcome part of the questionnaire.

Table 5.2: Participants Nationalities

Nationalities	Collected	Completed	Accepted for NC
Bangladesh	62	54	50
China	57	53	51
Egypt	73	61	56
India	71	64	53
Nepal	55	52	51
Pakistan	55	54	51
Philippines	62	62	53
Sri Lanka	55	54	52
Syria	56	54	51
Total	**546**	**508**	**468**

5.2 Descriptive Analysis

Hofstede has proposed that the concept of national culture can be defined by a model that features a number of different factors, or dimensions; this has been

developed into a measurement tool called the Values Survey Module, latest version 2013 (VSM13). The validity of this model has been confirmed by research conducted by Hofstede, and other independent teams, showing how national indices and the outcomes from experimental surveys correlate with the proposed dimensions. Critical analysis of the model and the psychometric properties of the measurement tool have suggested that there may be concerns over the methodology used to evaluate the validation, reliability and repeatability of the results obtained using previous editions of the VSM. Hofstede has disputed these criticisms on the basis that other researchers have each assessed less than 40 countries, and that this does not constitute a sufficient sample size (Hofstede & Minkov, 2013). It should be noted that because the analyses in question are targeted at the ecological level of countries rather than individual subjects, the impact of the sample size is significantly less than the sample size impact found in the quantitative approach to statistical analysis.

Despite any controversy over the validity of Hofstede's national culture theory and methodology, it remains appropriate to test the outcomes from this survey against his model. Thus, the VSM13 tool was used to determine whether the survey results correlate with, and provide a metric of, the proposed theoretical construct. This part of the analysis has been undertaken at the ecological level of countries; as such, it is based on just nine data points (nine countries). Therefore, the results must be treated with caution due to the problem of the small sample size.

5.2.1 Reliability Test

Reliability is a term that deals with the measurement of the consistency of the usage of an instrument. In the present case study, the constructs of the conceptual model were based upon VSM13, safety outcomes and safety behaviour. Usually Cronbach's alpha (α) used to verify the extent to which the observations accumulated during the course of the research may be relied upon. Cronbach's alpha's value is between 0 and 1 and varies between this range and with a coefficient that is low and which specifies that the involved variables may be heterogeneous in nature meaning that they act awfully in the representation of the measure Pallant (2016). Cronbach's alpha is directly proportional to the correlations that is present between the items meaning that if the average inter-item correlation

increases, the Cronbach's alpha will also increase and if the average inter-item correlation decrease, the eventually Cronbach's alpha will also decrease significantly. An accepted rule is that if the value of alpha is 0.8 or more, this states that there is good reliability whereas if the alpha's value is 0.7, this specifies that the reliability is acceptable. Apart from all these merely guidelines, the real value of alpha depends upon many factors. Let us take an example that Cronbach's alpha increases when the number of the items increase irrespective of the fact that there is any change in the internal consistency. (Saunders et al., 2015).

The values of Cronbach's alpha are tabulated in Table 5.3. The outcomes depict clearly that the value of Cronbach Alpha Coefficient is between 0.799 and 0.908 that itself serve as a proof that the data that was collected via the survey was reliable and consistent.

Table 5.3: Questionnaire Cronbach's alpha

Construct	Number of cases	Number of variables	Cronbach's alpha
National Culture	9	24	0.908
Safety Behaviour	9	10	0.799
Safety Outcome	508	14	0.904

As the theory of Hofstede is generally used for the analysis at national level, so there is difference between the correlations at an individual level and correlations at country level. With that being said, when the assessment of VSM13 reliability is being conducted, the mean scores that are overall of every country are utilized. So, every country is just considered as one case and an overall alpha is being calculated for every dimension altogether. However, the results can become a point of question as the sample size is very small i.e. only nine countries. The same concerns were shown by Spector, Cooper, and Sparks (2001) replicating the theory of Hofstede came into light but with a total of 23 countries where they came to find that with the small sample size, the tests that came into light showed very unstable values of Cronbach's alpha. So Hofstede and Minkov (2013) then gave a proposal to use an adequate amount or number of countries in order to get a level of reliability that is acceptable. The results that were devised can be viewed or considered as an indication that items in every dimension correlate very high and can specify the redundancy level. Therefore, it was considered a necessity to challenge the validity of the construct the relation of its upcoming correlations.

5.3 Factor Analysis

5.3.1 Item-Total Correlations

The item-total correlation is that correlation of a variable in which the construct is formulated with the composite scores of all the variables involved (Lu, Lai, & Cheng, 2007). If its value is significantly is less than a value of 0.30, then this serves as an indication that the variable is computing something that is far from or different than the whole of the construct. Thus, such a variable shows a vivid potential to be eliminated (Pallant, 2016). Subsequently, Pallant (2016) states a recommendation to eliminate all the variables that show a low item-total correlation i.e. less than 0.30 if the overall computed Cronbach's alpha is less than the value of 0.7. It is clearly shown in Tables 5.4 and 5.5 that variables of SBV10, SOV11, and SOV14 has a value less than 0.30. Hence, for the subsequent analysis of the both constructs, all the values were retained.

Table 5.4: SBV item-total correlation

Safety Behaviour Variables (SBV)	**Corrected Item-Total Correlation**	**Cronbach's Alpha if Item Deleted**
SBV1: I voluntarily carry out tasks or activities that help to improve workplace safety	0.398	0.792
SBV2: I help others when they are working under risky conditions	0.378	0.794
SBV3: I often make suggestions to improve how safety is handled around here	0.588	0.769
SBV4: I take action if I see something unsafe	0.720	0.745
SBV5: I believe that I have some responsibilities in promoting safety policy and practices	0.418	0.791
SBV6: I put in extra effort to improve the safety of the workplace	0.468	0.783
SBV7: I don't need to follow all safety rules and procedures to finish my job safely	0.600	0.772
SBV8: I carry out my work in a safe manner	0.459	0.784
SBV9: I use the correct safety procedures for carrying out my job	0.647	0.772
SBV10: I use all the necessary safety equipment to do my job	0.254	0.805

It is understood that undertaking a full factor analysis using the limited sample size of this study is unlikely to produce useful outcomes. Nonetheless, the decision was

made to continue with this approach because it may lead to insights about the function and characteristics of VSM13. Given the small size of the sample, this analysis will only aim to demonstrate construct validity; it will achieve this by demonstrating that the construct items are both convergent and discriminant.

Table 5.5: SOV item-total correlation

Safety Outcome Variables (SOV)	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
SOV1: Falling from a height accident	0.604	0.898
SOV2: Falling objects accident	0.704	0.894
SOV3: Heavy lifting accident	0.682	0.895
SOV4: Tools accident	0.733	0.892
SOV5: Materials accident	0.651	0.896
SOV6: Electric Shock accident	0.675	0.895
SOV7: Burns and explosion accident	0.757	0.891
SOV8: Transportation Means accident	0.900	0.885
SOV9: Chemicals and Gases accident	0.789	0.890
SOV10: Injuries due to slips	0.821	0.889
SOV11: Near misses and unsafe conditions	0.287	0.909
SOV12: Accidents resulted in less than one day absence	0.323	0.909
SOV13: Accidents resulted in 1-3 days absence	0.300	0.901
SOV14: Accidents resulted in more than three days absence	0.219	0.911

Convergent validity describes the degree to which the individual items that comprise the dimensions of each construct are alike. It is expected that, for a dimension to show convergent validity, the individual items will be highly correlated. The data in Table 5.6 show that the alpha parameter for each of the construct dimensions was large enough to prove the correlation between the individual items; this demonstrates convergent validity against all the Hofstede dimensions. Reliability for each dimension was assessed using the Cronbach's alpha. A close assessment of the data shows that both the PDI and IVR dimensions include items (NCV07, NCV20 and NCV17, respectively) for which the correlation is relatively low. Thus, removing these items would significantly increase the total alpha value. Calculation of the construct's total reliability (0.897) and correlation indicated that all the individual items were highly correlated to each other. While this suggests a lack of

independence between the items and scales, it is more likely that it is an artefact of the small sample size. Thus, all the values were retained.

Table 5.6: NCV item-total correlation

NC Dimensions	Items	NC Dimensions Cronbach's Alpha	Corrected Item-Total Correlation
PDI	NCV07	.915	0.148
	NCV02		0.453
	NCV20		0.177
	NCV23		0.337
IDV	NCV04	.947	0.454
	NCV01		0.619
	NCV09		0.605
	NCV06		0.316
MAS	NCV05	.871	0.775
	NCV03		0.514
	NCV08		0.830
	NCV10		0.383
UAI	NCV18	.912	0.524
	NCV15		0.684
	NCV21		0.382
	NCV24		0.505
LTO	NCV13	.920	0.752
	NCV14		0.707
	NCV19		0.753
	NCV22		0.648
IVR	NCV12	.869	0.599
	NCV11		0.387
	NCV17		0.214
	NCV16		0.540

5.3.2 Exploratory Factor Analysis

This is a statistical methodology that is utilized to unravel the repressed structure and design of a big variable set and then identifies the hidden relations between the variables that are being measured. According to Hair, Anderson, Babin, and Black (2010), EFA proves to be exceptionally fruitful for the introductory analysis when there is a lack of an acceptable and comprehensive theory in regards with the relationships of variables to the basic constructs. The EFA method was deployed

individually for every construct as an independent scale was being utilized for the measurement of every model constructs.

By using Q factor analysis or R factor analysis, the EFA method can be performed and eventually applied. Q factor analysis searches for among the subjects that are across a sample of variables. Whereas, the R factor analysis unravels a dimension set that is inactive in a larger set of variables (Hair et al., 2010). Usually R is the mostly used factor analysis and this was utilized for the study going on at present to summarize and reduce the variables to formulate a new set of factors.

Before conducting any analysis, the researchers are required to make sure that the data collected has enough correlations so that it can be justified for factor analysis. The term factorability dictates to the reliability of the data that is to be factorized specially in cases that involve inter- correlation among the variables. Methods known as Bartlett's test of sphericity and Kaiser-Meyer-Olkin (KMO) are sufficient for this. The Bartlett's test is utilized in order to decide if the there exists a relation among the variables such that a specific p-value that is less than 0.5 affirms the relationship and states the accuracy of the factor analysis (Field, 2009). On the other hand, the KMO values are mostly in the range of 0 to 1 and most definitely be close to 1 in order to prove a significant sample for the analysis (Pallant, 2016). So, it can be said that the number of data points is important in order to conduct both sample significantly tests when the sample exceeds the item numbers by default in the instrument. Well, in the current study, nine data points per 24 items for the national culture and the safety behaviour constructs have been reported to fail to provide values for Bartlett's test and KMO. This is not at all a surprise because the dependency of KMO test lies solely upon the positive definite matrix that was not acquired because of the sample size that ultimately resulted in a correlation matrix that was unstable (Field, 2009). Furthermore, Table 5.7 shows KMO's value for safety outcome construct is 0.939 which illustrates that all the constructs were beyond the minimum level of acceptance of 0.60 (Pallant, 2016). There is a significant relation among safety outcome variables as the statistic resulted from Bartlett's test of sphericity for every construct was efficiently high at $p < 0.001$.

Table 5.7: SO - KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.939
Bartlett's Test of Sphericity	Approx. Chi-Square	4292.594
	Df	91
	Sig.	.000

Discriminant validity describes the degree to which the individual items for different dimensions are dissimilar. It is expected that, for a dimension to show discriminant validity, each of its items will be poorly correlated with the items of the other dimensions. As discussed previously, some researchers have criticised the Hofstede dimensions, suggesting that their items lack of mutual exclusivity (Orr & Hauser, 2008). The results of this survey support this criticism. Again, it is possible that this conclusion is due to the small sample size, and it may be a problem inherent in any study attempting to repeat Hofstede's work using less than 40 countries. The survey results have also been used to determine whether the sample adopts the national culture factor structure to check if the items load to their relevant culture dimensions. In line with Hofstede's approach, the orthogonal varimax rotation method was used.

The rotational approach is used to minimise the number of items and to identify whether the information collected corresponds to a coherent factor structure. In this case, the primary aim was to assess the extent to which Hofstede's theoretical model could be used to load sub-scale items onto the relevant scales. Predictably, the outcome was that the sub-scale items were distributed across various components. Additionally, it was found that component 1 was loaded with six variables. Detailed analysis revealed that, in fact, items for PDI, UAI, IDV, LTO and IVR loaded respectively on five components. Items that belonged to UAI were loaded on components 1,3 and 4. This clumping of items provides further evidence that the dimensions may be interrelated.

The researcher used the 508 total responses to check how the sample size affects the rotation method on the safety behaviour construct. As a result, two safety behaviour factors were identified, namely safety participation (component 1) and safety compliance (component 2), with values of 43.6% of total variance (Table 5.8). While when using the nine cases, the factors loaded on four components.

For the safety outcome construct, two safety outcomes factors were identified, namely near-misses and day off rate (component 2) and occupational injurie types rate (component 1), with values of 60.6% of total variance (Table 5.9).

Table 5.8: Exploratory factor analysis of safety behaviour.

Safety behaviour variables (SBV)	Component	
	1	2
SBV1: I voluntarily carry out tasks or activities that help to improve workplace safety	.663	-.002
SBV2: I help others when they are working under risky conditions	.526	.173
SBV3: I often make suggestions to improve how safety is handled around here	.586	.184
SBV4: I take action if I see something unsafe	.742	.023
SBV5: I believe that I have some responsibilities in promoting safety policy and practices	.605	.030
SBV6: I put in extra effort to improve the safety of the workplace	.557	.219
SBV7: I don't need to follow all safety rules and procedures to finish my job safely	.004	.735
SBV8: I carry out my work in a safe manner	.258	.557
SBV9: I use the correct safety procedures for carrying out my job	.119	.724
SBV10: I use all the necessary safety equipment to do my job	.074	.706

Table 5.9: Exploratory factor analysis of safety outcomes.

Safety outcomes variables (SOV)	Component	
	1	2
SOV1: Falling from a height accident	.734	-.016
SOV2: Falling objects accident	.750	.180
SOV3: Heavy lifting accident	.770	.084
SOV4: Tools accident	.787	.169
SOV5: Materials accident	.728	.108
SOV6: Electric Shock accident	.755	.101
SOV7: Burns and explosion accident	.829	.118
SOV8: Transportation Means accident	.905	.245
SOV9: Chemicals and Gases accident	.846	.159
SOV10: Injuries due to slips	.883	.138
SOV11: Near misses and unsafe conditions	.098	.694
SOV12: Accidents resulted in less than one day absence	.147	.676
SOV13: Accidents resulted in 1-3 days absence	.109	.714
SOV14: Accidents resulted in more than three days absence	.060	.603

By choosing to use the Hofstede national culture theory, this study has been forced to also employ the VSM13 measurement tool and the methodology of considering

data at the ecological level of countries and apply it for the SB. This has resulted in a reduction in the sample size from the 468 matched individual respondents who completed the survey to just nine countries. This sample size is not considered to be large enough to allow for the conventional statistical approach to factor analysis (Field, 2009). Nevertheless, it was deemed appropriate that some limited statistical analysis should be conducted to see whether it would confirm the criticism levelled at the Hofstede approach and the psychometric characteristics of the earlier versions of the VSM tool. It was also felt that this analysis would help illustrate the ecological fallacy and explain why publications have sometimes confused the two levels of analysis. This concludes the discussion of factor analysis; the next section will consider the collected data from a NC perspective.

5.4 National Culture Analysis

The VSM13 consist of 30 questions, six demographic related questions and the remaining 24 questions were allocated for the six national dimensions (four questions for each dimension).

5.4.1 Power Distance Index

The index formula is: PDI = 35(m07 – m02) + 25(m20 – m23) + C(pd) (Hofstede & Minkov, 2013).

Where: m02 is the mean score for question 02

m07 is the mean score for question 07

m20 is the mean score for question 20

m23 is the mean score for question 23

C(pd) is a constant (positive or negative) that depends on the nature of the samples; It can be chosen by the user to shift her/his PDI scores to values between 0 and 100.

Table 5.10: Mean scores for PDI questions.

	m02	m07	m20	m23
Egypt	2.410714	3.5	3.607143	1.982143
Syria	2.294118	3.901961	3.509804	2.392157
India	2.584906	3.528302	3.377358	2.45283
Sri Lanka	2.807692	3.807692	4	2.519231
Bangladesh	2.9	4.44	4.32	3.2
Pakistan	2.901961	4	3.901961	2.607843
China	3.058824	4.156863	4.215686	2.627451
Philippines	3	3.773585	3.90566	2.584906
Nepal	2.705882	3.843137	3.862745	2.607843

The first dimension to ever come into light by IBM data of Hofstede was Power Distance Index. This involves the concerns of the issue of status consistency and human inequality. Societies are measures by how they accept and expect the power that has been unequally distributed. The inequalities can be as a result of the disparities of the power, wealth and the prestige given to each area (Hofstede et al., 2010).

Places that have high PDI, the manager are more likely to be obeyed by the employees as they have the right to command. Whereas the places that have low PDI, they have a great tendency to improve the relations between the subordinates and the leaders (Oswald et al., 2018). Where there is low PDI, people consider each other equal despite of their official statuses. When there is high PDI, the people in power consider themselves the only authority that has the right to demand and command (Mascarenhas et al., 2010).

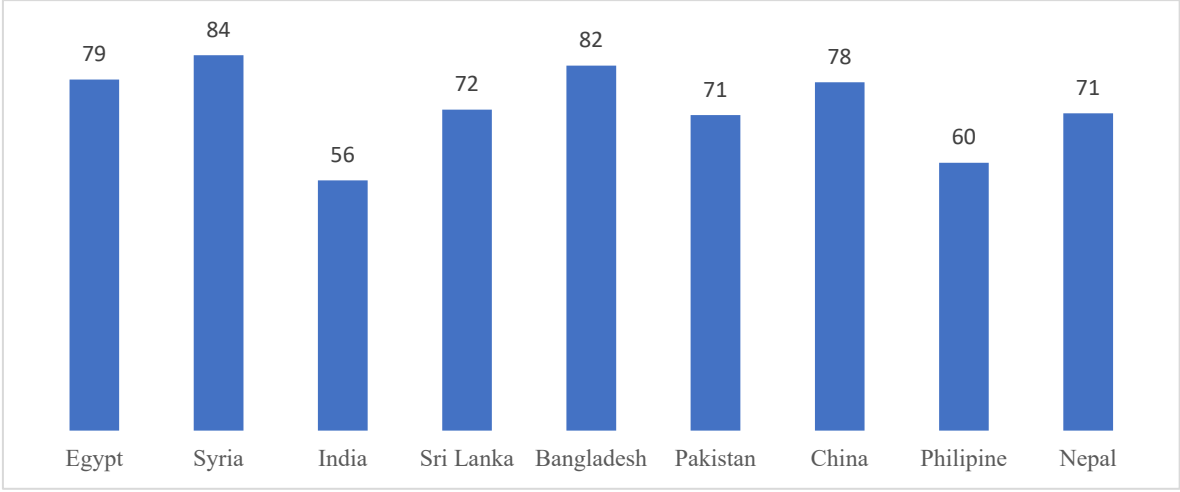

Figure 5.1: Power Distance Index

Figure 5.1 represents the PDI scores of all the nine countries. Almost all countries have high power distance except India which is close to average. In societies where there is high PDI, the power does not need to be legitimate. High PDI societies boost hierarchy and this is turn spreads inequality. So the people in power or charge tend to do more corruption and misuse their privileges. Therefore, it is considered that the social system can be improved by overthrow the corrupted personals.

5.4.2 Individualism Index

The index formula is: IDV = 35(m04 – m01) + 35(m09 – m06) + C(ic) (Hofstede & Minkov, 2013).

Where: m01 is the mean score for question 01

m04 is the mean score for question 04

m06 is the mean score for question 06

m09 is the mean score for question 09

C(ic) is a constant (positive or negative) that depends on the nature of the samples; It can be chosen by the user to shift her/his IDV scores to values between 0 and 100.

Table 5.11: Mean scores for IDV questions.

	m01	m04	m06	m09
Egypt	2.928571	3	2.303571	2.892857
Syria	2.098039	2.313725	1.647059	2.254902
India	2.679245	2.735849	1.886792	3.018868
Sri Lanka	2.384615	2.423077	1.692308	2.615385
Bangladesh	2.86	2.76	2.02	3
Pakistan	2.470588	2.588235	1.72549	2.45098
China	2.627451	2.529412	1.705882	2.45098
Philippines	2.566038	2.528302	1.90566	2.584906
Nepal	2.490196	2.470588	1.588235	2.392157

The initial point of IDV is apparently the individuals and the relationships that are among them. Individualistic society can be defined and thought of as a loosely tied societies in which the people or everyone is assumed to look after himself firstly and then of his immediate family and friends. Whereas, the collectivism states a knot that is tight in a social framework where the individuals are emotionally connected and integrated into a larger family. Other-groups or clan that would provide protection and comfort (Hofstede et al., 2010).

Societies can be classified into two types on these basis i.e. the individualistic societies and the collectivistic societies. Societies that are called individualistic societies are those in which the relations among the individuals are loose. Whereas, if the relations between the individuals are strong then such societies are labelled as collectivistic societies. Collectivism as a whole refers to either excluded from a group or belonging to one. When an individual belongs to a group, everyone in the group cares for them and each other and feel very sad and frightened on the separation from that particular group. Individuals belonging to the same group have same characteristics (Francesco, 2004).

Collectivism and individualism considered as multi-dimensional constructs but the theorists concur to the point that there is this main difference of in-group loyalties. Individualists apply less group loyalty giving much more importance to the goals at an individual level. While, the collectivists do not have any individual aims. Rather they have group aims and share the same goals. So, it is suffice to say that although these are similar terms but in aspect where the loyalties lie, they are really different (Yuki, 2003).

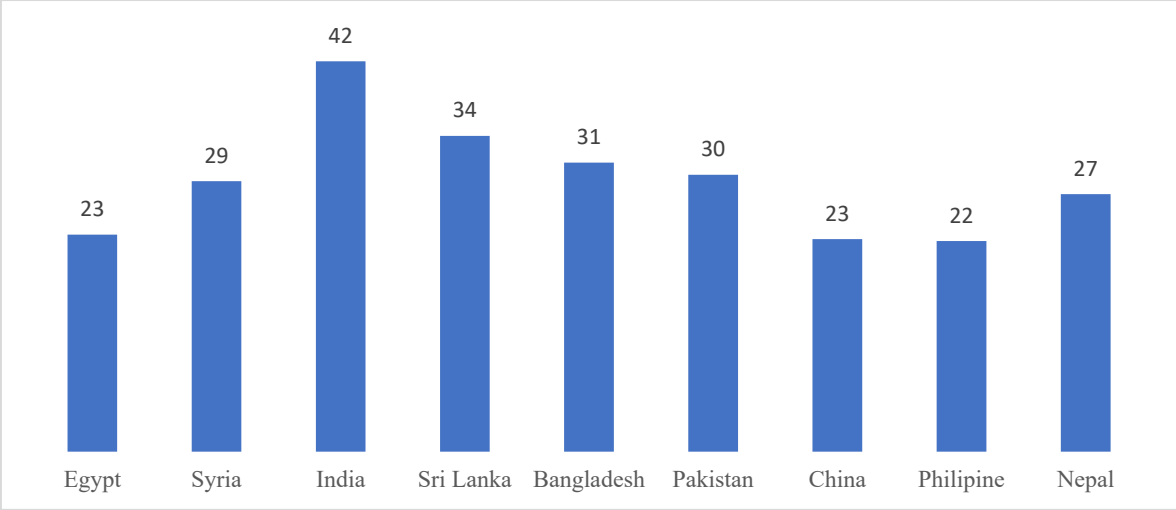

Figure 5.2: Individualism Index (IDV)

On a general basis, the scores of the nine countries, as shown in Figure 5.2, incline towards collectivism rather than individualism. The countries that show collectivism are mostly integrated into strong groups. Their people are focus entirely on the idea of belongingness to a group. Their identity also rests upon this (Hofstede et al.,

2010). They strongly encourage to spend their lives with and under the shade of a family. India scored the highest rank on the IDV and observed as collective country.

5.4.3 Masculinity Index

The index formula is: MAS = 35(m05 – m03) + 35(m08 – m10) + C(mf) (Hofstede & Minkov, 2013).

Where: m03 is the mean score for question 03

m05 is the mean score for question 05

m08 is the mean score for question 08

m10 is the mean score for question 10

C(mf) is a constant (positive or negative) that depends on the nature of the samples; It can be chosen by the user to shift her/his MAS scores to values between 0 and 100.

Table 5.12: Mean scores for MAS questions.

	m03	m05	m08	m10
Egypt	2.196429	2.464286	2.696429	1.785714
Syria	1.921569	2.607843	2.705882	1.784314
India	2.471698	3.132075	3.075472	2.113208
Sri Lanka	2.307692	2.173077	2.288462	2.057692
Bangladesh	2.76	3.38	3.22	2.38
Pakistan	2.254902	2.705882	2.823529	1.823529
China	1.921569	2.745098	3.156863	1.607843
Philippines	2.396226	2.792453	3.113208	1.924528
Nepal	2	2.254902	2.392157	1.607843

The MAS bases raises from the distinction of the roles among the genders. Feminine society can be defined as a society that has social gender roles that exhibit overlap. The Femininity stands for the role which is characterized by the need for modesty, cooperation, have a caring nature for the weak, need for warmth relations and importance of attachment to non-material things. Whereas, masculinity upholds for such a society where the social sex roles depict sharp differentiation and this role has been characterized by the need of assertiveness, sympathy with the strong, importance of attachment to material things and need for achievement (Hofstede et al., 2010).

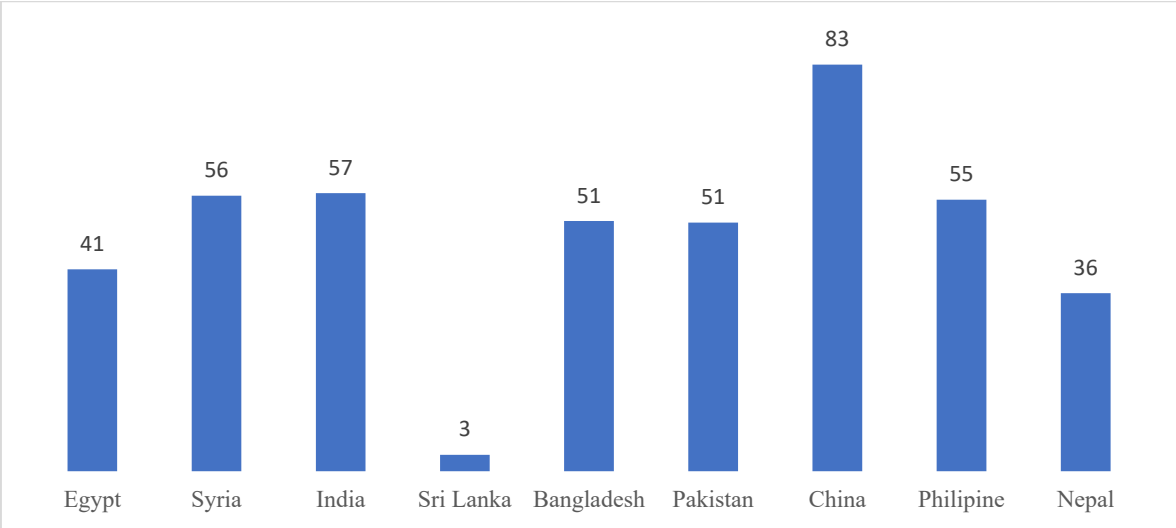

Figure 5.3: Masculinity Index (MAS)

Hofstede made a finding that the societies having high MAS, the people are drawn towards the idea of freedom and action. They strive for the attainment of personal goals and give these things preference over the contribution to the satisfaction and care for other people. In short, they only think about themselves. Being able to be of service to others, to illustrate the nurturing aspect of one's own personality and the quality of helping others is seen more in society that has the femininity trait dominance. Egypt, Sri Lanka and Nepal considered to be feminine societies and the remaining countries are masculine societies. Sri Lanka scores lower on the MAS dimension (3) while China scores higher (83) (see Figure 5.3).

5.4.4 Uncertainty Avoidant Index

The index formula is: UAI = 40(m18 - m15) + 25(m21 – m24) + C(ua) (Hofstede & Minkov, 2013).

Where: m15 is the mean score for question 15

m18 is the mean score for question 18

m21 is the mean score for question 21

m24 is the mean score for question 24

C(ua) is a constant (positive or negative) that depends on the nature of the samples; It can be chosen by the user to shift her/his UAI scores to values between 0 and 100.

Table 5.13: Mean scores for UAI questions.

	m15	m18	m21	m24
Egypt	1.964286	3.142857	2.660714	1.696429
Syria	2.294118	3.411765	2.588235	1.823529
India	3.245283	3.924528	3.075472	2.679245
Sri Lanka	2.230769	3.153846	2.365385	1.884615
Bangladesh	2.58	3.6	2.58	1.92
Pakistan	2.686275	3.803922	2.705882	2.294118
China	2.705882	3.352941	2.431373	2.215686
Philippines	2.660377	3.301887	2.509434	1.924528
Nepal	2.470588	3.196078	2.54902	2.137255

This states how humans try to cope to negotiate with the uncertainty that hinders their future and also it depicts the tolerance rate of people towards something that is ambiguous (Hofstede et al., 2010). Likewise, Uncertainty Avoidance index (UAI) is defined as the degree or extent to which the members of the society fell secure and their willingness to take risks wholly and solely on their behalves to such situations, the outcomes of which are unknown or uncertain clear (Beugelsdijk & Frijns, 2010). There exists certainly a very big complexity if the information or the data is not clear or vivid. If there is fast, drastic and sudden or unexpected change, then there can be undoubtedly a grave instability among the people and in the environment in which they are living. This can pose as a threat as well.

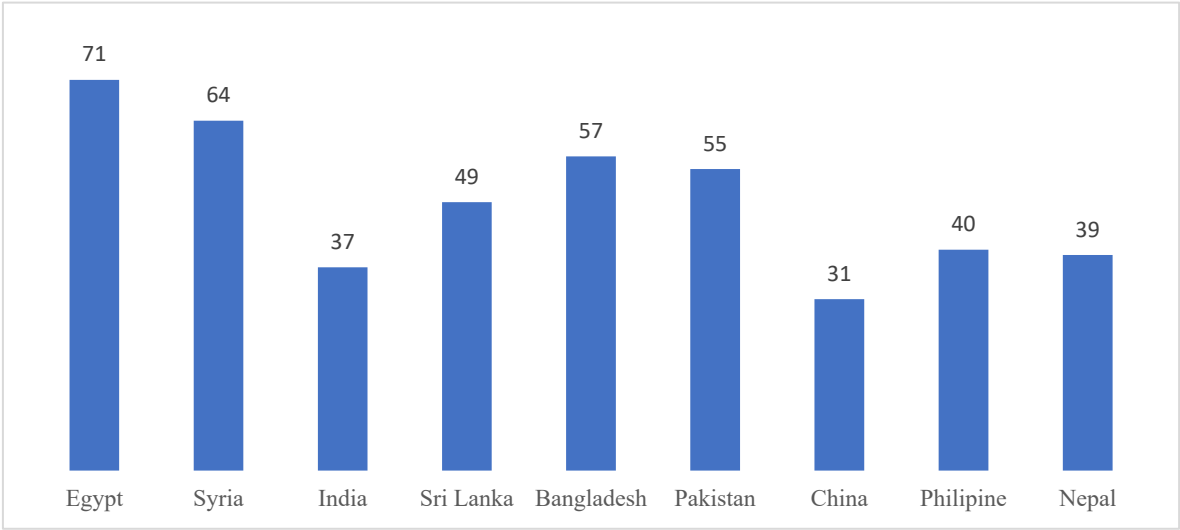

Figure 5.4: Uncertainty Avoidance Index (UAI)

When there is weak UAI, then the discussions and competitions among the people will be proved fruitful and a positive outcome will come from it. The level of tolerance is normal. In societies like these, people tend to come out from their comfort zone and almost feel at ease with taking risks. Fear is also decreased in such societies. If there is a high UAI, then the individual's feelings level can be under extreme threat and can be very risky in unknown situations and have a higher stress rate on the individual. A culture of this type exhibit very high formality and the tolerance levels towards the people are very low who tend to move away from the defined norms and traditions (Hofstede et al., 2010). In general, the scores of the nine countries shows that Egypt, Syria, Bangladesh and Pakistan have high UAI scores and Egypt has ranked the highest in it with UAI of 71. China scored the lowest (Figure 5.4).

5.4.5 Long Term Orientation Index

The index formula is: LTO = 40(m13 – m14) + 25(m19 – m22) + C(ls) (Hofstede & Minkov, 2013).

Where: m13 is the mean score for question 13

m14 is the mean score for question 14

m19 is the mean score for question 19

m22 is the mean score for question 22

C(ls) is a constant (positive or negative) that depends on the nature of the samples; It can be chosen by the user to shift her/his LTO scores to values between 0 and 100.

Table 5.14: Mean scores for LTO questions.

	m13	m14	m19	m22
Egypt	2.642857	2.214286	2.696429	2.428571
Syria	2.019608	1.745098	2.352941	1.784314
India	3.641509	3.075472	4	2.849057
Sri Lanka	2.288462	2.019231	3.134615	2.153846
Bangladesh	2.5	2.12	3.1	2.22
Pakistan	2.529412	1.901961	3.137255	2.137255
China	3.490196	2.294118	4.058824	2.27451
Philippines	2.509434	2.45283	3.09434	2.169811
Nepal	2.411765	2.039216	2.843137	2.196078

In the year 2001, it has been formulated that the answers of students from a sample size of 23 countries that was firstly devised by Bond (1988). This dimension was greatly depended upon the values minds of East. In this, it was discovered that these students have great qualities of persistence and thrift. They have respect for tradition and stability. The fostering of the virtues and qualities one has and continuing to retain them while moving towards the future is regarded as long-term orientation. Whereas, the short-term orientation relates to the virtues that are somehow related to the past or present (Hofstede et al., 2010). Although some people foresee things happening to them in the present as well instead of the future so in this case, they observe short-term outcomes.

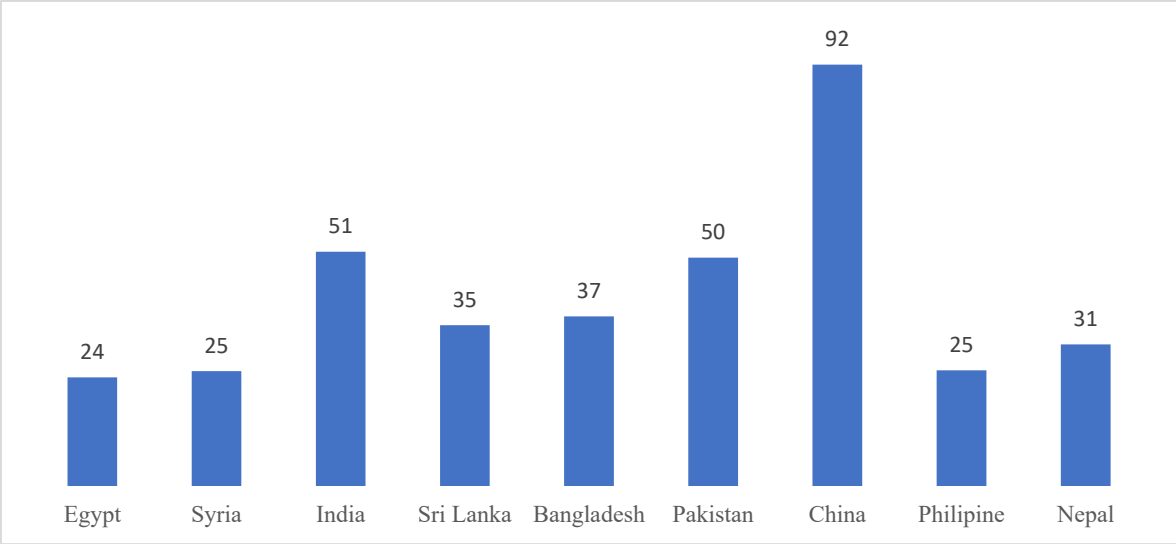

Figure 5.5: Long Term Orientation Index (LTO)

In the long-term oriented cultures, the people give more importance to the future while in short-term, people tend to implement social responsibilities and answer and take action in at present (Mascarenhas et al., 2010). Figure 5.5 shows that six countries have a less than average score in this dimension. China has the highest score while Egypt has the lowest.

5.4.6 Indulgent Versus Restraint Index

The index formula is: IVR = 35(m12 – m11) + 40(m17 – m16) + C(ir) (Hofstede & Minkov, 2013).

Where: m11 is the mean score for question 11

m12 is the mean score for question 12

m16 is the mean score for question 16

m17 is the mean score for question 17

C(ir) is a constant (positive or negative) that depends on the nature of the samples; It can be chosen by the user to shift her/his IVR scores to values between 0 and 100.

Table 5.15: Mean scores for IVR questions.

	m11	m12	m16	m17
Egypt	2.25	2.803571	2.375	2.464286
Syria	2.392157	1.921569	2.058824	2.509804
India	2.226415	2.471698	2.226415	2.358491
Sri Lanka	2.076923	2.307692	1.826923	2.038462
Bangladesh	2.34	2.74	2.1	2.16
Pakistan	2.098039	2.196078	2.078431	2.294118
China	2.862745	3.27451	2.568627	2.627451
Philippines	2.471698	3.188679	2.415094	2.584906
Nepal	2.098039	2.098039	1.980392	2.098039

This construct is known as the indulgent versus restraint dimension and was first presented as a concept by Hofstede et al. (2010). This refers to the requirement to curb the basic needs of human beings and is also related to enjoying life and having fun (Hofstede, 2011). It has been credited as a complementary construct. According to Hofstede, the society that is restrained shows no freedom of speech, strict norms have been imposed upon them. This type of society has a few people that are happy. While on the other hand, the indulgent society give more value and importance to free time and tend to pose positive emotions. According to figure 5.6, the nine countries have more restraint society. Philippine has the highest score while Syria has the lowest.

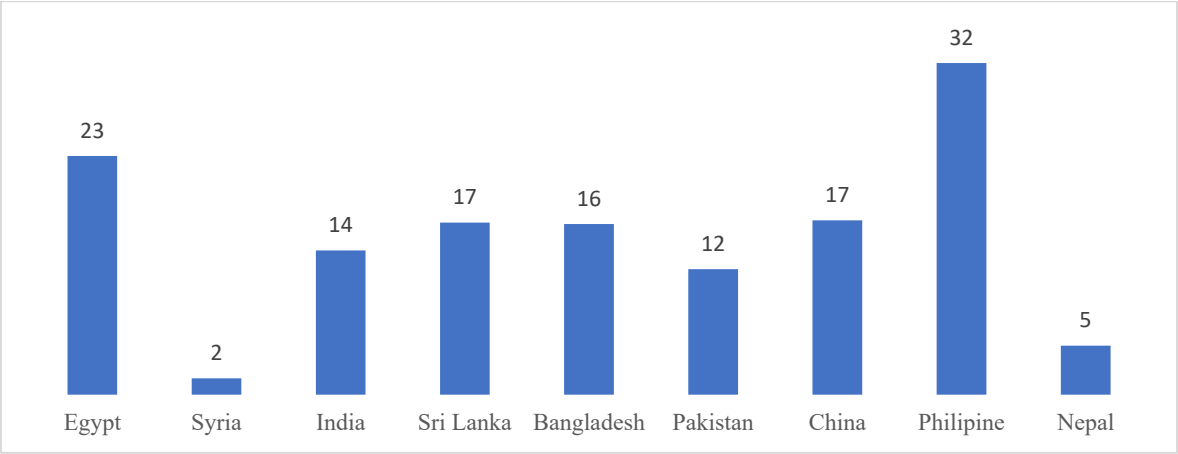

Figure 5.6: Indulgent Versus Restraint Index (IVR)

5.5 Safety Outcomes analysis

Figures 5.7 and 5.8 (below) shows the frequency index of the participants' responses to the regularity of occurrence of each accident type, and near misses and day off rates mean values on oil & gas construction projects in Kuwait. Frequency Index (FI) for the presented accident types used for ranking and is calculated using equation as shown in section 4.9.1. The accident types and near misses and day off rates were ranked based on their FI scores, as shown in Tables 5.16 and 5.17. As can be seen, the most frequent accident type is the "falling from a height" (FI = 68.50394) and the lowest was "electric shock" (FI = 44.28291). It is worth noting that there is only a very small difference in the FI scores of the accident types ranked first and second. The second accident type is "Transportation Means" (FI = 68.0943), the author believes this was because most of the KOC construction projects were in remote areas which requires a longer travel time.

Table 5.16: Near misses and day off rates rankings based on FI

Safety outcomes	FI	Rank
Near misses and unsafe conditions.	65.89391	1
Accidents resulted in less than one day absence	64.24361	4
Accidents resulted in 1-3 days absence	64.51866	3
Accidents resulted in more than three days absence	64.63654	2

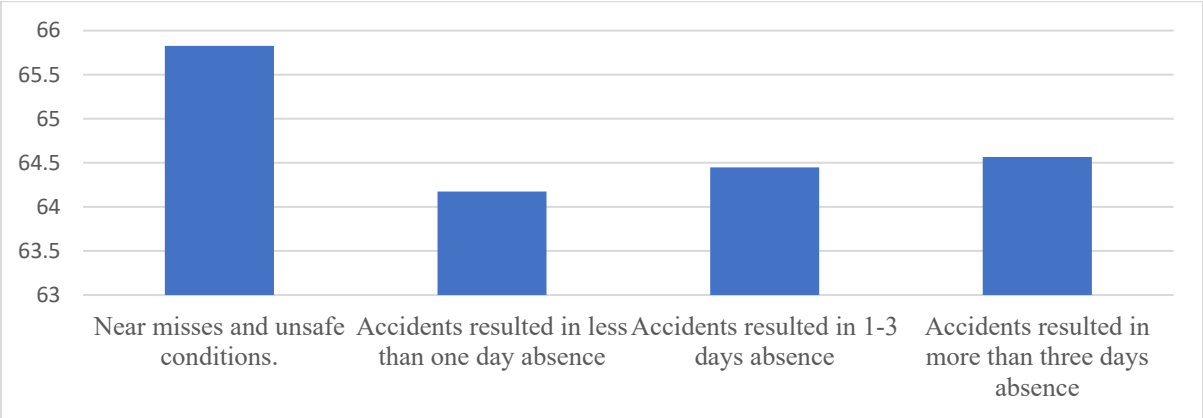

Figure 5.7: Near misses and day off frequency index

Table 5.17: Ranking of Major accident types based on FI

Type of accident	FI	Rank
Falling from a height	68.56582	1
Falling objects	58.46758	8
Heavy lifting	59.96071	7
Tools	64.51866	5
Materials	58.31041	9
Electric Shock	44.28291	10
Burns and explosion	64.08644	6
Transportation Means	68.0943	2
Chemicals and Gases	66.36542	3
Injuries due to slips.	64.79371	4

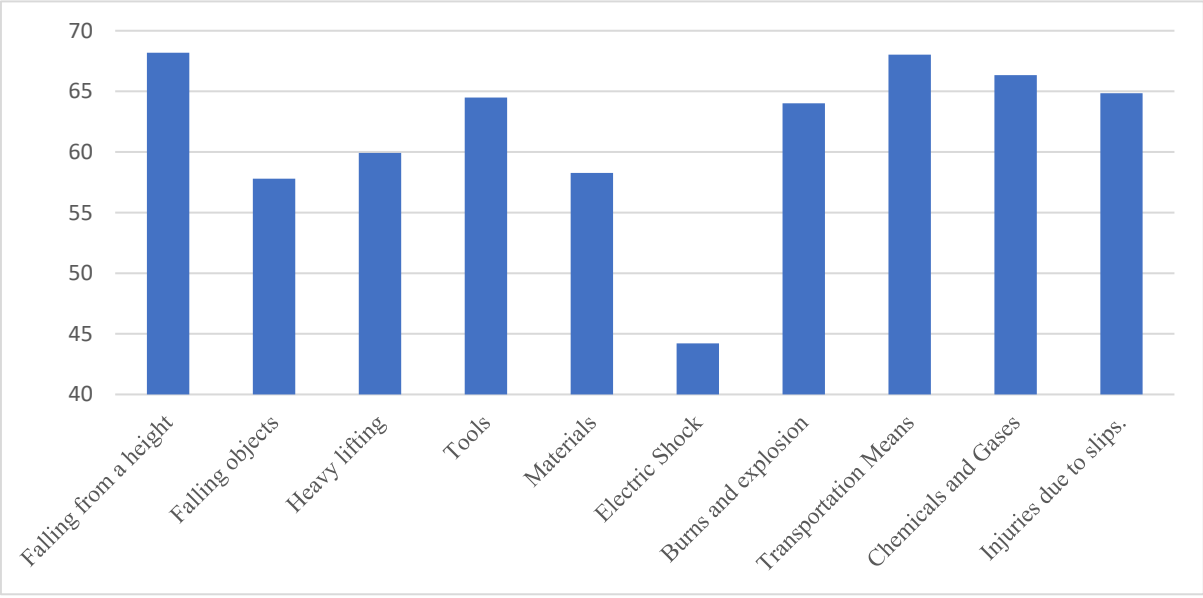

Figure 5.8: Major accident types frequency index

It has been determined that falls from heights are one of the chief causes of fatalities on construction sites (Dong et al., 2017; Hamid et al., 2019; Nadhim, Hon, Xia, Stewart, & Fang, 2016). In the UK, 48% of fatal injuries in the construction

industry caused by falling from height (HSE, 2018). Contractors attempt to minimise casualties by using safety belts, ropes, and cables; a minority also use safety nets. Nevertheless, a highly weighted frequency of fall injuries continues to occur, and this indicates either that most frontline construction workers do not have access to these safety measures, or that the site safety managers permit workers to ignore them. Additional research is called for to determine which of these interpretations is accurate. Another significant cause of accidents is transportation means, along with injuries caused by chemicals and gases on construction sites. Chemicals and gases leaks can cause serios accidents in the oil and gas construction industry (Kashwani & Nielsen, 2017).

5.6 Hypothesis development

5.6.1 Power Distance Index

The degree to which inequitable societal sharing of power is tolerated by individuals is indicated by PDI. Within the context of safety culture and behaviour, Hofstede's PDI is an interesting dimension that can directly influence the attitudes and behaviours towards safety that employees exhibit as an outcome of the national and safety cultures (Mearns & Yule, 2009; Mohamed et al., 2009).

According to Mearns and Yule (2009), those in a higher position are expected to exercise their power and encouraged to be passive in high PDI cultures; there is decentralized decision making in organisations. Gyekye and Salminen (2005) stated that in organisations of this nature, when tasked with creating an effective safety culture, members of the senior management group make decisions about safety that their subordinates are expected to passively accept the directives passed down the hierarchy from above. For example, safety standard procedures and orders are obeyed by pilots with high PDI backgrounds, as discovered in an experiment in the aviation sector (Helmreich & Merritt, 1998). In conclusion, decision mechanisms and formal rules are related to high PDI (Aziz, Johnson, & Sands, 2008).

In low PDI, superiors and their subordinates collaborate more closely in decision-making processes and the organisational structure is flatter (Mearns & Yule, 2009). Managers operating in low PDI societies typically respect their subordinates' abilities

to do tasks and make decisions. As such, in these cultures, the organisation takes a more decentralized form in which workers in these countries are more empowered and take part in planning and decision making, as well as working in decentralised businesses where power is widely shared on equal basis (Hannay 2009). Reason (1997) argued that, low PDI structures are more supportive of the establishment of a solid safety culture on the basis that empowering employees increases their motivation to actively participate in safety-related initiatives.

Kwon and Farndale (2018) maintained that national culture, to some degree, has a role in determining the norms of an organisation according to different voice channels at the macro level. Individual people have different perceptions concerning efficacy and safety, and these, it has been acknowledged, are in some capacity determined by national culture. Hitherto, of all the cultural dimensions, only that of power distance has been subject to research. Voice propensity and power distance are negatively related; the reason for this is that unequal distribution of power (for instance, only higher positions can exercise voting rights) is more readily accepted in those cultures that have a higher power distance.

Views and perspectives on safety culture might be impacted by national values concerning greater power distances; those individuals in positions of lower power have a reduced likelihood of challenging erroneous behaviour of their superiors. This lowers the chances of more front-line workers admitting errors that may impact their societal or professional standing or prospects. Further, according to studies by Soeters and Boer (2000), Mearns and Yule (2009), and Reason (1997), this can result in asymmetry between subordinate-worker–management communication. On this basis, the following hypotheses were formulated:
H1: Safety compliance and PDI have a significant correlation.
H2: Safety participation and PDI have a significant correlation.

5.6.2 Individualism Index

The IDV dimension has a direct impact on individuals' engagement as a fundamental component of safety culture and safety climate. The collectivist dimension of national culture refers to strict societal relations. Hofstede et al. (2010) argued that individuals from societies of this nature aspire to conform to the

expectations of the larger group to which they belong. In this regard, the willpower of the group as a whole had an impact on the individuals' values and beliefs. While considered from the individuals' engagement, people from high IDV cultures tend to think more independently and are more likely to take the initiative than those from low IDV cultures (Aziz et al., 2008). Furthermore, in low IDV cultures collectivism when individuals encounter critical decision-making situations they will tend to avoid expressing their personal opinions or visions. Within the context of safety rules, as opposed to taking the initiative on an individual level, people prefer to follow the actions of others. Fiske (2002 cited in Mearns & Yule 2009) argued that, it is more beneficial to the development of an optimistic safety culture in high IDV cultures as it involves taking responsibility for solving problems.

There is a strong correlation between the IDV dimension and how to perceive risk. High IDV cultures individuals will protect themselves and treat themselves as a priority (Mearns & Yule, 2009). Mascarenhas et al. (2010) stated that in high IDV cultures, individuals place an onus on personal success and hold individual rights in high regard. They are expected to take sole responsibility for themselves and the members of their direct family. The literature distinguishes between high and low IDV and the effect that it has on the risk and safety propensity of employees. Beugelsdijk and Frijns (2010) highlighted that in high IDV societies, individuals are more likely to make decisions that are based on their personal their individual sense of safety. On the contrary, in low IDV cultures, people expect others to take the initiative. When taking and monitoring safety rules and procedures, members of low IDV cultures are concerned with group safety. Thus,

H3: Safety compliance and IDV have a significant correlation.

H4: Safety participation and IDV have a significant negative correlation.

5.6.3 Masculinity Index

The significance of gender norms within a society is indicated by the MAS index. Hofstede's (1980) study of MAS cultures highlighted the importance of respect. The findings revealed that it is important for individuals to realize their responsibilities towards themselves in high MAS cultures (Hofstede et al., 2010). This observation has significant implications in the context of safety rules and the adoption of a safety as a culture. Individuals may obeying the safety rules on a personal level and

subsequently feel safe themselves. In high MAS cultures, the adaptation of safety culture easier can be anticipated.

The findings highlighted above indicate how the MAS dimension is strongly connected with risk perception. In high MAS cultures individuals' tends to avoid any risks that threaten their own safety. This entails that they may adopt a more cautious approach and be likely to comply with rules and procedures that they perceive to support their safety. On the contrary, Mearns and Yale (2009) argue that individuals from low MAS cultures will place a higher focus on the health and safety of others. Low MAS cultures workers tend to focus on providing environmental health and workplace safety and protecting their colleagues' safety as well as their own.

To create an effective and efficient safety culture in organisations, management need to understand gender implications. When dealing with high MAS cultures, management should tap into their interest in individual safety and focus on establishing extrinsic rewards in exchange for individual contributions. Furthermore, in organisations that have low MAS cultures, management should focus on the development of a wider environment of safety through focusing on positive safety outcomes and organisational. As such, announcing the health and safety results of an organisation through different visual, virtual and auditory equipment will probably be more effective in feminine cultures than in masculine cultures. Therefore,
H5: Safety compliance and MAS have a significant correlation.
H6: Safety participation and MAS have a significant correlation.

5.6.4 Uncertainty Avoidant Index

UAI specifies the degree to which ambiguities are perceived to pose a risk to individuals in society. Uncertainty is not accepted and risk is avoided by people in societies with strong UAI. There is a robust link between UAI and safety (Burke et al., 2008; Mascarenhas et al., 2010; Meeuwesen, van Den Brink-Muinen, & Hofstede, 2009; Schubert & Dijkstra, 2009). According to the findings of Hofstede's study, the safety requirements individuals are expected to adhere to are more tangible in high UAI cultures (Mascarenhas et al., 2010). On the contrary, in low UAI cultures, individuals have fewer rules to follow.

Among the reports which focus on UA, Burke et al. (2008) using data from 68 organisations embedded within 14 nations, examined the role that UAI plays in safety culture and established that Hofstede's UAI dimension can play an important role in safety training effectiveness. Per Hofstede (2001), cultures of a high UAI value are likely to value stability and have formalized rules; accordingly, when determining feelings of high psychological safety among these cultures, signals from a wider array of sources may be needed. Workers of cultures with a high UAI might therefore show greater sensitivity in regard to work design, supportive working environment, and context and personality when compared to leader behaviours. Offermann and Hellmann (1997) have demonstrated how leaders are generally less approachable and tend to be more controlling among high-UA cultures. Accordingly, this highlights alternative antecedents regarding the perception and shaping of psychological safety. However, this can be too rigid and may prevent employees from reactive effectively to any unexpected situations. According to Burke et al. (2008), the impact of safety training is much less in high UAI cultures since dependence upon standard methods could limit employees' adaptability to changing events or critical situations. Furthermore, Perez-Floriano and Gonzalez (2007) challenged the assumption concerning the indiscriminate application of training methods for safety among numerous countries, regardless of cultural, sub-cultural, and intra-national differentiations.

Workers in countries with a high-UA culture are not as likely to take risks in the workplace; as a result, they are more likely to invest themselves more comprehensively in their role in experiencing self-expression and encouragement within their working environment (Frazier et al., 2017). It could be observed that a stronger relationship can be established between UAI and risk perception. The higher the UA, the less likely individuals will exhibit risk-taking tendencies. In other words, structuring all the systems, rules and policies to eliminate security risks will be preferred by high UAI individuals. High UAI cultures are associated with limited methods—reducing safety errors, simplifying regulations and rules, and developing choices—that provide limited quantities of information. On the contrary, in low UA, more complicated tasks, overprotection is avoided, and choices are maximized rather than redundancy. In high UAI cultures, employees expect their superiors to take positive and consistent action to safeguard their safety. Managers are expected to develop structured safety management systems that are associated with clear

standards, formal rules and procedures, ongoing instructive safety training programs, and a clear management commitment to safety. On the contrary, low UAI employees are typically less emotional than their high UAI counterparts, are more tolerant of uncertainty, and exhibit a higher propensity to take risks (Burke et al., 2008). Therefore,

H7: Safety compliance and UAI have a significant correlation.

H8: Safety participation and UAI have a significant correlation.

5.6.5 Long Term Orientation Index

The prospective vision of a society is the concern of LTO. In long–term oriented cultures, people give more importance to the future, while in short–term cultures, people tend to implement social responsibility and take action in the present (Mascarenhas et al., 2010). Individual networks and established norms are usually prioritised by societies that have immediate-term goals, while principles such as endurance and prudence typically characterise societies with long-term prospects. Consequently,

H9: Safety compliance and LTO have a significant correlation.

H10: Safety participation and LTO have a significant correlation.

5.6.6 Indulgent Versus Restraint Index

Hofstede's theory incorporates IVR as the final aspect, although in terms of multinational research, this national culture dimension is rarely adopted. The extent to which individuals' requirements and wishes are limited or encouraged by a society is the focus of the IVR index. Therefore, limited free time and adherence to stringent legislation and principles characterise strongly restrictive societies, whereas great free time and self-satisfaction typically characterise societies with strong IVR. The last two dimensions that are mentioned are not as widely cited as the others in the literature. This is because their use cases are limited to a few countries. Thus,

H11: Safety compliance and IVR have a significant correlation.

H12: Safety participation and IVR have a significant correlation.

5.7 Correlation analysis

A sample that comprises 25 items or more is the most appropriate size for applying Pearson's correlation (David, 1938 cited in Bonett & Wright, 2000). Thus, due to the limited number of case nations comprising the sample, the most suitable statistical tool in this instance is Spearman's Rho. Both the safety participation and safety compliance factors as indicators of national culture were subject to bivariate correlation analysis. Overall, the statistical significance was determined for three of the 12 potential correlations (see the summary in Table 5.18).

5.7.1 Power Distance Index

At $r = -.301$, $n = 9$, and $p = .431$ (two tailed), no statistical significance was identified between safety participation and PDI. Furthermore, at $p > .05$, safety participation and degree of power distance were not found to have a significant correlation, although a weak negative correlation was present. Meanwhile, at $r = -.912$, $n = 9$, and $p = .001$ (two tailed), statistical significance in the correlation between safety compliance and PDI was determined. Additionally, safety compliance and PDI were found to have a significant negative correlation. Overall, at $p < .01$, safety compliance and PDI were found to have a substantial and significant negative correlation.

5.7.2 Individualism Index

At $r = -.803$, $n = 9$, and $p = .009$ (two tailed), (two tailed), statistical significance in the correlation between safety participation and IDV was determined. Additionally, safety participation and IDV were found to have a significant negative correlation. Overall, at $p < .01$, safety participation and IDV were found to have a substantial and significant negative correlation. Meanwhile, at $r = -.084$, $n = 9$, and $p = .831$ (two tailed), no statistical significance was identified between safety participation and IDV. Furthermore, at $p > .05$, safety participation and IDV were not found to have a significant correlation, although a very weak negative correlation was present.

Table 5.18: Spearman correlations between national culture and safety behaviour

Correlations

		SP	SC	PDI	IDV	MAS	UAI	LTO	IVR
SP	Correlation Coefficient	1.000	.417	-.301	-.803**	.209	-.183	-.410	.377
	Sig. (2-tailed)	.	.265	.431	.009	.589	.637	.273	.318
	N	9	9	9	9	9	9	9	9
SC	Correlation Coefficient	.417	1.000	-.912**	-.084	.017	-.733*	.167	.343
	Sig. (2-tailed)	.265	.	.001	.831	.966	.025	.667	.366
	N	9	9	9	9	9	9	9	9
PDI	Correlation Coefficient	-.301	-.912**	1.000	-.092	-.055	.644	-.286	-.151
	Sig. (2-tailed)	.431	.001	.	.813	.889	.061	.456	.698
	N	9	9	9	9	9	9	9	9
IDV	Correlation Coefficient	-.803**	-.084	-.092	1.000	-.126	-.017	.454	-.433
	Sig. (2-tailed)	.009	.831	.813	.	.747	.966	.220	.245
	N	9	9	9	9	9	9	9	9
MAS	Correlation Coefficient	.209	.017	-.055	-.126	1.000	-.393	.454	-.050
	Sig. (2-tailed)	.589	.966	.889	.747	.	.295	.220	.898
	N	9	9	9	9	9	9	9	9
UAI	Correlation Coefficient	-.183	-.733*	.644	-.017	-.393	1.000	-.669*	-.050
	Sig. (2-tailed)	.637	.025	.061	.966	.295	.	.049	.898
	N	9	9	9	9	9	9	9	9
LTO	Correlation Coefficient	-.410	.167	-.286	.454	.454	-.669*	1.000	-.168
	Sig. (2-tailed)	.273	.667	.456	.220	.220	.049	.	.666
	N	9	9	9	9	9	9	9	9
IVR	Correlation Coefficient	.377	.343	-.151	-.433	-.050	-.050	-.168	1.000
	Sig. (2-tailed)	.318	.366	.698	.245	.898	.898	.666	.
	N	9	9	9	9	9	9	9	9

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

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

5.7.3 Masculinity Index

At r = -.209, n = 9, and p = .589 (two tailed), no statistical significance was identified between safety participation and MAS. Furthermore, at p > .05, safety participation and MAS were not found to have a significant correlation, although a weak negative correlation was present. Meanwhile, at r = -.017, n = 9, and p = .966 (two tailed), no statistical significance was identified between safety compliance and MAS. Furthermore, at p > .05, safety compliance and MAS were not found to have a significant correlation, although a very weak negative correlation was present.

5.7.4 Uncertainty Avoidant Index

At r = -.183, n = 9, and p = .637 (two tailed), no statistical significance was identified between safety participation and UAI. Furthermore, at p > .05, safety participation and UAI were not found to have a significant correlation, although a very weak negative correlation was present. Meanwhile, at r = -.733, n = 9, and p = .025 (two tailed), statistical significance in the correlation between safety compliance and UAI was determined. Additionally, safety compliance and UAI were found to have a significant negative correlation. Overall, at p < .05, safety compliance and UAI were found to have a substantial and significant negative correlation.

5.7.5 Long Term Orientation Index

At r = .410, n = 9, and p = .273 (two tailed), no statistical significance was identified between safety participation and LTO. Furthermore, at p > .05, safety participation and LTO were not found to have a significant correlation, although a moderate positive correlation was present. Meanwhile, at r = -.167, n = 9, and p = .667 (two tailed), no statistical significance was identified between safety compliance and LTO. Furthermore, at p > .05, safety compliance and LTO were not found to have a significant correlation, although a very weak negative correlation was present.

5.7.6 Indulgent Versus Restraint Index

At r = -.377, n = 9, and p = .318 (two tailed), no statistical significance was identified between safety participation and IVR. Furthermore, at p > .05, safety participation and IVR were not found to have a significant correlation, although a weak negative

correlation was present. Meanwhile, at r = -.343, n = 9, and p = .366 (two tailed), no statistical significance was identified between safety compliance and IVR. Furthermore, at p > .05, safety compliance and IVR were not found to have a significant correlation, although a weak negative correlation was present.

The earlier parts of this section outlined how this study's hypotheses were formulated using the existing research, how the variables were analysed and supported by research. An evaluation of the correlation analysis findings and an appraisal of their application are discussed in the following section.

5.8 Discussion

This section concentrates on the correlations that were found to have statistical significance. Therefore, pertinent research will be used to discuss the correlations for H1, H4, and H7. Drawing on the national culture rating provided by VSM13, safety behaviour was identified as being connected to Hofstede's PDI, IDV and UAI. In particular, the following correlations were found: a substantial negative correlation between safety compliance and PDI and UAI; a strong negative correlation between safety participation and IDV.

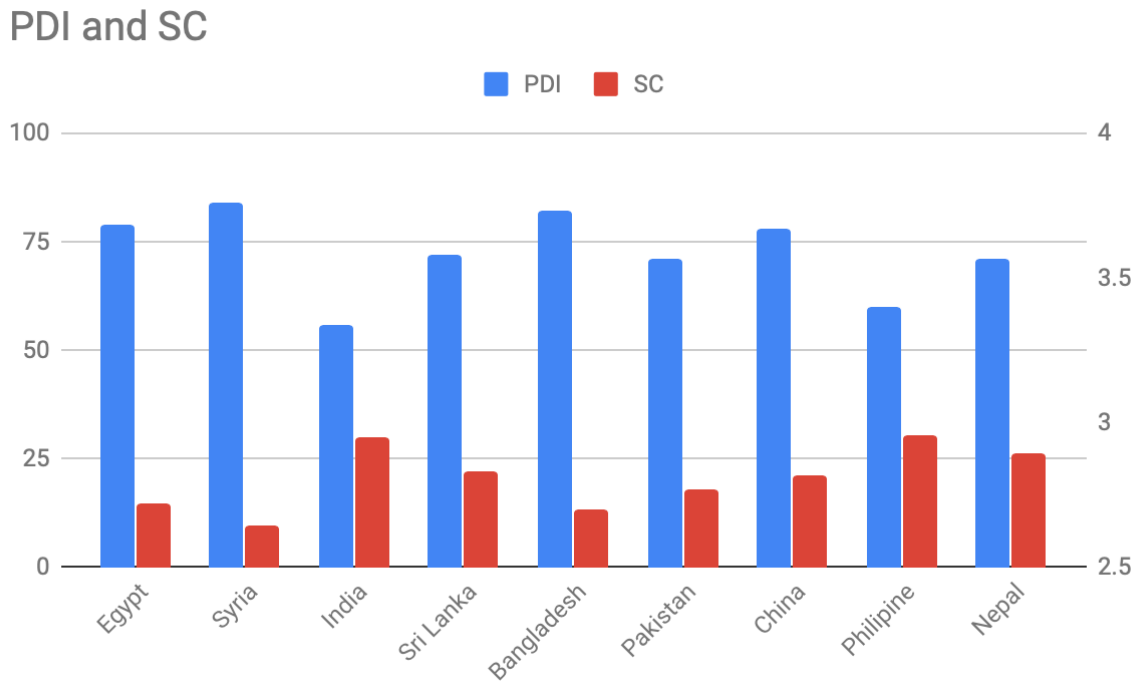

Figure 5.9: Power distance and safety compliance levels

Evidence for the effect of PDI variable and the formulated hypotheses was partly found. Safety compliance was found to have a significant correlation with PDI at a .01 degree of confidence, hence verifying H1, which predicted that safety compliance and the PDI scale would have a significant correlation. Regarding safety and power distance, a positive correlation has previously been evidenced by Okolie and Okoye (2012). Furthermore, decision mechanisms and formal rules are related to high PDI as it will undermines employees' confidence and prevents them from taking the initiative more (Aziz et al., 2008). It has been shown that workers originating from cultures with a higher PDI are more likely to follow and accept instructions from their superiors in the workplace. This is particularly critical where issues of safety at the workplace are involved. Finally, great tolerance of power inequity has been connected to cultures with large power distance among individuals. Consequently, society will be characterised by a great divide between those with limited and considerable power.

In conformity with the earlier analysis, the lowest level of safety compliance is shown by countries like Syria, Bangladesh, and Egypt. As discussed earlier, PDI is considered extremely important dimension for health and safety management. Employees who exhibit a propensity to prefer a high PDI environment typically favour a situation in which managers develop and communicate standardized rules and regulations about safety in line with the hierarchical structure. Specifically, employees who seek high PDI relationships operate under the understanding that the management holds full responsibility for all the decisions about workplace safety; they have no responsibility other than obeying rules. Organisations which encounter that type of employee system is able to figure out a more effective safety culture, with a system of strict safety rules and procedures, issuing top–to–bottom interaction and strict strictly supervising performance. Furthermore, Employees who favour low PDI structures seek an opportunity to take part in all health and safety management elements, share their opinions, provide suggestions, and have the opportunity to use their initiative to solve any safety problems they encounter. They recognise the importance of establishing and following safety rules and, because they have been involved in the development of safety mechanisms, they are more likely to comply with them.

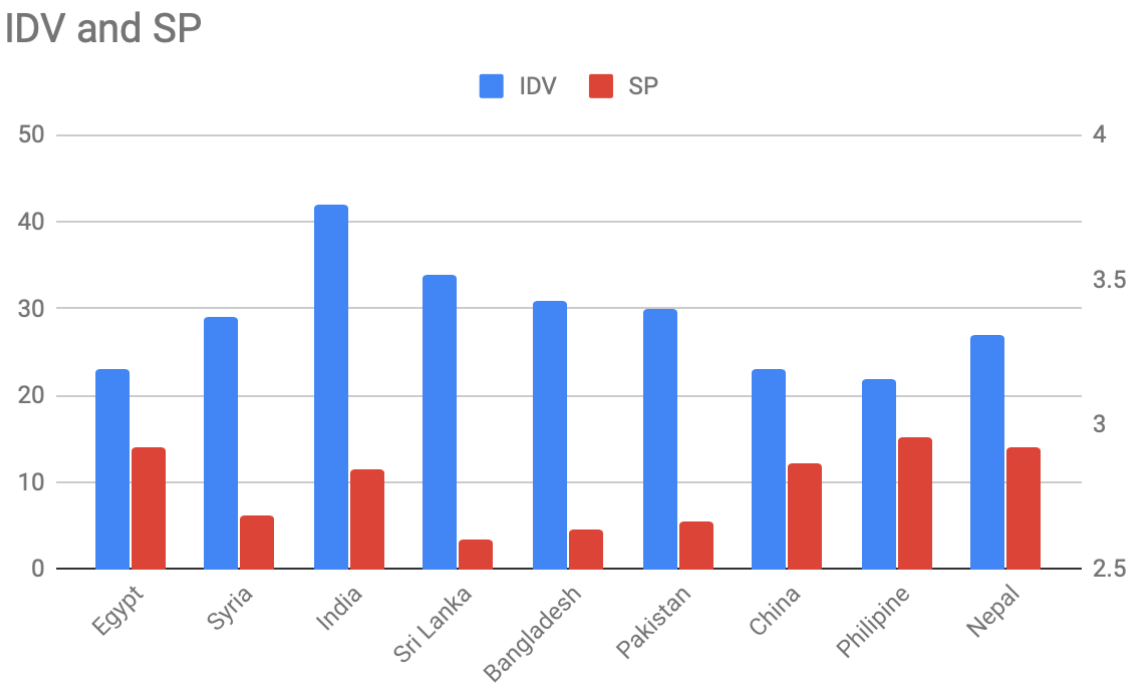

Figure 5.10: Individualism versus collectivism and safety participation levels

Evidence for the effect of IDV variable and the formulated hypotheses was partly found. Safety participation was found to have a significant negative correlation with IDV, while at a .01 degree of confidence, safety participation was also identified as negatively related to IDV, hence verifying H4, which predicted that safety participation and the IDV scale would have a significant correlation. Regarding safety and IDV, a negative correlation has previously been evidenced by Yayla-Kullu et al. (2015) and Mohamed et al. (2009).

All the nations considered for this study found to be collectivist societies. However, in low IDV cultures, people view themselves as being part of an extended family. They are close to their friends, relatives, and the other groups to which they belong and they hold the needs of these groups in higher regard than their individual needs (Hofstede et al., 2010). In their attempts to develop a solid safety culture, organisational management need to take to employees' cultural backgrounds (IDV) into consideration. Participative and empowering strategies need to be considered for people from individualistic societies; much more comprehensive personal safety trainings must be given; and security must be stressed as an individual responsibility. When dealing with collectivistic cultures, safety culture should be

generalized, and a focus should be placed on the development of a mutually valuable and helpful topic. Furthermore, health and safety management should be organised and structured in a way that takes into consideration the group norms and conducted in group settings.

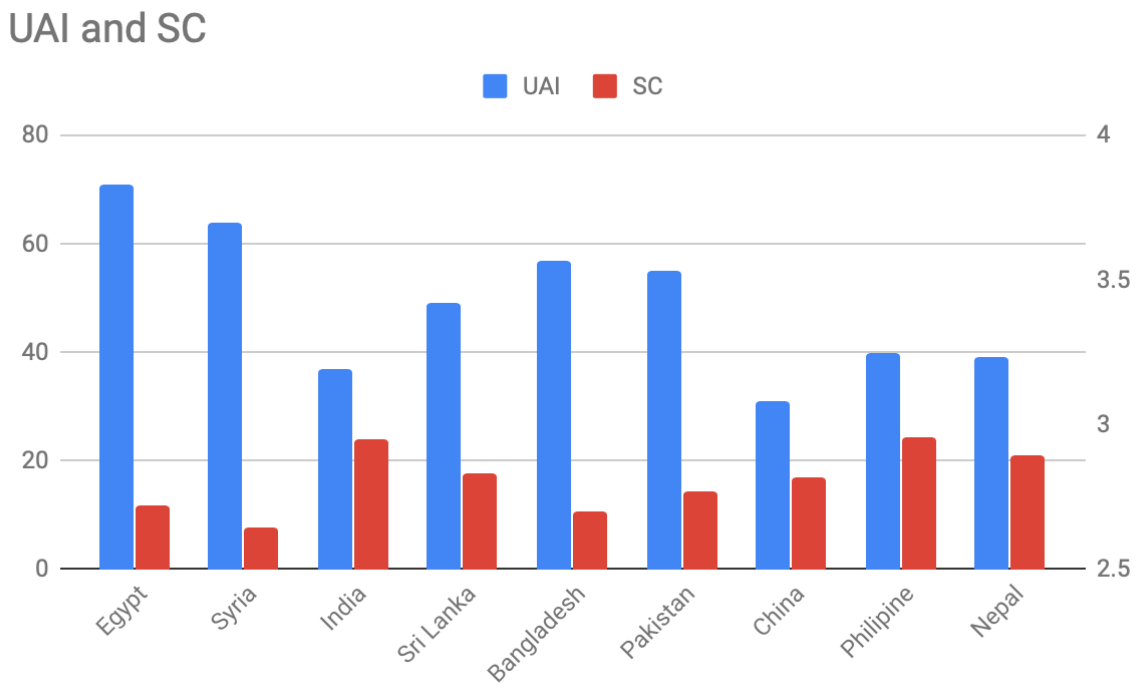

Figure 5.11: Uncertainty avoidance and safety compliance levels

Evidence for the effect of UAI variable and the formulated hypotheses was partly found. Safety compliance was found to have a significant negative correlation with UAI, while at a .05 degree of confidence, safety compliance was also identified as negatively related to UAI, hence verifying H7, which predicted that safety compliance and the UAI scale would have a significant correlation. Regarding safety and UAI, a positive correlation has previously been evidenced by Burke et al. (2008) and Okolie and Okoye (2012). A positive correlation has been found between UAI and likeliness of workers to comply with health and safety rules. However, it has also been found that workers from cultures with high UAI are likely to be less flexible, inventive and robust when they encounter new problems or emergency situations. Indeed, the literature have identified UAI and PDI as highly significant factors in the field of workplace safety. Similarly, Burke et al. (2008) commented that an advantage of workers in countries with a higher UAI is that they are more

acquiescent in following safety procedures in the workplace. However, it also leads to the unfortunate consequence of a lowered tolerance towards unexpected situations. In high UAI cultures, people follow more standard automation and operation procedures. However, this can be too rigid and may prevent employees from reactive effectively to any unexpected situations. According to Burke et al. (2008), the impact of safety training is much less in high UAI cultures since dependence upon standard methods could limit employees' adaptability to changing events.

5.9 Summary

In contrast to what was proposed by extant literature, this study found PDI and safety compliance levels to be negatively correlated. Results also indicate that nations with high UAI dimension have a comparatively lower rate of safety compliance. Furthermore, nations with low IDV dimension have a comparatively high rate of safety participation. Next chapter describes qualitative data collection and thematic analysis used in this research.

6.0 Qualitative Data Analysis

Safety in the construction industry in Kuwait is an area of concern. Many construction sites are populated by migrant labourers from Asia who have little or no safety training in and little protective equipment. The workers accept low-paying jobs in Kuwait because they would otherwise face worse poverty in their home countries. Many of these workers do not speak the local language and cannot read or write. Together these factors create an environment prone to workplace accidents.

To gain further information regarding safety in the Kuwaiti construction sector, a qualitative data study was performed. This study gathered information through documents analysis and personal interviews with 12 HSE engineers, consultants and specialists. The interviews were semi-structured: interviewees were asked a set of questions that would enable participants to supply answers containing wide-ranging information. These answers were then analysed and assigned codes according to the points made in the answers. The interviews were carried out face-to-face at times and locations chosen by the interviewees. This was done to ensure confidentiality and to enable participants to offer sensitive details, providing maximum insight into the health and safety situation at Kuwaiti building project sites.

By analysing the collected qualitative data, this chapter thoroughly examines the research problem to draw insights from real-world data regarding how practitioners in the construction industry view the industry's health and safety practices. Beginning with an overview of participant interviews to ascertain sample representativeness, the first half of this chapter provides a brief description of how data was collected through interviews, how the interviews were structured, and how they were transcribed. Finally, participants' perceptions of issues in construction concerning health and safety.

6.1 Research Design

This part of the research study employs an exploratory, qualitative approach to get a deep and broad understanding of the social constructs related to the safety culture and supplied extra data in this context. This research method, which enables researchers to ask questions that access participants' perceptions and experiences,

avoids the restrictions that accompany structured questionnaires and other more rigid data collection methods (Nicholson & Kiel, 2007). This approach is therefore flexible in tracking and collecting data on findings that may be unexpected, may contribute to a more holistic understanding of the investigated topic, and may uncover associations between concepts and behaviours or even generate a novel refining theory (Matthiesen & Binder, 2009). Another feature of this research method is that the researcher himself is actively involved in the study design and process (Creswell, 2014). This method presents challenges in that qualitative data is difficult to interpret or is susceptible to bias because observations, interviews, and focus groups are the most commonly used data collection methods (Matthiesen & Binder, 2009).

Within the field of qualitative health and safety research, semi-structured interviews are the most commonly used method of gathering data since they offer flexibility during data collection (Gubrium & Holstein, 2003; Love et al., 2002). This was, therefore, the method chosen for the current study. As noted by Gubrium and Holstein (2003), the semi-structured approach is useful for recording participants' insights and opinions of various subjects or concerns, which may be sensitive or difficult. Semi-structured interviews involve key questions designed to collect data related to fixed areas that are the main focus of the project's central subjects. However, as stated by Nicholson and Kiel (2007), respondents can often deviate from these chief themes within an interview, but they can also converse and widen their ideas and opinions on other issues and contribute to a more comprehensive understanding of subject matters. The flexibility of this method enables the researcher to collect more information, which may cover issues that are important to participants but may have been initially overlooked in the research design when ascertaining the important themes (Creswell, 2014). Semi-structured interviews[3] aid the discovery and the enhanced understanding of the views of contributors. This study has used semi-structured interviews as a method of data collection concerning construction safety practices within the workplace in the Kuwaiti oil and gas sector.

NVivo 11 was used to transcribe and analyse the data collected from the semi-structured interviews, allowing data to be organised, filtered, and, for key findings,

[3] Refer to Appendix III for a list of interview questions.

recognised. First, data coding was conducted. It was important that the data was inspected before the analysis because the inspection impacted the preliminary process. It was conducted independently on all data sources to ensure that the diverse nature of the interviews and that the responses collected did not distract from the research area and purpose of the study. Second, to enrich the study's reliability and validity, the methodological approach created a system of keywords designed to identify specific expressions, ideas, perceptions, themes, and subjects relating to the intentions and objectives of the study. Moreover, reader comprehension of primary findings was assisted by the format of the transcripts, which were organised and cropped for textual analysis.

6.2 Interviews Sampling

This research phase employed a form of non-probability sampling known as purposive sampling, where the author intentionally chooses examples that are relevant to the theme of the study and which can be expected to provide the most useful and interesting data (Saunders et al., 2015). The study thus chose participant interviews which provided ample data and aided in the understanding and strong conception of the areas of research (Nicholson & Kiel, 2007). Purposive sampling strategies also demand an inclusion criterion, which in this research was limited to safety engineers responsible for safety documents, projects safety team, safety trainees, and hygienist engineers. Before employing a purposive sampling approach, it is necessary to identify the factors that will be assessed and ensure that they represent a comprehensive model of the topic to be studied. Study examples are then selected using these factors. It is also possible to use different approaches for the sample selection, depending on the needs of the research study. For this study, a maximum variation sampling approach was chosen for each of the three target groups described above; this approach was selected in order to maximise the breadth and scope of the data that were collected (Saunders et al., 2015). Morse et al. (2002) influenced the study's qualitative choices regarding sample size and provided values of totality to certify that the chosen sample was sufficiently representative of the environment and subjects concerned. Morse et al. (2002) explained that a sample may be considered to be adequate once the breadth and depth of the collected data is sufficient enough to validate (or otherwise) all of the potential categories identified for the study. In following Saunders et al. (2015)

suggestion, interviews were continually examined until the objectives of completeness and representation were fulfilled. Once information was obtained from the interviews, the overall sense of meaning for this idea, theme, and procedure and whether it adequately answered the research question was established. Then the completeness of the data could be achieved. Saturation was reached when the researcher was confident that any new data collected can be readily matched to the existing data categories and no new trends or categories can be determined. At that point, data categories can be said to be validated and well-established.

6.3 Ethical Approval

Before this field study and data collection process were approved, the companies being researched wanted assurance that the collected data and findings would be kept confidential and would neither publicly revealed nor published. These requests, made in various meetings with the companies, were assured by this study's researcher, who took measures to keep participants' personal and project-related information strictly confidential. The companies finally agreed to participate in this project and allowed the researcher to interview their employees. Confidentiality agreements were signed by the research supervisor, the researcher himself, and the involved Kuwait oil companies. Ethical approval was therefore sought before interviews were conducted,[4] and participation was voluntary. The twelve participants constituting the sample population were provided a description of the study's intention and procedure as well as the author's role and methodological process prior to their interviews. Each participant was offered the option to contact the researcher directly if desired and was given respect, time, and a number of opportunities to opt into or out of participation. Participants were made acutely aware that anonymity was guaranteed and that all data would be given in confidence. All collected information was therefore coded and anonymised, and the researcher and university supervision team had exclusive access to raw data.

Prior to gathering data, each respondent was asked to provide their informed consent. Before each interview, the interviewee was read the consent form, which explained the study process and the type and objectives of the study in a language that was comprehensible to the interviewee; the participant's consent to proceed

[4] Refer to Appendix I for copies of the ethics approval.

was then obtained.[5] Engagement in research has been emphasised as being completely voluntary. Furthermore, the decision to withdraw from research at any stage has also been stressed, especially if a participant's ongoing engagement would pose risks to their welfare. Whilst interviews were recorded with a digital tape recorder, interview content was transcribed such that conversations contributed to the study objectives but were not associated with a specific participant; these were also later coded. Participants were aware that their interviews would be taped, although they were informed that they could opt out of being recorded. Finally, the participants knew that, whilst quotes from their interviews would be used anonymously in this study.

6.4 Conducting the Interviews

Interviews were conducted at the study site's work offices, which were both convenient and private. Interviews were anticipated to last between thirty and sixty minutes depending on how much detail participants offered in their responses. More general questions were asked at the beginning of each interview, while they gradually became more specific and were linked to the research issues and literature;[6] this method has been suggested to allow participants to more closely focus on each question's essential points (Polit & Beck 2018; Bradley et al., 2007). The researcher debriefed each participant after his/her interview.

At each stage of the data collection and analysis process, the researcher collected notes in a reflective journal. These notes were then applied in the analysis. In terms of interview structure, the researcher first introduced himself then defined the study's aims and objectives, explained each component of the interview process, and addressed issues of consent by confirming that all participants understood what the consent form was, explaining it before potential participants agreed to and signed it. The official language of the Kuwaiti oil and gas sector is English, so this was the language used in the interviews. During the interviews, stimuli (prompts and probes) were used to inspire the participants to offer more information on an idea they had revealed or a subject they were discussing. Three participants asked to have the interview in their first language (Arabic), and these interviews were

[5] Refer to Appendix V for the participant consent form.
[6] Refer to Appendix III for a list of interview questions.

subsequently translated into English at a later stage. Any issues discussed within the interview were then revisited by the researcher to ensure that there was a clear understanding of the views offered by the participant. This helped guarantee the research data held a greater level of precision and thoroughness.

6.4.1 Participant Demographics

The twelve participants who volunteered to participate in this study originated from a number of diverse cultures and backgrounds. All participants belonged to the construction industry but held different titles, including Senior Safety Engineer, Senior Specialist in Health and Safety, Safety Engineer, Health and Safety Training Engineer, Industrial Hygienist, and Health and Safety Senior Specialist. Participants' professions and years of experience differed (see Table 6.1); one had five years' experience, eight had worked between ten and sixteen years, while the remaining participants had more than twenty years of experience. All participants seemed openly enthusiastic about the opportunity to express their views on safety and discuss potential solutions to current issues and concerns related to worker safety, which they were comfortable discussing. Whilst participants held some shared perceptions, each offered unique insights and data.

Table 6.1: Participant Demographics

ID	Position	Gender	Nationality	Experience
P1	Senior Safety Engineer	Male	India	15
P2	Senior Specialist in Health and Safety	Male	India	16
P3	Safety Engineer	Male	Sri Lanka	12
P4	Safety Engineer	Male	Philippines	25
P5	Health and Safety Training Engineer	Male	India	13
P6	Industrial Hygienist	Male	India	28
P7	Safety Engineer	Male	Sri Lanka	12
P8	Health and Safety Senior Specialist	Male	India	16
P9	Safety Engineer	Male	India	20
P10	Industrial Hygienist	Female	Kuwait	5
P11	Senior Safety Engineer	Male	Kuwait	10
P12	Senior Safety Engineer	Male	Kuwait	12

Four main themes arose from the interview transcriptions, and the following table (Table 6.2) summarises these themes as well as the sub-themes and main issues. Via a thematic analysis that generated an understanding of the interviews, each question and interview were analysed separately. Once interviews were transcribed,

they were repeatedly read to generate a code system that represented ideas relevant to each question, thus allowing that the researcher form themes or similar answers provided by various participants. Data coded to each theme—that is, demographic information such as age, position, work experience, and education—is outlined in Table 6.1 and provides context for the interview data. Participant IDs, which are provided alongside this data, serve as the identifiers used for quotes included in the data analysis. This information aided the researcher in determining whether or not certain demographic groups hold any specific concerns, such as problems related to specific projects or cultural factors that may influence the safety performance of projects.

6.5 Interviews Analysis

Data collection and qualitative analysis are carried out in conjunction with one another because the analysis commences whilst the data is being gathered. According to Pope and Mays (2006) and Bowen (2008), this facilitates timely amendments to research strategies and interview questions, thereby enabling more effective ongoing data collection, although several analytic stages can be noted for these interviews. In the first phase, interview data was transcribed and compared to the original recordings to assure accuracy and allow the researcher to become familiar with the data to more comprehensively understand the participants' key arguments. This phase was also the first opportunity to outline potential themes arising from the data set. According to Bradley et al. (2007), coding can be inductive, deductive or integrated as a combination of the two. This study employed an inductive approach in which the codes were primarily determined by the data. The relation between data collection and analysis in qualitative research can be demonstrated by analytic induction (Braun and Clarke, 2006). During the coding stage, the subjects that occurred most frequently during the interviews—either prompted by the participants directly or due to the expansion of their ideas and understandings—were noted.

Pope and Mays (2006) define open coding as the inspection of data to classify core notions. This method was used during the initial coding stage of the current study, where all potential codes were established. As new theories appeared, they were allocated codes, and the data underwent a detailed review. Although data was

persistently reviewed and new themes coded, a second analysis was created to perfect the codes in order so enhance their appropriateness for the statistics (Bradley et al., 2007). Moreover, in vivo coding was utilised abundantly so that the words of the participants themselves developed into the codes (Corbin & Strauss, 2015).

The most suitable framework for this study is thematic analysis because this procedure develops a theme in participant data by reading and rereading transcribed interview data (Braun & Clarke, 2006). With this approach, the researcher identifies a principle, repeated or significant concerns, key ideas, and assumptions from the data set (Creswell, 2014). The program used in this study, NVivo 11, supports this analytic approach and possesses features that ease the analytic process, such as a single storage place, data accessibility, and enhanced analysis stability.

The framework for qualitatively analysing our interview data is therefore rooted in thematic analysis and further adopted the six-step approach developed by Braun and Clarke (2006) to capture essential insights about the data that both relate to the research aim and organise a coherent understanding of the data. The step-by-step data analysis, characterised by a thematic approach, was structured as follows.

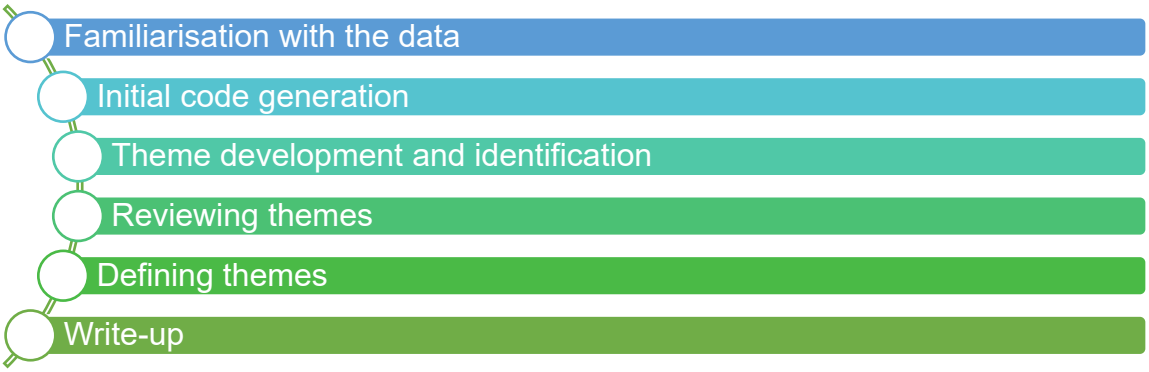

Figure 6.1: Stages in Thematic analysis (Source: Braun & Clarke, 2006)

Step 1: Familiarisation with the data. The data collected from twelve interviews was transcribed verbatim from audio recordings into text documents and then uploaded to NVivo 11, an electronic data management system. To enable familiarisation and immersion with the data set, the researcher organised and listened to the recordings repeatedly as well as read the transcripts multiple times to

guarantee a genuine understanding of the interviews' meanings and ensure data accuracy.

Step 2: Initial code generation. Once the researcher was familiar with and had produced an initial list of observations about the themes and noteworthy aspects of the data, a set of codes was invented from the interviews to distinguish the raw data. NVivo 11's data management features were applied to implement a coding system.

Step 3: Theme development and identification. Once all raw data was transcribed, coded, and organised, resulting in a list of codes that were recognised in the data set, this step re-emphasised the analysis of broad themes. The researcher thus looked at the initial themes that arose in step one and gathered similar coded data from step two to identify any new themes that arose therein. This step therefore constituted a code analysis process in which the researcher analysed whether and how diversely codes were gathered into a primary theme. In cases when codes were irrelevant to any themes, generating a miscellaneous theme and placing any outlying codes into that category was conventional (Braun & Clarke, 2006).

Step 4: Reviewing themes. A two-stage revision of the themes was undertaken. The first revision aimed to refine the coded data, which entailed reading quotations assigned for each theme and assuring they had a logical form. If quotations seemed to contradict or fail to suit the theme, the researcher determined whether the theme was inappropriate or whether the mismatched quote was not suited to that theme category. In these cases, the researcher revised the theme, produced a different theme, re-allocated the quotation to a different theme, or excluded the theme from the analysis. The second revision recognised each theme's validity in relation to the data set to determine whether or not the provisional thematic map accurately represented meanings apparent in the data set. This was a challenging process, as it was difficult to identify a finishing point and not simply endlessly re-code and reclassify themes (Braun & Clarke, 2006). With no guidelines for completing this step, when modifications were no longer significant, the researcher stopped reviewing themes. Thus, this step ended with the researcher having a strong, comprehensive understanding of what each theme meant and how

the themes related to one another as well as a holistic overview of the data's shape and content.

Step 5: Defining themes. Once a satisfactory thematic plan was determined for the data set, this step was a more nuanced process of defining and refining themes by identifying and naming them. These definitions and names represented the essence of each theme and determined the data characteristics each theme reflected. A comprehensive analysis outlining what the themes articulated was written for each theme. The researcher produced overall themes and broader insights into groups of themes to look at how they mapped onto the research aim and objectives. This step functioned to provide names and a final, brief descriptive analysis that directly offered a logical sense of what each theme meant.

Step 6: Write-up. Once themes were completed in their entirety, they were presented alongside subthemes that met the research aim and objectives for the final research report's write-up. This research report's thematic analysis was intended to inform and convince readers about the data's origins and the validity of the presented analysis and findings. To do so, the report delivered both data content and participant quotations alongside critical descriptions that provide context and support for the insights and findings the researcher drew from the data. Thus, the report was not merely an explanation for the data, but was additionally a supporting argument for the research aim and objectives.

6.6 Findings

The researcher maintained the transcripts' integrity in their original form by not correcting any spoken errors made by participants who did not speak English fluently, thus their original meanings were preserved. When quotations were used to support themes of findings, they were presented in their original format alongside added punctuation marks for smoother readability. Irrelevant sections that were removed are indicated by […]. Data consistency is therefore assured while only the necessary quotations for this study's findings and main aims are provided. Table 6.2 summarises the interview's findings.

Table 6.2: Interview findings.

Themes	Subthemes	Frequency
Insufficient budgets	Incompetent workforce	17
	Illiteracy	16
	Poor safety facilities	8
	Inadequate resources	7
	Lack of safety gear	6
Safety culture	Management's commitment	23
	Communication	18
	Training/information	12
	Employee involvement	6
	Compliance with procedures	7
Work pressure	High turnover	7
	Tight schedule	12
	Large number of workers	8
	Working hours	9
National culture		6

6.6.1 Insufficient Budgets

Interviewees complained that the tendering process in the construction industry encouraged cheap bids, since it seemed that the lowest bid usually won the contract, whatever the level of value offered in the bid. Acceptance of a bid at the lowest price then led to bidders cutting costs as much as possible to meet the production requirements and deadlines; safety was often sacrificed. Cost-cutting has led to too few workers, pieces of equipment and tools. Equipment supplied has been of poor quality. In this context, interviewee P2 specified that, "*There are company's good companies and they have very good system, if go to their worksite you see that they are very well established systems but we have select the cheaper way because he has to make the money, and if you make the money somebody have to save it, the save from the Manpower the save from the food quality and the save from the accommodation, motivation is the problem they are not motivated for safety*".

In more detail, interviewee P4 highlighted the selection of the lowest bidder effects and mentioned that, "*Yes, there is a large effect of the selection of the lowest bidder. Sometimes the standard of the company's HSE qualifications and experience is not established, and the company cannot enforce safety measures.*" In this context, interviewee P3 specified that, the selection of the lowest bidder

resulted in compromise in the quality of the materials and the workforce, thus affecting safety. "*So if you select lowest bidder we will get the services also affecting the service also will be poor, if there is a proper contractor and they get the good company it will improve actually this is affecting HSE performance.*"

6.6.1.1 Incompetent Workforce

Meanwhile, interviewee P11 It was reported that contractors need to employ a competent workforce: "*O*ne *of the issues that we have is the quality of manpower. If you want to bring in quality manpower, it is very costly … but you want to bring in a more well-trained and skilled workforce.*" In the same regard, another point of view shared by interviewee P3 who stated that when the skill of a workforce is compromised, the quality of the work is also at risk. "*They need to compromise on that. When you are compromising only your skill force you are risking your work.*" In this regard, Interviewee P7 added that "*They want to do cost-cutting, so because of that I can say they just get unqualified people as a result and it result into accident actually.*"

The respondents reported that the quality of the workforce competency and the skill of the workforce was poor. For instance, one interviewee P9 stated that, "*The main factors are the skill and competence of the supervisors and the workers. The competency is low, and they also have very poor supervision.*" The workers were not highly experienced and did not have sufficient experience to handle required tasks. Interviewee P4 described that, "*Another thing is that they don't have the qualified employees. Let's say, for example, they don't have qualified engineers, and they don't have qualified mechanics and technicians.*"

Additionally, interviewee P8 stressed the key role that experienced contractors played regarding occupational health and safety, by saying that, "*There are a lot of things to work out with the contractors because sometimes we are not getting highly qualified contractors.*" (P8). Having unqualified contractors meant that these contractors were not able to effectively guide their employees on safety issues.

6.6.1.2 Illiteracy

Insufficient safety budgets also introduced illiterate people into the workforce. Meanwhile, interviewee P8 shed some light on illiteracy level "*The majority of the workers are illiterate; I am talking at the labourer level, the majority of the people are illiterate.*" Illiterate workers thus could not follow written safety procedures. They had to be trained and given verbal examination, adding an extra cost for the contractor. In the same context, interviewee P7 pointed out that, "*A person who is not educated and who does not know how to read and write—we will start giving them verbal examinations. We provide the training, and, for example, I cannot know all of the languages spoken by the workers, even though I know six languages. Now I have assistance.*" In a similar vein, P10 revealed that, "*The most important thing I think that affects the performance of safety is the language where the majority does not speak English and does not know any language that betrayed his mother tongue besides there are many illiterate workers."*

Also, due to lack of sufficient funds, contractors brought in cheaper labourers who did not have the necessary skills. In the same context, interviewee P6 pointed out to the impact of insufficient funds by saying that, "*So naturally you bring in a cheap labourer, train him for ten days and make him a welder. Naturally, he will not know the basics and will be experienced in safety matters*."

6.6.1.3 Poor Safety Facilities

Contractors did not have enough finances to build safety facilities to the required standards. For instance, P3 stated that, "*Facilities provided by contract management are not very geared towards safety; they are not spending on safety—their spending is minimal. So, if they have like budget and competent people and supervision, this could be much improved.*" In more detail, interviewee P5 mentioned that, "*Lack of knowledge about the subject and again another point which is very important welfare facilities to the lower-level employees, that is not always considered anywhere. For example, the people are staying in very small places and the food and accommodation facilities are not good. So, when they are not having comfortable life in the camp or where they are staying … so that would be possibility reflecting here and as I've told you demotivation*" (P5).

6.6.1.4 Inadequate Resources

Five interviewees also commented that companies in the building industry did not set aside funding for safety or offer resources for workers to undertake projects safely. Cost-cutting as one of the factors affecting safety performance, as, for example P2 who stated that, "*They view safety as secondary and not as a part of the job, and that requires frequent follow-up. This is what I feel, but there could be some other factors.*" It was reported that contractors opted for methods that would cost less, even if they were not effective. In this context, interviewee P3 specified that, "*The other issue that we have come to know is common is that much of the time, contract management itself is looking for cost-cutting measures. They view safety as secondary and not as a part of the job.*"

Respondents said that sufficient resources should be provided, including training and safety wear. In this regard, P9 stated that "*They should provide the resources to the workers, according to standard specifications or whatever it should be that the company should do to ensure they procure the correct PPEs. They should also provide proper training and certification for the workers and the supervisors.*"

6.6.1.5 Lack of Safety Gear

Workers reported not having the required safety wear. Interviewee P5 revealed that "*We know that some of the safety shoes are not to our standard. But we see them on site, and I don't know who permitted it*." While interviewee P10 indicated that, this situation occurred because the contractors had not provided the correct protective wear. "*They do not provide the necessary clothing for workers. Some workers wear disposable clothing more than seventy times. When asked why, one replied that other options were not offered to him.*"

6.6.2 Safety Culture

Interviewee P7 stressed the key role that top management played regarding the company's safety culture, by saying that, "*The safety culture can come only when the top management, and not only they are taking everything for low cost. So they want to compromise on so many things, they want to compromise on even small, small things and that's … that's the main issue.*"

Nine interviewees pointed out that a culture of safety on a construction project not only led to improved accident figures and working practices but also resulted in a better product. The respondents added that the majority of the workforce did not consider safety culture to be a priority. Interviewee P10 revealed that, "*Some people believe in high-level safety culture and are looking to improve safety on sites, but unfortunately they are the minority.*" Most of the participants reported having to be pushed to practice safety in the workplace, as, for example P7 who stated that, "*When the companies won't give me an infringement of the company, we used to get scared of them because even though it was 50 KD but now it has increased to 1000 KD, but still those guys are not worrying. In certain companies the safety culture is not there so then okay you take, the company is ready to pay the money you do a violation the management is saying you do violation I will pay 1000 KD the safety culture is not there*".

6.6.2.1 Management's Commitment

Indeed, nine interviewees considered devotion to safety at the management level to be the key to the implementation of safety policies and ensuring workers viewed safety as a high priority. Such a safe working climate would then permeate all aspects of the project. Companies that took safety seriously would also offer safety training and equipment, as well as monitor safety results. Six interviewees reported that a disinterest in safety among managers also led to the opposite—a climate in which safety was disregarded and accident figures rose.

Respondents said that for workers to maintain the highest levels of safety, there was a need for strict supervision. In this context, interviewee P7 specified that, "*I am not saying that the workers do not maintain safety standards, but that we have to keep after them to ensure that they do. Instead, we should be leading them. If there is one very good supervisor, if the job supervisor for that particular group of people is very good, then life is so easy*". This would ensure that all safety regulations were followed.

Over the last five years, the respondents had witnessed the suspension of contractors who were not compliant with safety requirements on site. Interviewee P4 reported that, "*So that's why some contractors are being suspended even without*

warning". An independent department was established to review and monitor contractors. In more detail, interviewee P4 mentioned that, "*Yes, this is being maintained, and they are suspending contractors based on the contractors' previous performances. They are terminating the contracts, and once they are terminated, the contractors can't engage in contracts for perhaps the next three to five years. During the evaluation, we are present*".

Additionally, interviewee P2 revealed that "*Actually, nobody wants to be hurt if I am working and you are working, nobody wants to be killed or harm injured. The thing is that his supervisor I will not put myself in trouble, I could not utilise that this was going to happen, and this is going to fall on me*". The respondents noticed that contractors were covering up incidents and that investigations were not being done properly. Moreover, P6 pointed that, "*We've come across situations where a project management consultant has hidden an incident, and we have also come across situations where the report of the investigation is not done properly*". This meant that there were numerous hidden incidents that safety officers were not privy to.

At the construction sites, there were numerous near-misses, but the reporting of near-misses was abysmal. Interestingly, interviewee P11 revealed that "*What is the benefit if I report near-miss which is nothing resulted, there is no harm due to near miss so why should I worry about it, kind of least bothering of the near-misses? But for the accident of course it is comparatively good because we have a statistics and we see that it is reduced over the years*". Likewise, interviewee P6 declared that, "*most importantly what we observe is they don't report; the contractors don't report many of the times we observe that contractors don't report. And we've come across situations that a project manager consultant has hidden incidence, and we have also come across situations that the investigations report is not done properly. So these are all we can say the tip of the ice break. That means there are so many hidden things which we as company management may not come across all of these things*" (P6). P3 stated the same by saying that, "*Here we have come across situation that people cover up accidents people cover up loss work day cases, they convert it into medical treatment cases and that's what I said I mean these type of things will not help in any way*."

Weak or uncommitted leadership regarding health and safety also led to fears that speaking out would bring recriminations from managers or other workers. Improved systems for the reporting of concerns or complaints were required, as interviewees stated that often accidents or near-misses were not reported, and that when workers had raised concerns they had in some cases been threatened with loss of their positions or been moved to jobs in inconvenient locations. Interviewees felt that this sort of blame culture was worse in situations in which relations between the on-site workers and the managers based in off-site offices were unsatisfactory. Such workers on the ground felt aggrieved that their managers did not understand the difficulties they faced day to day. Indeed, some interviewees stated that they had witnessed the under-reporting of accidents and near-misses on sites where they had worked and that this was because workers had suffered recriminations when they had previously reported safety concerns.

6.6.2.2 Communication

The respondents reported that workers from different cultures used different languages. This meant that there was no common language to be used by the employees. In a similar vein, P1 revealed that, "*The drawback is the language barrier. If you worked with Chinese employees—most of them, they could not speak English, only Chinese*". Interviewee P1 agreed with this adding that, "*Sometimes in some of the major incidents language is one of the barriers. The supervisor is telling something to his laborers but both of them are from a different nationality, so the worker won't be able to understand what the supervisor is telling to them. So that is one of the problems on the worksites.*" The possibility of accidents and incidents of miscommunication was reported. In this regard, Interviewee P8 added that, "*I think what affects the performance of safety is when the majority of the employees do not speak English and do not know any language other than their mother tongue*".

Poor communication was reported as another aspect of poor management. Some employees believed that all communication travelled in only one direction, from managers to workers, with no chance for the workers to provide feedback to the top-level employees, who might resent safety instructions as something for which they see no need. For instance, interviewee P4 described the communication in construction work sites: "*Communication from the manager down to the senior*

engineer is excellent, because if you will communicate to them actions is being taken, but the communication from senior engineer down there is a big problem - I observe this because I am a safety man I always go in the field … The dissemination of information and communication, HSE communication that are from the bosses to the subordinates communicating to them what are the hazards involved in their job, and what are the precautions they have to take and whenever they encounter such situations they should not have to proceed with that, without the supervisors being informed". Interviewee P7 agreed with this: "*We are having a difficulty communicating down the line. Okay to the top management and the middle management we are able to communicate very well, but ultimately the workers who are working on site*".

Communication was another key factor affecting levels of safety on site. The presence of many nationalities of labourers who spoke several different languages led to challenges in the communication of messages regarding the work required, which then affected safety. Any safety posters or meetings required time and resources to prepare multiple translations, and not all languages could be addressed. Posters and information also frequently did not take into account the limited literacy levels of the workers. Managers relied heavily on some workers who could act as interpreters to other labourers, but senior staff could not be sure what was being said or in what manner. Health and safety advisors noted that the ability to translate accurately varied among these go-between workers, leading to further concerns regarding the messages received by the labourers.

The respondents also reported that the language barrier affected safety it the workplace. In this regard, Interviewee P8 indicated that, "*The main lacking factor that we are observing on the construction sites is the language barrier*". Workers could not communicate effectively with each other. For example, one worker could say something, and their colleague would understand it differently. Communication difficulties and differences in native culture could easily lead to an environment of misunderstandings, as well as some prejudices between managers and workers; this, in turn, then could frequently lead to the development of a blame culture. Managers have blamed labourers for mistakes and interpreters for translating false messages, and a lack of trust has been evident. Workers reported being afraid to speak out regarding safety issues, and middle managers being afraid of information

reaching their superiors. This mistrust and fear have led, in some cases, to the removal of workers to other jobs, inferior positions or placement on standby. Interviewees reported increasing levels of administration, as companies have introduced ineffective measures, such as forms to be filled out to act as a record of an incident or discussion; however, a lack of drive to correct the problems was also reported. Workers also reported splitting across ethnic lines into adversarial groups. Furthermore, health and safety staff noted that under-reporting or misreporting of accidents has led to an inability to learn from mistakes and therefore improve site safety. Moreover, P1 pointed to the vital role of a good communication system: "*To avoid those things, we should have a good communication system*".

6.6.2.3 Training/Information

It was observed that some employees attended safety-training workshops only to get certificates. For instance, one interviewee P10 stated that, "*The staff attends, but I do not know if they understand what was explained or not, where they are interested only to prove the presence so as not to fall on the contractor's responsibility not to attend his workers for training. Only to obtain a document confirming the attendance of the training course, so that we do not know if the present worker is illiterate or educated, as he is here to sit in the room only*". Some contractors registered foreign workers in courses in Arabic, but there was a lack of interest in contractor training courses on safety. Many employees were interested in the certificate of attendance only. Interviewee P10 clarified that, "*So that some contractors register foreign workers in courses in Arabic and this proves the lack of interest of contractors training courses on safety and what is interested in the certificate Attendance only.*"

Furthermore, P10 stated that, "*I do not know if they understand what was explained or not when they are interested only in proving their presence so that it does not fall on the contractor that employees did not attend training*". Which led to a lack of safety policy and awareness. For instance, interviewee P6 revealed that "*maybe a lack of awareness in projects in construction projects they suddenly bring new people … They come to Kuwait and immediately people are brought to sites they don't get adequate training and acclimatization, it's not that far the … requirements*

that could be one factor and the other factor could be completion of project under time".

In addition, the respondents said that majority of the workforce did not understand occupational health and safety: "*Lack of knowledge about the subject—this point is very important for the welfare facilities for the lower-level employees, which is not always considered.*" As well, supervisors were not interested in employee safety nor knowledgeable about the existing risks. Interviewee P5 stated that, "*We don't give the training to lower-level people, we are giving the contractors key persons, like engineers or safety representatives, so they are professionals so their cooperation is well, and we monitor the talk given by that contractors with the employees, it is good but how much knowledge they are observing that is up to the work behaviour by the people actually. So that is solely given by the contractor supervisor to that lower-level employees*". In this regard, Interviewee P3 added that, "*The training sessions is open to all, but the low-level workers are not attending actually the workers are giving training in their site as well the supervisors engineers and the person's they are attending … it should be the company to procure the PPE's and they give proper training like certified trainings for the workers and the supervisors - especially for the scaffolding, gas testing confined space and working at height"*.

6.6.2.4 Employee Involvement

Nevertheless, a lack of proper advocacy for safety at the construction sites was also reported, as, for example P6 stated that, "*a lack of awareness in projects in construction projects they suddenly bring people*". The stakeholders were not doing enough to educate the workforce on safety and the importance of embracing safety culture in the workplace.

Interviewees also cautioned against ill-thought-out health and safety policies. They reported experiences of companies in which health and safety guidelines had been introduced, and managers had attempted to enforce new rules rigorously. This may have been well intentioned and led to reductions in the number of accidents reported; however, on-site workers regarded these new systems as attempts to police them, since there had been little discussion with workers before the rules were simply imposed on them. This led to further grievances. Workers felt removed

from decision-making and complained that their independence to complete work efficiently had been curtailed. Incident under-reporting flourished as workers feared reprisal under the new scheme if they offered information. Workers also considered the new safety equipment and rules to be difficult to use or follow and complained that they had been introduced by management with little knowledge of site conditions. The result was that safety was not improved.

At the construction sites, there were numerous near-misses, but the reporting of near-misses was abysmal. In this regard, P3 stated that, "*They don't report the near-misses through the proper system because of the fear of the superintendent of the contract or the client. They don't report these near-misses, which is frustrating, as these cases will not be included in the picture of the statistics*". Contractors feared that if they reported such incidents, they would be under constant scrutiny that may cause the cancellation of their contracts.

6.6.2.5 Compliance with Procedures

Meanwhile, interviewee P5shed some light on safety *compliance:* "*The accident happened due to non-compliance as I say for practices or other HSE procedures …"*. In addition, different cultures introduced employees who could not comply with safety requirements. In this regard, P8 stated that "*Okay, to be frank, like the Arabs and Egyptians, they will not comply with the safety standards and they don't even bother to comply with the procedures. That is the main thing*". Some of the employees came from cultures where they were not used to following safety procedures. In the same context, another respondent P7 indicates that, "*The Egyptian guys always wear this ghutra. I give him a helmet, and he puts on a ghutra and then puts on a helmet, which ultimately means the helmet is not useful. I go to a site, and I can pull all of the ghutra and load them into my car and go*".

Employees were reported as having poor compliance to safety rules, for example P4 stated that, "*They are very poor in terms of compliance. … has an excellent safety document, and because we are implementing KPC standards, we have put in place safe working environments. All companies are adopting this one. This morning I attended a committee about improving the technical contractor and vendor management standards*".

Some employees reported having not adhered to safety procedures because they did not have proper awareness of safety issues. In the same context, interviewee P6 stated that, "*Previously, the employees did not have much awareness about the behavioural and HSE cultural issues. Now this has been improved by continuous education and monitoring by the safety engineers and the management. This has considerably improved overall safety, which is reflected in HSE performance, including reduction in accident rates*". Likewise, interviewee P7 declared that, "*And these guys are working on buildings outside, you will see the scaffolding outside of the refinery and it's very dangerous, they think that yeah I have work there and I have been living until now. So why are you asking me to work on a scaffolding with a tall board or with braces or anything. They just stand on a single plank*".

Respondents said that they noticed some commitment from the contractors to practice and maintain safety, as, for example P6 who stated that, "*Contractors safety performance in my opinion to a great extent yes I would say that they follow lots of … procedure with great difficulty of course, but they try to comply with most of our procedures. So the intention is that I would say about 60 to 70% in my opinion they do cover the requirements …*". Contractors showed some willingness to maintain safety in the workplace.

Another main factor identified, by interviewee P8, was the deviation from the procedures and standards: "*Many of the contractors do not have any robust procedures, and they don't follow the company guidelines and procedures*". So, they were failing to comply with actual procedures and guidelines and standards. Workers did not maintain high levels of safety when they took shortcuts. Interviewee P6 stated that, "*I won't say they maintain the highest level of safety; sometimes they do take shortcuts, which is well known.*" Furthermore, interviewee P8 reported that, "*Even in the summertime - I can tell you even in the summertime they are considering deadlines so they are forcing employees to work - what their perspective is since sunlight is not directly affecting they can work … fatalities in the last 2 years. All of these incidents happened the main root cause of everything leads to deviating from the procedure and not following - following shortcuts. These are the main things that we can tell with the aspect to the comment on the construction safety performance*".

6.6.3 Work Pressure

6.6.3.1 High Turnover

The high turnover of labourers could lead to gaps in worker groups and the loss of valuable experience and knowledge. There was also a lack of permanency in terms of the contractor staff. Bringing in new staff so often has meant that there has been no consistency in the acquisition of safety skills. In a similar vein, P6 revealed that, "*Lack of permanency in terms of the contractor staff. I am talking about frequent turnover of the contractor staff resulting in experienced personnel being lost and a wave of new people coming. It takes time for the new employees to get acclimated to the requirements, and they are under time pressure on the job by the time they do understand. That is one major issue*".

Employing permanent staff would also improve safety performance. Interviewee P9 clarified that, "*It is effective but the recorded time frame employee turnover you know you doesn't see the same person after, once the civil comes he goes and then the mechanical team will come, and then the electoral and the instruments will come, and then commissioning well come. So the fluctuation or we can say the turnover of employees considering all of these, if you have a permanent Manpower like in maintenance they have a service contractor. For five years, they will keep the same manpower, as it is easier to implement*". Having permanent workers meant that there was consistency in instilling safety practices in the workers. The workers would then value the company as their own and would not worry about where they would get their next job.

In addition, interviewee P9 explained that, "*This country has been forced to mobilize Maybe more than 50,000 new workers. So that place alone when you have a manpower available for the oil and gas construction sector, where the turnover is really less - the level of Maintenance of the safety performance would be rather easy. When you have more turnover like all of a sudden this much number is being mobilized. You are really handicapped in sensing or evaluating the safety Behaviour or whatever your previous questions of within. Once they get mobilized immediately they are Maybe - gradually not immediately gradually with their activities they are directly getting more into physical activities on-site. Gradually there are other things*

they are getting like the resident is getting permit, and all of a sudden they are being sent to site".

6.6.3.2 Tight Schedule

Under time pressure, workers were more focused on production than safety. For instance, P8 stated that, "*as far as safe people or where it is concerned they are focusing more on the progress rather than safety. They are compromising too much on safety; their only intention is the progress. That is what is currently happening on construction sites*". Workers were concerned about working faster to gain overtime, in total disregard of their safety. In this context, interviewee P5 specified that, "*If the employee completes a job in two hours, I will give them five hours' overtime. So, what will happen is the employee will do the first job very quickly to get that five hours of overtime"*.

Interestingly, interviewee P10 revealed that, "*We do not take care of the safety conditions under the pressure of time and sometimes the time pressure is turned over to us as a supervisory body so that we can not detect their excesses ... it's clear I think there is currently pressure to complete the project as soon as possible … Especially now there is political pressure to finish the project*".

Furthermore, working under time pressure resulted in the bypassing of the HSE procedures and other safety practices, which obviously led to accidents: Interviewee P6 stated that, "*There are gaps that frequently occur, which are observed and pointed out. But regarding the question of working safely even under time pressure, I won't say it is 100% perfect. There are gaps in such situations. Under time pressure people do make mistakes or they far go certain safety rules and regulations for the sake of completions of jobs, or they fail to see maybe it is not an intentional fault, unintentionally they fail to see certain requirements to completed due to time pressure"*. Furthermore, interviewee P5 argued that, "*It may result in bypassing the HSE procedures and other safe practices, and obviously it may lead to accident actually and this is a culture existing in most of the places Kuwait.*"

In addition, the respondents said that workers failed to notice breaches in safety procedures, thus causing unintentional faults. Interviewee P6 revealed that, "*They*

fail to see something, and maybe it is not intentional; unintentionally, they fail to see that certain safety requirements are completed due to time pressure." This may be because some contractors do not comply with health and safety regulations designed to protect the health and safety of workers because they are more focused on completion dates and profits. This has led to serious accidents caused by employees working beyond their abilities or in unsafe conditions. Many workers have been seriously injured and even killed in such events. There have also been countless near-misses caused by the same neglect.

6.6.3.3 Large Number of Workers

It was argued that that incident rates were high because of the large number of workers making it difficult to audit or monitor each of them. In a similar vein, P10 revealed that, "*The size of the project, which requires a large number of workers and it is difficult to audit all the workers in terms of experience or scientific certificates are conducted and some optional interviews of workers and those who are not covered. For example, I believe that some of the certificates submitted are incorrect. Some workers are farmers in a construction project*". Interviewee P2 stated that, "*If you go there you can imagine that 90,000 people are working every time and maybe around 40 or 50,000 is staying in North Kuwait, 40,000 traveling daily from here to North Kuwait*". Moreover, P12 argued that, "*Since the last 20 years the charts have been higher, even though there are so many deviations but still, and then a lot of people are very too much inside of the refinery currently. Contractor and employees are more than 70000 people, it's a huge number*". Likewise, interviewee P9 declared that, "*This country has been forced to mobilize Maybe more than 50,000 new workers. So that place alone when you have a manpower available for the oil and gas construction sector, where the turnover is really less - the level of Maintenance of the safety performance would be rather easy. When you have more turnover like all of a sudden this much number is being mobilized. You are really handicapped in sensing or evaluating the safety Behaviour or whatever your previous questions of within.*"

6.6.3.4 Working Hours

Interviewees discussed commercial pressures and customer requirements. Safety was said to be compromised by the need to complete work quickly. Tight deadline demands, often a result of insufficient planning at early stages, led to workers extending their working hours each day. Long hours, poor work-life balance due to long periods away from home and client insistence frequently led to safety shortcuts. Senior managers reported a sense of increasing demands from customers, and on-site employees in particular admitted that they knew safety was compromised through shortcuts. Some employees had to travel through the night to reach work at their designated start time. These factors all contributed to tired employees taking shortcuts affecting safety. Finally, working at night also affected safety. In most of the cases reported, the working environment was not well lit, so workers were not able to see properly. In addition, workers were fatigued at night and thus not able to perform well. For instance, interviewee P2 revealed that, "*I tell my teams who want to work during the night—I say don't work at night; the people are tired, they don't want to discuss anything and they are busy with work … So I say, no, don't work at night*".

Finally, the respondents recommended that workers were supposed to take breaks between working hours, as, for example P8 who stated that, "*I will recommend that here at the construction site, the working hours— contractors aren't following the working hours. Ten to twelve hours—they are forcing their employees to work ten to twelve hours without a break.*" Taking adequate breaks would keep employees refreshed and invigorated. In this context, interviewee P2 specified that, "*although sometimes you will feel petty in the way that they are working in this harsh weather and weather conditions and the dust and they have to work so the way they are working is not equal into the physical effort … the working hours sometimes they work 28 days, 90 days and 28 days, 90 days' work and then 28 days and 4 weeks leave 90 days 3 months' work. Sometime his replacement is not coming so the company is not releasing him. But I will ask him why are you working in this situation and he is answering all of that time thinking about my family - why I am not gone for the last 6 months because of my replacement*".

6.6.4 National Culture

Interviewee P1 stated that, "*It affects positive and as well as negative, so we have some advantages and as well as some disadvantages. The advantages are having multi-nationalities, so you will get different methodologies and strategies followed by different companies and different countries like that. So that is a positive advantage because you are getting the sharing of knowledge from the Multicultural companies, so that is the main plus point ... And it will give you balance to Workforce to have the nationalities that's the major advantage. The drawback is the language barrier that is some of the barrier*".

It was reported that having different cultures was reported to lead to disjointed working and safety styles. Interviewee P6 stated that, "*The perception of safety differs from culture to culture, so it affects a lot. These employees work in different industries in Kuwait. For example, there could be a contracting company who supplies employees to … or maybe is working on some projects in ...*". Interviewee P6 stated that, in some cultures, it was reported, safety was not considered to be a big issue, by saying that, "*They don't even view something as a safety violation or a safety infringement for if it's a part of their daily life. But for some, these are very serious issues*". In this context, interviewee P3 specified that, "*It does not fully affect the performance, but some point like some aspects like the language and their working style and their safety behaviours, it changes with their Multicultural Workforce*".

Interviewee P8 reported that, "*Okay, to be frank, like the Arabs and Egyptians, they will not comply with the safety standards and they don't even bother to comply with the procedures. That is the main thing*". Interviewee P9 agreed with this and revealed that, "*Pretty much, in the sense people you know comes from various background various part of work. And even from the same part of the world or from the same country it's from various cultural behaviours you can say. And all of this reflects in the mental activity on site, so some have been brought up in a safe mind-set basically. For some of them they found the safety to be a really fresh topic, so it's a mixture of many so it is a challenge in fact*".

Finally, the issue of trust among people of different cultures was mentioned by interview P4: "*Sometimes this will affect the commitment of the employees, because if you are the minority—I will take as an example the Filipino minority and the Indian majority—sometimes there are issues, even though the workers are good for the company.*" Mistrust among people of different cultures was noted as affecting performance.

6.7 Interviews Discussion

The analysis of the answers to the questions posed in the interviews highlighted the following areas: insufficient budgets; safety culture; work pressure; and national culture. Management's role and commitment to safety were emphasised with regard to safety outcomes. Several points were gleaned from the interviews and from background research. Workers often do not appreciate the risks to which they are exposed, and measures to boost safety awareness, such as health and safety posters, have no impact on those to whom they are directed.

A few of those interviewed expressed their view of the Kuwaiti government as having played a prominent role in the maintenance of health and safety within the construction industry. It was proposed that laws should be put in place by the government to ensure health and safety is compulsory both on construction sites and in the practice of procurement. Whilst these laws and policies should be constructed, they also need to be enforced by the government via operational means of enforcement and observation. Feng (2013) and Feng et al. (2014) stated that both the safety procedures put in place by a company and the backing of the government via regulations are connected to the frequency of workplace accidents. Like the interviewees, the literature also demonstrates that the government can be central in the prevention of accidents and other work-related illnesses by using a number of mechanisms to uphold, establish and implement health and safety requirements, since it is the chief proprietor, legislator, regulator and buyer of construction works (Hausken & Zhuang, 2016).

The lack of awareness of risks was shown to lead to flippant attitudes towards safety measures and the under-reporting of accidents and near-misses. Therefore, available figures from within the industry regarding accidents are unreliable. Many

researchers have studied under-reporting, including Leigh et al. (2004) and Reason (1997). The latest data available at the time of this study, produced by Probst and Estrada in 2010, indicated that more than seventy percent of accidents were not reported. Research by several groups, such as Dejoy et al. (2004) and Probst and Brubaker (2001) have also supported interviewees' assertions that workers do not report accidents for fear of recriminations.

The analysis of the answers given by interviewees showed that safety training for construction workers, either regarding safety equipment or safe working conditions, was rudimentary or non-existent. Therefore, the wearing of protective equipment was hardly done. Safety incentive programmes, in which employees are rewarded for meeting safety goals, are rare in the Kuwaiti construction industry. Safety policies are often not enforced or are applied inconsistently. Allied to training is the use of PPE, which again is rare in Kuwait. Workers are not aware of it, and even the wearing of helmets is rare. Even where PPE is supplied, workers often have not used it properly. Workers have argued that they dislike wearing PPE, as it is uncomfortable. This indicates poor safety management with weak commitment to the enforcement of safe working practices.

It is crucial that construction companies ensure that their workforces have the skills and equipment to perform their jobs well. All interested parties should employ or help all involved at the site to be competent and confident in undertaking necessary job requirements. Large number of construction employees in Kuwait are illiterate or lack the necessary skills to do their jobs, and this also can be applied on a global level. Most construction workers do not necessarily speak the language of the country in which they are working, so it is essential that training be provided to work around these cultural language barriers. A greater emphasis needs to be placed on training for machinery operators. Small and medium-size enterprises also should become part of a wider health and safety community that gives them access to specialised trainers and advisers. Implementing this would mean regularly testing and assessing the level of understanding among workers, who should not be allowed to work unless they pass the appropriate tests.

Inspectors visit companies to ascertain the safety procedures they have in place. However, Al-Humaidi and Tan (2010), reported that such inspections were often

undertaken by engineers employed by the company owner and were thus not independent. Inspections conducted every six months and yearly inspections have indicated that rather than aiming to minimise the occurrence of accidents, the industry was focusing on ensuring it had obtained insurance policies that would compensate workers and their families in the case of accidents. Safety procedures were minimal and were put in place only for substantial operations. In contrast, little was offered to employees in the way of training or compulsory requirements regarding the use of safety equipment.

The analysis of the interviews indicated that there was disagreement among the participants regarding their knowledge of the risks associated with their jobs, and most were unaware of the procedures to follow if the worst-case scenario happened. It was clear from various answers that employees were forced to complete work quickly and without consideration for safety. This was also noticed by McAleenan and McAleenan (2017), who stated that deadlines and time pressure subliminally negate the safety priority message and the efforts to achieve safety. Many workers had little awareness of the safety risks, and efforts to educate them via the use of posters or training sessions were minimal.

Many jobs within construction are short-term, and workers are required to work at several sites at once, often travelling long distances between them. This and the lack of job security lead to a high turnover of labourers in this sector. At each site, workers must learn on the job, with no training or indication of the dangers they may face and no induction for new entrants into the construction sector. These factors all increase the chance of workers being involved in accidents.

Even the hot weather in the Kuwaiti summer has an effect on safety. Workers can become unfocused and even fatigue, particularly given the long working hours imposed by managers who are keen to exploit the dry conditions. Bad winter weather can hold up work, and companies seize on summer conditions to try to catch up on what is seen as lost time.

6.7.1 Insufficient Budgets

There was an appreciation that the projects were under pressure to produce—this was a factor that researchers had associated to accidents (see for example Choudhry & Fang (2008); Hinze, 1997; Goldenhar et al., 2003; Mohamed, 2002). The results underlined how the supervisors of the jobs considered the work plan too tight and the budget insufficient and that risks were undertaken to complete the project in less time. Several participants indicated that, for the most part, the lowest bid will be awarded the construction work, but this does not always translate to optimum value. This research supported the notion that cost and safety are closely related and that budget reductions result in having to manage issues of additional safety risk, including serious pressures in production, cheap instruments and tools, cheap migrant labour that exacerbates communication difficulties, and safety equipment of poor quality. The main concern of contractors was keeping costs to a minimum, and safety was regarded as a waste of money. Larger companies tended to have more sophisticated knowledge regarding safety programmes that improve productivity and prove to be cost-effective. They took such costs into account more often than small and medium-sized businesses with limited budgets.

In a similar vein, any budget set aside for safety considerations was intended to cover insurance costs. Contractors did not include the cost of safety measures when they tendered for projects, as these were considered too expensive. The main concern of contractors was keeping costs to a minimum, and safety was regarded as a waste of money. However, large companies often held more sophisticated knowledge regarding the advantages of safety programmes that could improve productivity and thereby prove cost-effective, and hence they took such costs into account more often than small and medium-sized businesses that had small budgets.

It takes both time and money to ensure that a workforce is trained and supervised adequately in the adoption of workplace health and safety practices. This covers an array of activities, most of which must be accountable. Leaders and managers should understand the techniques involved and ensure that machinery operators are exceptionally well-trained, that any project plans incorporate health and safety plans and that workers are recognised and rewarded for following safe working

practices. Feng et al. (2014) suggested that companies should set investments of their annual revenue toward implementing a comprehensive health and safety plan. These costs should be viewed as essential expenditures for running the business, especially considering the cost implications should an accident take place on site. Hallowell (2011) noted that costs from workplace site accidents can comprise 15% of a construction project's total costs.

6.7.2 Safety Culture

6.7.2.1 Management's Commitment

Management's commitment to prioritising safety is pivotal, as it bears responsibility for employees' safety at work (Mearns & Yule 2009; Vinodkumar & Bhasi, 2010). Mohamed (2002) advised that management commitment emphasises the seriousness with which the organisation takes safety issues, evidenced by the support given to the implementation of safety projects and programmes. This commitment to safety can be seen when management takes a proactive approach to the identification and controlling of hazards that are likely to cause accidents. Mearns and Yule (2009) has suggested that employees are more likely to take safety seriously when they perceive that it is an organisational priority. Such an approach can therefore lead to the reduction of accidents and injury rates within an organisation.

Laharnar et al. (2013) argued that supervisors are the conduit through which management becomes aware of problems, concerns and demands, while they must also be fully involved in the implementation of new safety instructions or plans. In addition, supervisors have the most direct contact with workers and are therefore more able to influence and motivate their behaviour. Zohar and Luria's (2003) safety leadership research has suggested that implementing safety initiatives via supervisors is more effective than communicating this directly to workers, and Probst and Estrada (2010) stressed the importance of safety instructions from supervisors within the construction industry. As supervisors are privy to day-to-day feedback from workers about both positives and problems, they are ideally positioned to implement excellent safety leadership.

There was compelling evidence revealed by the current study about the positive impact that safety leadership among management has on employees' safety behaviour. This supports the findings of Zohar (2000) regarding the way that more frequent management-subordinate safety interactions positively influence safety performance. In addition, the present study's findings indicated that front-line managers were the most influential element within the construction sector. HSE (2003) has argued that it is as yet unclear which managerial level has the greatest impact on employee safety behaviour, although it has been theorised that this has a domino effect from senior managers through to middle managers, who then influence front-line managers who influence employee behaviour. This was supported by the results of the present study, which indicated that managerial influence seems to increase with closer proximity to the labourers especially who came from high PDI cultures. The present study's findings also revealed a positive relationship between management commitment and safety behaviour, which was consistent with the results of previous research by Keffane (2014), Mearns and Yule (2009) and Vinodkumar and Bhasi (2010).

The attitude of management towards safety can be seen as paramount in the delivery of safe working environments in the construction industry. There have been many research studies, including those by Choudhry et al. (2007) and Morrow et al. (2014), have noted that safety culture and other variables serve to influence safety performance. indicating that when a safety culture and a strong supportive climate are established in a company, the number and severity of accidents is reduced, especially in the oil and gas sector. If safety is valued, other concerns, such as the quick completion of work, must take second place; furthermore, fewer accidents boost worker productivity and therefore improve the end results in terms of profit and quality. Monitoring with safety in mind has been shown to prevent accidents. However, there has been little monitoring of workers in the Kuwaiti construction industry, wherein groups of inexperienced and untrained labourers are often left to find ways to complete tasks on their own. The importance of leadership for successful occupational health and safety has been emphasised by related studies such as Mearns and Yule (2009) and Guldenmund et al. (2013), signifying that the whole management tier must demonstrate commitment and clearly articulate and show that they prioritise occupational health and safety. To this end, management must invest time and effort while also undertaking the formulation of cohesive

occupational health and safety norms and standards and the implementation of correct safety behaviour by labourers.

The oil and gas industry is a specific area of concern regarding safety. The work is more complicated than that usually involved in simple construction projects and requires technical skill. This means that any changes required in working practices are usually introduced by managers, and if management is weak, workers may not be properly informed of necessary changes to their activities. Supervisors must be firm and well-trained to ensure that they act quickly to prevent unsafe practices and act on information to improve the situation for the future. Feng et al. (2014) have been among the researchers who found that companies that assigned a high priority to safety improved their safety statistics and that short-term monetary goals could be achieved while safety was also given top priority. Good monitoring systems that reacted quickly to reports of near-misses could prevent more serious issues from occurring later.

6.7.2.2 Communication

This study's results have demonstrated that safety training, communication has a positive coloration with safety performance. This outcome can be related to previous studies, such as Zohar (2002), which found that safety communication was predictive of safety at work; whereas Cooper and Phillips (2004) research indicated that views regarding the significance of safety training were prognostic of authentic levels of safety behaviour. Unexpected injuries can result from inadequate communication about safety hazards and injury prevention measures, while poor safety communication has been identified as a common issue in construction companies. This may necessitate additional training for supervisors in safety leadership skills, as communication about safety among construction workers is essential to achieving effective safety management. Hallowell and Javernick-Will (2013) has indicated that safety communication is an effective way of improving organisations' safety performance. Safety communication should be a two-way process according to Vinodkumar and Bhasi (2010), who have argued that a top-down approach is less effective than one that involves feedback from employees to management. Employees can play a vital role in suggesting improvements to processes that could make the working environment safer.

To reduce the likelihood of injuries and avoid exposure to hazards, Albert and Hallowell (2017) has advised that construction workplaces need a successful safely communication procedure. A significant amount of research has examined the necessity of this communication within high-risk work environments. For instance, workplace safety along with the significance of safety communications between workers and their supervisors, was researched by Zohar (2003), while Alsamadani, Hallowell and Javernick-Will (2013) considered the benefits of safety communication between workers. Several of the studies in this area have proven that the sharing of safety information is promoted by good safety communication, which, in turn, translates into positive safety behaviours, including better recognition of dangers like exposure to energised equipment and tripping hazards. Albert and Hallowell (2017) also revealed that safety communication improves compliance with safety measures, such as the use of regulated PPE, as well as improves safety participation, wherein employees may discuss safety challenges with their supervisors. Furthermore, Cheng, Leu, Lin and Fan (2010) demonstrated a negative and statistically significant relationship between workplace injury rates and the effective exchange of safety information, including safety-management practices and safety hazards.

Both Keffane (2014) and Rozenbojm, Nichol, Spielmann and Holness (2015) have argued that studies in several industries and across many countries have substantiated the importance of safety communication and its connotations with workplace safety. Scholars have related safety communication having a positive correlation with safety performance (Ali et al., 2009), organisational safety practices (Flin et al., 2000; Zohar, 1980), safety participation (Neal et al., 2000) and safety compliance (Vinodkumar & Bhasi, 2010). This range of information and research supporting the value of safety communication means that it can be seen as a leading indicator of accidents and injuries and thus reveal a significant information for understanding safety behaviour among employees.

When organisations seek to deliver messages, communication is key, and organisations should consider a range of methods to disseminate the information to employees, particularly as two-way communication has been seen to facilitate behavioural change. Vinodkumar and Bhasi (2010) have advised that poor safety communication in an organisation will not help improve safety in the workplace,

while communication about safety issues between management, supervisors and workers can effectively improve workplace safety. Several other scholars have included safety communication as an important factor in questionnaire surveys among various categories of workers. The research results from, Cox and Cheyne (2000) and Mearns et al. (2003) have demonstrated that an association's level of communication influences the outcome of safety performance. Pandit, Albert, Patil and Al-Bayati (2019) similarly observed that open communication was strongly associated with high safety performance. Furthermore, advised that an organisation's safety programme should comprise information on issues including new regulations and unsafe conditions, as well as safety promotions and events. It can therefore be seen that effective communication is essential in order to make the appropriate information available to managers and workers alike and to support site safety programmes more broadly.

6.7.2.3 Training/Information

In this study safety training for construction workers on both the use of safety equipment and on safe working conditions was rudimentary or non-existent; the use of protective equipment was barely evident. Safety policies were often not enforced or applied inconsistently. Workers often argued that they dislike wearing personal protective equipment, as it is uncomfortable. This indicates poor safety management with a weak commitment to enforcing safe working practices. There were discrepancies among the participants as to their knowledge of the risks associated with their jobs. Most were unaware of the proper procedures for confronting worst-case scenarios. It was clear from various answers that employees were expected to complete their work quickly despite safety considerations. Many workers had little awareness of the safety risks, and efforts to educate them through the use of posters or training sessions were minimal. While teamwork and discussions within the team were stressed, communication problems associated with professional, cultural, and rank differences arose among the various levels of experienced construction personnel. The majority of issues mentioned were linked to language and cultural difficulties amongst the workers.

Safety training has a vital role in promoting safety behaviours among employees has been extensively documented by scholars, including Díaz-Cabrera (2007), who

has said that employees can learn about the prominence of following company safety rules and processes by completing staff safety training. Meanwhile, Cooper (2000) has suggested that safety training is frequently the means to organisational accident prevention and control. Vinodkumar and Bhasi (2010) have advised that the success of health and safety programmes can be attributed to effective safety training. This is because training leads to improvements in knowledge, behavioural skills and attitudes, as well as enabling the prevention and avoidance of accidents.

Several scholars have considered the vital role that safety training plays in improving safety performance in the construction industry (Cooper, 2009; Hamid et al., 2019), while Namian, Albert, Zuluaga and Jaselskis (2016) have identified that site safety performance can be greatly improved by the effective training of construction workers. In general, accidents such as construction workers falling from buildings or being hit by falling materials, may be particularly ameliorated by adequate training programmes (Hamid et al., 2019). Cooper (2009) have supported this view, pointing out that training enables workers to perform their jobs better and more safely by improving their competencies.

6.7.3 Work Pressure

The construction industry is characterised by contracts that each have their own deadlines and budgets, creating a pressurised environment that is mirrored by employees' own concerns and may create either fatigue among workers or a culture where work is rushed. These factors can lead to construction site hazards being forgotten or devalued and human factors that contribute to elevated injury rates.

The pressure brought on by production scheduling was noted on every level and resulted in increased risk-taking in striving to meet deadlines. The supervisors admitted that the schedule was too short and confirmed the practice of risk-taking. Turnover was high on the project, which was attributed to poor pay levels. Many jobs in construction are short-term, and workers find it necessary to work at several sites at once, often travelling long distances between them. This and the lack of job security lead to a high turnover of labourers in this sector. At each site, workers must learn on the job, with no training or precautions about the dangers they may face, and no induction for new entrants into the construction sector. These factors

all increase the chance of workers being involved in accidents. Even the hot weather in the Kuwaiti summer has an effect on safety. Workers can become unfocused and even fatigue, particularly given the long working hours imposed by managers who are keen to exploit the dry conditions—bad winter weather can hold up work, and companies seize on summer conditions to try to make up lost time. These factors can lead to construction site hazards being overlooked or undervalued and contribute to elevated injury rates.

The view that a high-pressure work environment reduces the probability of employee involvement in safety behaviour is suggested by the results of the current study, which maintain the impression that work pressure and safety behaviour are negatively correlated. The results are in agreement with various studies, such as Clarke's (2006) finding that work pressure directly influences accident prevention. All companies should, therefore, advance and apply methods to abate employee pressure at work. Another study focussing on the UK offshore oil and gas industry workers also concluded that a high level of work production pressure felt by employees led to hazardous behaviour; these behaviours were less frequent when there was lower work pressure (Mearns, Flin, Gordon & Fleming, 2001).

High employee turnover in many construction companies has been reported as a result of fluctuating demand, meaning that many employees are often looking to move to other, competing firms. This high level of turnover means that it is often difficult for organisations to impart in-depth safety knowledge that goes beyond the mandatory minimum safety measures. However, the minimum occupational health and safety requirements are not adequate to offer workers proper protection, so construction safety managers should look to move beyond mere compliance. To get the most value for their money in terms of safety training, companies should seek to combine standard training with human-error-prevention training over a short period of time.

6.7.4 National Culture

Cultural values can affect workers' actions on construction sites, and workers with different cultural backgrounds may come into conflict, which can lead to unsafe behaviour. The use of migrant labourers is a key issue in the levels of safety

reached on Kuwaiti construction sites. Many fast-developing countries, such as Kuwait, rely on low-paid workers who travel to these countries where labouring jobs are plentiful, coming from poor homelands where work is scarce. These employees in Kuwait are mostly from South Asian nations. They leave their families behind while attempting to save money to offer them improved lives and bright futures in their home countries. They have no training or skills and sparse experience with construction, so they have little idea of ways to perform tasks safely. Their precarious employment position can also lead to anxiety and loss of concentration. In addition, because they cannot speak Arabic or English, which are the main languages of Kuwait, communication with managers is difficult. Differences in culture and work traditions can also lead to distant relations between those in charge and those on the ground. In the same vein, according to Al-Humaidi and Tan (2010), Kuwaiti law prohibits union membership for non-Kuwaiti citizens, so foreign labourers have no organised representation and no awareness of any rights they may have through government safety legislation. They thus have no option other than to follow the orders of their managers.

Development may be achieved by improving our understanding of the effect cultural values have on social associations at work, which can consequently influence an employee's readiness to inform supervisors of mistakes. This understanding may be gained within a construction business by instigating training schemes and team meetings. The findings of this study can be applied in the real world since they highlight the significance of the inclusion of culture in the implementation of existing safety management structures and practices. This is further supported by Starren et al. (2013), who stated that if a company aims to strengthen its work safety results, its efforts need to be more sufficient than the translation of pre-existing safety procedures. Principally, organisations need to finance training supervisors for employees to interconnect and inspire cultural groups. Mearns and Yule (2009) examined the varying effects national culture can have on safety and found that, with the purpose of guaranteeing greater safety for migrant employees, prior research should be used to enlighten safety practices. Additionally, companies must implement schemes that are specially designed for particular cultural groups.

6.7.4.1 Power Distance

Hofstede et al. (2010) stated that individuals from high PDI cultures are more likely to follow rules, as they are accustomed to an authoritarian culture; and Hannay (2009) and Mascarenhas et al. (2010) noted that these cultures incline towards acquiescence. It is therefore notable that high PDI inhibits free communication and also reduces the probability of non-compliance. Both Reason (1997) and Vinodkumar and Bhasi (2010) noted that open communication and compliance regarding rules and operating procedures are critical for the safety of frontline workers. Hofstede's (2010) suggestion about high PDI hampering two-way communication means that employees are frequently unwilling to question decisions made by their superiors. The same researcher also indicated that people from high PDI cultures have a tendency to rely on non-verbal cues or indirect hints for communication (Hofstede et al., 2010). Meanwhile, Mearns and Yule (2009) and Oswald et al. (2018) have suggested that those from high PDI cultures are likely to comply with instructions and procedures, as they value obedience. It may thus be inferred that cultures with a high PDI could have fewer injuries and less time lost to injury frequency as a result of their greater tendency to comply with rules and regulations. In contrast to the extant literature, this study found PDI and safety compliance levels to be negatively correlated (see section 5.7.1). This was attributed to management's lack of commitment to safety. Hofstede's (2010) observation about high PDI hampering two-way communication means that employees are frequently unwilling to question decisions made by their superiors.

6.7.4.2 Individualism and Collectivism

Individualism (IDV) is seen in societies where everyone expects only to look after themselves and their immediate families, while collectivism is characteristic of societies wherein people belong to cohesive groups that they remain loyal to throughout their lives (Hofstede et al., 2010). While IDV is an independent societal trait, it has a significant correlation to high PDI cultures, as they tend to be more collectivistic in nature (Hofstede et al., 2010). Hofstede (2011) also noted that collectivism generates obedience, conformance and cooperative communication, meaning that such cultures tend to value group goals over individual ones and are more likely to comply with rules that benefit the group or collective. It might therefore

be concluded that safety performance would be positively impacted by collectivist culture. Yayla-Kullu et al. (2015) and Mohamed et al. (2009) have suggested that the personal standards of people from collectivist societies are more influenced by their group's benchmarks, while Yayla-Kullu et al. (2015) advised that they are more likely to comply with behaviours that benefit the well-being of the entire group. According to Yayla-Kullu et al. (2015) and Mohamed et al. (2009), it might therefore be surmised that people from collectivist cultures will comply with safety requirements to a greater extent than those from individualist cultures. In cultures where individual benefits are prioritised over collective benefits, it could therefore be extrapolated that safety performance would be negatively affected. Accordingly, results indicate that nations with low IDV dimension have a comparatively high degree of safety compliance (see section 5.7.2).

6.7.4.3 Uncertainty Avoidance

Hofstede et al. (2010) considered a society's tolerance for ambiguity or uncertainty as manifested in uncertainty avoidance (UAI). Cultures with high UAI make great efforts to minimise the likelihood of unforeseen outcomes, as they are uncomfortable with such uncertainty (Burke et al., 2008; Mascarenhas et al., 2010). On the other hand, Burke et al. (2008) advised that people from low UAI cultures are more self-determining and thus more open to uncertain situations. High UAI societies are therefore more likely to comply with the rules that are created or imposed, and, if it relates to safety, to experience fewer losses. Okolie and Okoye (2012) contended that cultures with a high UAI would be expected to produce stricter and more thorough safety guidelines, thus having a positive effect on safety performance. On the other hand, high UAI cultures might also have overly structured decision-making environments that could mean people's responses in critical situations would be inflexible; this theory was supported by Burke et al.'s (2008) study, which implied that high UAI reduced the effectiveness of safety training in terms of reducing the occurrence of accidents. Results indicate that nations with a high UAI have a relatively lower rate of safety compliance (see section 5.7.4).

6.8 Document Analysis

The contractors of each participating company were provided with sets of guidelines regarding health and safety and the environment. These encompassed, among other elements, details of the following aspects:

- Applicable legislation and regulations
- Internal safety management standards
- Internal safety management systems, such as:
    - Policy and strategic objectives
    - Leadership, commitment, and accountability
    - Organisation
    - Training and resources
    - Risk assessment and management
    - HSE plans and practices
    - Implementation and monitoring
    - Ongoing evaluation and improvement
    - HSE personnel guidelines and qualifications

In this research, the primary focus of the organisational document analysis is the HSE guidelines for the contractors' documents that have been provided by the companies. The reason for this is that they detail the basic safety management elements in place at each company. The standard of the policies could provide some insight into the degree to which the management within the company prioritises safety. Overall, the content and structure of the policies were found to be highly comparable. Following analysis, five factors were identified as being the main elements of workers' safe behaviour and safe practices being maintained:

- Health, safety and environment plan
- Training and education
- Risk assessment and management
- Leadership, commitment, and accountability
- Welfare of Contractor Employees

6.8.1 Health, safety and environment plan

The policies entail specific requirements about, on the one hand, how the contractor can verify that the personnel and equipment employed meet the necessary standards of the HSEMS and the HSE objectives of the company, and on the other, how this will be conveyed to the contractor and subcontracted workers.
For instance, the participating companies' policies indicate that the HSE plan will detail the following elements.

- "*The contractor and subcontractor has an effective HSEMS applicable to the specific work contracted appropriate to the complexity and the phase of the contract*"
- "*Hazards and effects of, and to, the people, the environment, assets and reputation associated with the contracted work have been identified, assessed and controlled and recovery measures are in place when required*"
- "*The responsibilities for the execution and maintenance of all control and recovery measures relating to the contracted work are assigned to specific, named designated persons throughout the phases of contract*"
- "*Risks have been evaluated and measures taken to reduce the risks to a level that is 'As Low as Reasonably Practicable (ALARP)' and acceptable to the company*"
- "*The Contractor shall ensure compliance to all the applicable Company's HSE requirements, Kuwait's laws and regulations, and other International standards/ guidelines for safe working practices as stipulated in the contract documents*"
- "*The Contractor shall ensure all the equipment and tools utilized for the works/services are fit-for-purpose at all times, and, all critical equipment are tested and certified, as required*"
- "*The Contractor shall have a documented system for proposing and implementing changes to the equipment/ design/ procedures that also includes an effective way of communicating the changes*"
- "*The Contractor shall systematically report, follow-up and action recommendations from all accidents, incidents, near-misses and non-conformances in line with the Company's procedure as part of an ongoing improvement process and shall capture and use the lessons learnt for improving future performance*"

- "*The Contractor shall ensure that its employees understand the Company's emergency response plan and site-specific plans, and, open communications exist between the Contractor's personnel and the Company with respect to HSE.*"

6.8.2 Training and Education

Each company involved showed documentation that gives the specific requirements of safety and skills training and the education of management and employees. Again, the documents from the various companies are very alike in this regard. Safety training is obligatory for all management and technical staff. For instance, the policy provided declares that amongst other responsibilities, the contractor management is tasked with implementing practices and procedures and ensuring that every employee has a structured HSE and job competency training programme, which is discussed in detail below. Additionally, running the training facility falls under the remit of the contractor.

HSE training

The contractor must determine the training requirements for each craft or category, and subsequently create an HSE training matrix that is compatible with that of the company. The contractor's core personnel should take part in any relevant HSE training run by the HSE department where possible, and, upon completion, should then train the other employees. The contractor should ensure that all company training resources are utilised to their greatest possible extent, and that all facets of training are covered.

Technical training

The contractor is responsible for providing the necessary technical training to each employee, as stipulated by the contract, for each craft. Under this training programme, the employees of the contractor are trained in the following information:

- All technical elements related to carrying out the task and operating the equipment
- Any potential dangers
- The means of averting and managing these dangers

Certified training

With regards to employee category and/or craft, it is the responsibility of the contractor custodian department to determine and develop the appropriate Certified Training, which will subsequently be deployed to an approved third party or agency to provide to each employee.

This training is to be paid for by the contractor, and (s)he is required to keep documentation verifying this. This documentation must include the following items:

- Trainees' and instructors' names
- Details of the course content
- Date and time of the course

Intermittently, the contractors' effectiveness and records must be reviewed by the company in order to confirm that the required standards are being met, which are set by the Performance Standard for Evaluating the HSE Training Effectiveness.

- "*All personnel working in the contract at KOC facilities/ premises shall be aware of the KOC approved Contractor HSE plan, and, readily understand the hazards and risks involved as well as their associated controls and safeguards for the work they are assigned.*"
- "*All personnel working in the contract shall undergo an induction program prior to entering any of the Company's facilities/ premises. The Company will provide induction program only for the Contractor's/ subcontractors' key personnel, who in turn shall provide the induction program for all its other personnel.*"
- "*The Contractor shall employ qualified HSE professionals who shall be responsible for providing assurance of sound standards of HSE performance for the duration of the contract. The Contractor shall seek, where necessary, expert/ specialist advice from the Company or external Consultants.*"
- "*The Contractor shall provide appropriate training to its personnel responsible for the HSE management of the Contract and Site, such as HSE plan, Project HSE Reviews (PHSER), Risk Assessment studies, Job Safety Analysis, ISO 14001/OHSAS 18001, HSE Train-the-Trainer, Kuwait Regulations, etc..*"
- "*The Contractor shall ensure that all its personnel, including its subcontractors' personnel, are given HSE training and awareness program including first aid, CPR/AED, fire, Explosive Ordinance Disposal (EOD),*

defensive driving, etc. and the contractor shall submit a training matrix for all its personnel, in line with KOC procedure KOC.GE.028, for Company's approval prior to the start of site work."

- "*The Contractor shall have a system for the selection, placement and on-going training of its personnel to meet specified job requirements, and, to assess and provide feedback on their performance.*"

Whilst the number of training hours required of technical staff and management differs significantly, all policies stipulate that both must participate. For instance, based on information provided by one of the companies, each employee must undergo 10 hours of safety training annually, whereas the other document stated that management and engineers must commit to 30 hours. One similarity among all policies is that employees are not permitted to begin work without having passed the applicable training examinations. In terms of the workers, it is essential that skills and safety training is regularly provided, and this must be planned with consideration of the fluid nature of the construction environment, season, methods, and workers.

There are various forms of frequent safety education, including regular HSE meetings, *safety talks*, and *toolbox meetings*. The policies of all the participating companies include specifics about their HSE work meetings, which have strong parallels with one another. An overview of this is provided below.

"*On some HSE subjects, safety talks and toolbox meetings are the primary source of communicating safe work practices to Contractor and Subcontractor employees. Contractor should conduct the meeting daily, before work begins for the day or shift. It should be conducted for each craft by their supervisor at a predetermined place. Consideration should be in place to group the employees based on the language they understand (e.g. Arabic, English, Hindi, etc.). Contractor's higher site management and Safety Engineer shall demonstrate their support by attending these meetings periodically.*"

With regards to monthly and annual safety meetings, all of the policies stipulate that it is the responsibility of the contractor's site manager to arrange a minimum of one

safety meeting per month which includes representatives from each level of contractor employees. The following should be included in the agenda:

- HSE records and activities
- Statistics
- Incidents
- Personal protective equipment
- Any other safety concerns workers may have

The minutes of the meeting should be sent to both the company representative and the safety team leader.

6.8.3 Risk Evaluation and Management

The policies state that formal and informal HSE inspections and audits can be conducted by the company without any prior notice. The contractor must take part in these and comply with the findings to correct any issues that are uncovered. If requested by the company representative, the contractor must provide HSE documents and records, which, among other things, include:

- Work procedures
- Training records
- Performance records
- Environmental records
- Licenses
- Permits
- Registrations
- Compliance plans

For workers, job HSE inspections and audits are strong indicators that HSE issues are being adequately dealt with. Furthermore, they enable the identification of possible losses, and are a means of continuously monitoring the HSE programmes' effectiveness. As is the case with all HSE-related activities, the inspection and audit processes require definite objectives and clearly defined participants.

Safety inspection policies stress the need for cross-level inspections. For instance, one of the companies' policies stipulated that:

- "*The Contractor shall have a systematic documented process in place for identifying, assessing and categorizing the HSE aspects and hazards, their respective impacts and consequences, and the corresponding mitigation/ reduction/control measures. The risk assessments shall consider all physical, chemical, ergonomic and psychosocial/ organizational factors that could be detrimental to the health and performance of its personnel and the environment*"
- "*The Contractor shall establish a Personnel Health Program covering all its employees to demonstrate personnel engaged are healthy and fit for the respective work, which shall include pre-employment and periodical medical examinations (PME), work environment monitoring, personal monitoring, etc. as applicable to the scope of works/services*"
- "*The Contractor shall provide all necessary Personnel Protection Clothing and Equipment, as required by the risk assessment for their respective work assignments and in line with the applicable KOC procedure and standard, to all its personnel for the safe performance of all works/ services*"
- "*The Contractor shall conduct Project HSE Reviews (PHSER) at various phases of the Contract as may be required by the Contract and as outlined in the Company procedure*"
- "*The Contractor shall have a documented Environmental management program for monitoring discharges, minimizing environmental impacts and otherwise ensuring that all activities are carried out with due regard to the preservation of air, water, soil, animal and plant life*"
- "*The Contractor shall have a documented system for identifying, classifying, handling and disposing of wastes*"
- "*Contractor's Top Management shall conduct periodic HSE visibility audit at their worksites. An annual schedule of this HSE visibility audit shall be prepared and submitted along with their HSE Plans at the initiation of the contract. The audit reports and report on tracking to closure on the gaps identified during the audits shall be submitted to the Superintendent of Contract during their performance feedback.*"
- "*Contractor's Corporate Manager shall carry out an annual assessment of their site supervision's HSE Performance and provide a written report to the company representative.*"

- "*Contractor's Corporate Manager shall carry out 6-monthly audit on their Training Programme and activities and ensure that training quality and records meet company requirements and criteri*a.*"*
- "*Contractor's Job Managers (Site Engineer / Manager) shall make a safety audit of the work area at least once a week using an inspection guide.*"
- "*All Contractor's Safety Personnel, including designated Safety Representatives, shall make daily inspection of the work area. The inspection should be routine, planned, and designed to include communications with specific people in the work place, and not just a visual site visit.*"
- "*Contractor's Job Supervisors also shall make daily inspection of their work areas for the specific purpose of correcting unsafe acts or hazardous conditions and for proper storage & disposal of the waste.*"
- "*Contractor's Environment Engineer shall make daily inspection of the work area. The inspection must include communications with specific people in the work place, and not just a visual site visit. Also, ensure Environment Management System (EMS) is followed/practiced.*"

It is critical that the corrections are completed in full within the established timeframe. If a hazard is identified that could cause an accident or equipment damage, an immediate suspension of work can be ordered by the safety inspectors, and the work can only recommence upon their acceptance of the rectification results. Any violation or hazard must be immediately rectified at the point of identification. "*the company premises may stop CONTRACTOR's work which is considered hazardous (violates COMPANY, or other standards). Failure to comply with these Guidelines, or any action or inaction by the CONTRACTOR that causes or results in injury to personnel or damage to COMPANY equipment, may result in a) Completion of the work by a third party at CONTRACTOR's expense. b) Cancellation of the contract*."

All of the policies emphasise the necessity to vigilantly assess the inspection and audit results. Safety officers sum up the wisdom that can be garnered from previous errors and determine areas for increased focus. The cause of any degree of accident must be diligently investigated and reported in full detail. In the circumstance of a construction site accident in another location, safety officers must

thoroughly analyse the report in order to avoid a similar occurrence on their own sites.

6.8.4 Leadership, Commitment and Accountability

The contractor is obliged to definitively lay out the commitment and accountability for the roles that have been established.

- "*The responsibility for HSE shall lie with the line management and the top executives shall be personally involved in HSE management.*"
- "*The commitment to HSE shall be evident at all levels within the organization and the corporate culture shall ensure a positive attitude to HSE issues in line with KOC HSEMS Roles & Responsibilities Guide.*"
- "*The Contractor's HSEMS shall demonstrate, to the reasonable satisfaction of the Company, that the aims and objectives of its HSE policy are demonstrated through documented performance.*"
- "*The Contractor shall be accountable and ensure that all of its subcontractors comply with its HSEMS as approved by the Company and the Company's HSE requirement*s."

Safety rules about machinery and equipment are clearly stated in the policies, from purchase to repair and maintenance. The importance of using high quality and secure machinery and equipment is stressed. Moreover, the policies absolutely prohibit the purchase and/or rental of equipment and machinery that does not meet the national mandatory standards, is of low quality and poorly constructed, and does not come with a security guarantee. Should a fault of any kind be found with any item of machinery or equipment, it is immediately deemed unusable and must be repaired. The policies state that regular maintenance services must be carried out on all equipment and machinery as per the appropriate maintenance regulations.

6.8.5 Welfare of Contractor Employees

So, the policies provide details of the requirements related to the safety behaviours and attitudes of both employees and managers, as discussed above. Furthermore, they encompass requirements for other issues that are closely linked to construction

site safety maintenance, which are a component of the overall safety management system.

As per the policies, while the work is being carried out, the contractor is responsible for maintaining a certain level of tidiness on site, which entails ensuring that rubbish and excess materials do not build up. The company's Procedure for Solid Waste Management provides the contractor with guidelines for solid waste disposal. All debris, tools, consumable supplies and materials are cleared from the site once the work is completed. If, following due notice, the contractor does not maintain a reasonable standard of cleanliness and safety on the site, or adequately clean it after the work has completed, the company can carry out this work themselves and deduct the expense from the contractor's pay. This is also applicable for the contractor's site. All site visitors must abide by the following conditions:

- They must be approved by the company
- They must attend the company HSE Orientation programme
- They must enter and exit via the company gate only
- They must be accompanied by the contractor for their entire visit
- They are not permitted to roam freely; rather, they must visit the designated areas only

Examples of other welfare requirements follow.

In terms of facility sanitation requirements, the contractor is obliged to comply with OSHA 29 CFR 1926.51. This states that the contractor must supply:

- Drinking water – points located close to employees, not served with common cups
- Clean toilets and urinals – located close to workers
- Sanitary washing faucets or washbasins – also located close to workers, and shower or bath facilities available to workers who work with chemicals
- Lockers for dressing
- Changing rooms – should be kept clean
- Employee-only eating area and rest room
- Dispensers with liquid soap or bars of soap, with individual paper towels – always stocked

- Shelter room with cool drinking water – located close to workers exposed to heat stress

With regards to shut-down and project work, the contractor must provide toilets and sanitary washroom facilities to employees at a standard acceptable to the company. Via an agreed (with the company) method, sewage generated by the contractor must be disposed of.

Eating areas should contain tables and chairs, and should be sanitary and air-conditioned.

- "*The Contractor shall provide suitable welfare (i.e., health care, housing, food and living conditions), as applicable, for its employees to improve their capability so as to provide the best services possible. The Contractor shall adhere to the minimum limit for housing approval as per the Company's requirement*s.*"*
- "*Contractor shall offer improved welfare (i.e. housing, food and living conditions) for his workers to improve their capability to do their work. Also, the contractor must obtain approval on the housing prepared for his labours from the Ministry of Health and Ministry of Social Affairs.*"
- "*The Contractor shall adhere to company minimum limit for housing approval as per the company guideline and requirements. KNPC Superintendent of the Contract shall organize a multidiscipline Team to inspect the Contractor's labours housing and other Contractor employees' welfare to ensure compliance to these requirements, as per company Performance Standard for Auditing Contractor Employees' Welfare.*"
- "*Contractor shall provide an air-conditioned transportation buses for its employees from their company accommodation to worksite and vice versa. Transportation buses shall be provided with sun film / tint as protection against heat radiation during summer.*"

6.9 Discussion

Several observations can be made from the documentation provided by the participating companies. All of the projects under construction were large scale and difficult, and employed a minimum of 20,000 workers; All companies' policies were

highly comparable, encompassing safety management standards, strategies, and measures. This study has shown that the participating companies have effectively documented their health, safety, and environment management system guidelines for contractors, yet in actuality, the level of success of their implementation fluctuates between their projects.

The author carried out on-site questionnaires and interviews, which facilitated the gathering of first-hand information about the level of rule violating and some elements of policy implementation in the various companies. The findings showed that there are safety violations on the construction sites in Kuwait, at varying frequencies and types. Whilst the safety management policies showed high similarity amongst the companies, in reality they were typically not effectively implemented, therefore the safety management performance fluctuated. A correlation was identified between having clean and tidy living and working areas, strict inspections, immediate rectifications following warnings, effective safety training, and strong on-site communication, and a lower probability safety rule violation by the workers. Typically, there is a link between how often workers have a violation and the quality of the safety management. This is in accordance with research by Mullen (2004), which verified a strong connection between safety behaviours and organisational factors. Mearns and Yule (2009) stated that management commitment to safety exerts a greater impact on worker behaviour than do fundamental national values.

Interviews were selected to collect data because they were complimentary to the research intention of gaining a holistic insight into the safety culture of Kuwait's oil and gas construction projects. This study thus provides valuable insights into aspects of safety culture and different organisational levels within this sector. Because interviews were conducted in three phases—including a pre-interview and post-interview discussions and debriefs—each phase had a specific purpose and function. Pre-interviews built rapport between participants and the interviewer to encourage comfort when discussing the construction projects' safety. The interviews themselves collected data, and the post-interviews sought participants' perceptions of the overarching safety culture in Kuwaiti construction projects. This information thus sufficiently and extensively informs practice and policy in other contexts.

The qualitative interview method was a strength of this research in that quantitative methodologies do not permit data to be as detailed as in qualitative methodologies (Cooper, 2000). Due to the researcher's preparatory familiarisation process and pre-interviews, participants were aware of the research project and established a relationship with the interviewer beforehand, which resulted in more openly honest discussions. This trust and assurance of anonymity was a major strength because it resulted in the collection of data with nuanced detail and relevance to the research topic. The researcher's cultural identity as a Kuwaiti may have had an influence on the behaviour of participants from a non-Kuwaiti background. However, the extent of participants' open discussion of sensitive topics and voluntary participation implies that this potential influence was marginal.

A few challenges arose in collecting data, the primary one being the amount of time allotted for interviews and the small number of participants. These shortages were due to the researcher's limited timeframe for the study's completion and the participants' time restrictions due to their work responsibilities. The number of participants was a concern, and voluntary participation may have been a limitation because staff members interested in discussing the research topic avoided participating due to their direct involvement and thus their potential liability in safety-related activities. Interviews were conducted in English, which may have limited the study because all participants spoke English as a second language. Participants may therefore have been unable to express the full extent of their perceptions, although they did switch to Arabic many times during their interviews to explain certain aspects of their opinions. They were encouraged to do so and were allowed to use their first language. Understanding the safety culture and factors affecting safety performance within Kuwait's oil and gas construction projects was heightened and aided by the study's findings, regardless of the limitations.

6.10 Summary

This study identifies areas perceived to be related to safety culture and performance in the Kuwait oil and gas construction projects by site-based employees working at the frontlines. The results and findings inform the development of standardised

interview questions that can investigate these features.[7] Perceptive and valuable information underlining four major themes affecting safety and the attitudes of participants regarding workplace safety were collected via data provided by the interviews. These themes are: insufficient budgets, safety culture, work pressure, and national culture. This study also provides a preliminary understanding of the complex relationship between these themes. A prevalent finding is that managements' commitment to safety is extremely important in the provision of safe working environments.

Although safety management policies were strikingly similar amongst the companies observed, in practice they were typically not implemented effectively, and safety management performance fluctuated. A correlation was identified between maintaining clean and tidy living and working areas, strict inspections, immediate rectifications following warnings, effective safety training, and strong on-site communication, and a lower probability of safety rule violations by the workers. Typically, there is a link between the frequency of worker violations and the quality of safety management. This is in accordance with research by Mullen (2004) that verified a strong connection between safety behaviours and organisational factors. Mearns and Yule (2009) stated that management commitment to safety exerts a greater impact on worker behaviour than do fundamental national values.

By template analysis of the answers and the codes assigned to them, some main areas of concern were highlighted, from the availability and suitability of safety equipment to management and worker attitudes to safety. It was pointed out by five interviewees that the very nature of construction is dangerous, and each building project carries its own particular hazards. Yet many interviewees regarded high-quality management as the key to full implementation of well-devised safety policies. Seven of the participants feared that their senior managers and project leaders were unaware of the risks faced by their employees and were therefore unable to put high-quality safety policies in place.

Interviewees said that good leadership required the drive to improve health and safety, involving cooperation with others and giving credit to those who took health and safety matters seriously. Research studies support these findings. A drop in the

[7] See Section 6.1.

number of reported accidents was observed when relations between managers and workers were strong, according to Michael et al. (2006) that such good relations led to greater numbers of safety hazards being reported to management. Several researchers (Christian et al., 2009; Clarke, 2010; Mullen & Kelloway, 2009) have reported that good leadership gives rise to safety awareness, safe actions during work and thus improved safety records. This attention to safety among managers was the most important factor in keeping injuries to a minimum. Good management and good leadership have been shown to be linked. Some interviewees said that managers were unwilling to listen to their employees, whom they seemed to regard as inferiors, ignoring concerns brought to them by employees. Poor leadership had a negative effect on safety, as the distance between managers and workers led to little consultation and poor project planning; this in turn led to heavy workloads, long working hours and long journeys to and from work.

Lack of monitoring was regarded as an impediment to the improvement of health and safety, as without the continuous monitoring for accidents, managers could be unaware of the numbers or patterns of safety issues that occurred. Monitoring was often not mentioned in contracts, yet contractors were reported by several interviewees as weak links in the safety chain. Contractors often ignored health and safety concerns and offered insufficient safety equipment, meetings for the discussion of safety or safety training. Several interviewees reported that safety equipment had been scarce or unsuitable during work they had conducted and that improved safety equipment or equipment in general could have aided in the efficient and safe completion of the job.

It was also reported that workers had often received little education and had low levels of literacy, making training even more important. The workers found it difficult to understand contracts, health and safety policies and legislation. Training was needed that took into account the education levels of the trainees; for instance, health and safety posters needed careful consideration to enable workers to absorb the information easily. Some workers also did not see the need to consider safety or considered the adoption of protective clothing as time-consuming or uncomfortable. Management and leadership played an important role in workers' attitudes towards safety.

7.0 Research validation

7.1 Research Findings

The study's findings highlighted four primary factors (Table 7.1) that affect construction safety performance: insufficient budgets, safety culture, work pressure, and national culture. Management's role and commitment to safety were emphasised with regard to safety outcomes. Three aspects of national culture were found to have a significant impact on workplace safety: power distance, individualism, and uncertainty avoidance.

Table 7.1: Factors affecting safety performance in Kuwait's oil and gas construction projects.

Themes	Subthemes
Insufficient budgets	Incompetent workforce
	Illiteracy
	Poor safety facilities
	Inadequate resources
	Lack of safety gear
Safety culture	Management's commitment
	Communication
	Training/information
	Employee involvement
	Compliance with procedures
Work pressure	High turnover
	Tight schedule
	Large number of workers
	Working hours
National culture	Power distance
	Individualism
	Uncertainty avoidance

7.2 Research Validation Process

The research results were shown in the previous section. Nonetheless, it is crucial to establish the validity of the results in order to determine how reliable they are. To determine this, validation processes were carried out to establish validity. The key objective of conducting research is to produce results that can be used to improve current practices. Identifying the validity of such findings is thus crucial, as this can ensure that expected process improvements are able to be reliably accomplished in real-life practice. Hair et al., (2010) explain validation as being a means of

evaluating how a tool effectively and accurately measures what it is intended to measure.

Validation, as pointed out by Bryman (2015), is a process in which the investigator applies the research findings to a sample population in order to obtain feedback pertaining to the results. Tongco (2007) explains that the selection of qualified to address cultural questions demonstrates the competency of the researcher and the reliability of the sample. In the present study, validation of results was sought from experts in the construction industry safety in GCC countries. Validation team members were selected from contractors, consultants and government organisations. It is thus fair to say that the information obtained from participants in reliable and the researcher is competent in their role. Employment of experts for validation processes was achieved through purposive sampling, where the author intentionally chooses examples that are relevant to the theme of the study and which can be expected to provide the most useful and interesting data (Saunders et al., 2015), with the purpose being to use experts experienced with working in the GCC construction industry, and specifically with OSH. Purposive sampling was thus deliberately applied to select experts who were expected to possess the necessary qualities and expertise (Tongco, 2007). To carry out the validations[8], experts had to determine the extent to which findings were accurate and representative of reality. Five experts were contacted for the purpose of validating the findings draft, with the final study's findings being set in place following the validation process. All experts returned a response through email, one expert asked to read the whole thesis before making any recommendations. The thesis wasn't ready during the validation process and the experts that participated in the validation are: a professor of civil engineering from Kuwait University; a professor of industrial engineering from Kuwait University; senior safety engineer from Saudi Aramco; safety engineer from the Kingdom of Bahrain. Generally, participants were happy with the findings, and made very few changes.

7.2.1 Refining the Findings

The validation procedure of the study's findings was presented previously. In order to refine study's findings, experts were asked to state whether they thought the

[8] See Appendix VI for validation invitation letter.

study's findings were accurate, representative of reality and to determine whether they had been suitably classified into different research themes. Expert opinions were positive and contained some recommended factors to be considered related to lack of oversight to safety measures from government bodies and the allocation of safety personnel during bidding and tendering phase. Every expert showed satisfaction with the classification of the research themes. The final findings (Table 7.2) will be discussed below. The experts believed that the results accurately represented the GCC construction industry the recommendations made were thus straightforward and realistic within the GCC context.

Table 7.2: Validated factors affecting safety performance in oil and gas construction projects.

Themes	Subthemes
Insufficient budgets	Incompetent workforce
	Illiteracy
	Poor safety facilities
	Inadequate resources
	Lack of safety gear
Safety culture	Management's commitment
	Communication
	Training/information
	Employee involvement
	Compliance with procedures
Work pressure	High turnover
	Tight schedule
	Large number of workers
	Working hours
National culture	Power distance
	Individualism
	Uncertainty avoidance
Government role	
Allocation of safety personnel during tendering	

7.2.1.1 Government Role

Experts stated that there is a lack of oversight to safety measures from government bodies. The research highlights a lack of governmental commitment to ensuring safety, and this is evident through the lack of legislation enforcement, inspection resources, and any work-related accident databases (Feng, 2013; Feng et al., 2014). The government must also be able to effectively monitor and enforce safety regulations (Awwad et al., 2016). Awwad et al. (2016) points out that, in the absence

of sufficient enforcement, small companies are at a major disadvantage when implementing safety procedures compared to large companies that cut corners. It is important for the government to devise incentive programs to motivate smaller companies to commit to safety. For instance, they may wish to link safety performance to an insurance premium, taxes, or industry licensing systems.

More frequent inspections in construction sites is required from government bodies. These random visits must serve as an opportunity to not only correct any wrongs, but also help small companies enhance their safety practices. Safety performance and compliance with safety laws could be linked to the licensing system of construction organisations. Incentives such as lowered taxes could be implemented for companies who have good safety performance. It is important that large companies work with the government and small companies to create practical checklists and tools that can be used to ensure safety performance on sites. Large companies should lead the way by showing a commitment to safety through vigorously monitoring safety, rewarding good safety performance, and mentoring subcontractors to enhance their safety performance. Companies found to be in breach of safety rules should also be punished. Large companies should set aside some money to invest in safety when assessing tenders and awarding contracts to subcontractors. Similarly, it is crucial that safety be treated as a top priority for public projects.

7.2.1.2 Allocation of Safety Personnel During Tendering

The findings highlight the necessity of implementing stringent safety policies at construction sites. This is the responsibility of the contractors. The safety laws are outlined in the tender documents; however, this is often neglected at the construction stage. This appears to be in accordance with findings by Kartam et al. (2000), whose research into construction safety in Kuwait revealed that a lack of safety regulations and legislation was a key factor in determining low safety performance for companies in the construction industry.

Recent research by Tymvios and Gambatese (2016) has revealed that construction accident causation has links to the overall organisation of projects, alongside matters of the individual worker. Suraji, Duff and Peckitt (2001) suggested that there

are many aspects involved in the number of workplace accidents in the construction industry; these involve the workers, contractors' site management, planning by designers and clients' project management efforts. An increased risk of accident may, therefore, be influenced by any persons involved in a construction project. The safety of a construction site is not only the responsibility of the contractor, but of all those involved. Within the UK's Construction Design Management (CDM) regulation, safety in construction is relevant even before construction has begun. Within this regulation, during the tender stage, clients have a key role in the development of a safely plan in agreement with contractors. When a construction project is in the planning and design stages, a planning supervisor is employed to evaluate this safety plan further. Tymvios and Gambatese (2016) states that it is expected that the main contractor will be held accountable for the planning and organisation of health and safety during construction, while designers are held responsible for the safety of the project's design.

7.3 Summary

In this study, experts opinion were sought to evaluate the results' credibility, since this method enables participants to identify the extent to which the findings represent reality. Moreover, the validation results provided by the four experts was presented and discussed. Findings indicate that, as a whole, the expert opinions were positive and contained some recommended factors to be considered related to lack of oversight to safety measures from government bodies and the allocation of safety personnel during bidding and tendering phase. Every expert showed satisfaction with the classification of the research themes. The final study findings after the validation highlighted six primary factors that affect construction safety: insufficient budgets, safety culture, work pressure, national culture, government role, and allocation of safety personnel during tendering.

Management's role and commitment to safety were emphasised with regard to safety outcomes. This management commitment to safety could take the form of providing adequate PPE, investigating accidents and near-misses, attending safety meetings and taking corrective action. When discussing the communication about and response to safety concerns in contrast to the significant management dedicated to safety, many earlier studies, such as Mearns et al. (2003), Mohamed

(2002), and Vinodkumar and Bhasi (2010), describe similar outcomes. Procedures like this show there is a genuine concern for worker safety and suggest managers assume dedication towards safety procedures, which can be used to drive the improvement of workplace safety (Vinodkumar and Bhasi, 2010).

8.0 Conclusion and Recommendation

8.1 Introduction

This chapter concludes the study that began with the literature review and proceeded through to the design of the research, data collation and analysis, finally ending here with the presentation of the findings and the conclusions from them. The main aim of this study was to understand how the national culture impacted construction workers' safety on the job within Kuwait's oil and gas sector. The study sought to generate recommendations to improve safety levels. Any single accident consists of a complicated series of actions, and performing actions in unsafe ways is a factor that greatly impacts the genesis of accidents as evidenced in prior studies. Consequently, this study's basic proposition is that safety can be enhanced in the construction sector primarily through decreasing and removing unsafe behaviour. Unsafe acts are typically difficult both to comprehend and to define and this is especially true for those that occur at managerial levels.

This research study starts with a brief outline of the study objectives and details the primary findings that satisfy the objectives. This chapter is split into five sections. It opens with an outline of the research and gives a brief synopsis of each chapter. Second, it details the strengths of the study and covers their limitations. Third, both hypothetical and empirical propositions of the evolving findings will be examined. Fourth, an outline of future study directions will be suggested together with a safety model that can be drawn from present data supplemented by this study's findings. This study will then conclude with a number of recommendations and culminate with a closing statement.

8.2 Thesis Overview and Summary

8.2.1 Research Aim and Objectives

This study used a mixed-methods approach involving a questionnaire completed by 508 participants and interviews that included 12 participants. Descriptive and cross-sectional statistics were used to analyse the results of the survey. This was supplemented with factor and correlation analyses to allow wider comprehension of the situation and perspectives in the oil and gas industry construction centre in

Kuwait. Quantitative content analysis was employed to analyse the data from the 12 interviews and to gain an extensive understanding of the setting. Data generated from the interviews and questionnaires was analysed to comprehend the current safety behaviours implemented in Kuwait's oil and gas construction projects. This allowed examination of the association between the safety behaviours practiced in construction and Kuwait's national culture, enabling us to address health and safety matters, examine the research findings and proposals through the perspectives of professionals, and generate final proposals and directions for future study on this topic. The following sections demonstrate how the study aims were achieved. The contributions of this study are described and cover both hypothetical and empirical matters, followed by a discussion of the study limitations and future recommendations.

The aim of this research is to understand how the safety behaviours of construction workers are affected by national culture within the oil and gas sector in Kuwait and will produce recommendations for enhancing the safety performance.
Research objectives:

- To identify and understand the main concepts of safety
- Evaluate the current state of the safety performance and safety behaviour found in construction sites
- Investigate the ways in which safety behaviour is impacted by cultural factors, drawing upon Hofstede's national cultural dimensions
- Identify factors influencing safety performance in the Kuwaiti oil and gas construction projects
- Provide recommendations for enhancing the safety performance in the Kuwaiti oil and gas industry's

The study successfully achieved its objectives and the findings of the various research methods used are outlined below.

Chapter One – Introduction

The background of the research and the research problem were defined in this chapter, justifying the research aims and objectives and the methodology employed. The chapter opens with a statement detailing the research question. The literature on the impact of national culture on the health and safety of workers is reviewed.

Kuwait represented a gap in the literature globally, particularly regarding research into safety during construction projects conducted in Kuwait. These gaps led us here to review the impacts of Hofstede's national culture theory. Chapter one also gave brief details on the study scope and presented a synopsis of the study.

Chapter Two – Safety Literature Review (objectives 1)

Chapter 2 accomplishes the objectives of an all-inclusive critique of the literature on hypothetical concepts of primary safety actions. Furthermore, the chapter details and explains the safety climate and approaches to safety, thereby assessing how they impact safety performance. Moreover, the influence of national culture is also investigated. This review of the literature therefore establishes the links between the safety climate, safety performance, national culture, and safety behaviour. The literature review examined the topic broadly and specifically for the construction field. The data generated highlighted severe issues that require resolutions. The literature review was relevant to the safety behaviour and climate in the construction sector in addition to other sectors while also assessing their impact on safety performance.

Safety behaviour, when defined in terms of the ways individuals perform on the job, consists of two parts: compliance and participation in safety. The literature review also established that instead of using statistics generated by the construction company, the use of self-reporting methods was more beneficial in defining the real state of safety behaviour in construction.

This chapter then went on to critique other impacts of national culture on health and safety as indicated in the literature; IDV, PDI and UAI are three national culture dimensions that were shown to have an impact on the performance of health and safety. The literature however does not indicate whether the data generated is applicable to Kuwait and other nations in the Arabian Gulf.

Chapter Three – National Culture Literature Review

Chapter three demonstrates the significant characteristics of several models of national culture. This is performed through assessment of their advantages and limitations. Moreover, it examines the reason for using the Hofstede model in this research study.

Chapter Four – Research Methodology

This chapter outlined the various quantitative and qualitative techniques that could be used and the various strategies that could be followed in this study. Moreover, this chapter also assessed the research techniques employed in this study, including an examination of the research concept.

A questionnaire was developed and responses to this were used to achieve the objectives. This consisted of three primary areas: National culture, safety behaviour and safety outcome. VSM13 was employed for the national culture construct. Next, safety behaviour—the second construct—was composed of two elements: safety participation and compliance. The final construct, safety outcome, was composed of three factors: the accident rate, the injury rate and the days-off rate. It was theorised that national culture had a direct effect on safety behaviour constructs. Overall, the study objectives were addressed using twelve hypotheses.

Chapter Five – Quantitative Results (objectives 2 and 3)

The third and fourth objectives aimed to assess the present state of safety in terms of performance and behaviour in the construction area and examine the ways in which safety behaviour is influenced by cultural factors, drawing upon Hofstede's national cultural dimensions. To achieve these objectives, the necessary data was collated using questionnaires.

The quantitative findings and subsequent analyses of the questionnaires are detailed in this chapter in accordance with the elements and forms of data obtained. Suitable statistical tests will be employed to confirm data validity and reliability. Data stability was examined using Cronbach's alpha reliability test. This was supported with an Exploratory Factor Analysis (EFA) which served to determine the reproducibility and strength of Hofstede's components. An EFA was also performed for the constructs of each model to establish the suitable quantity of factors. The findings of the EFA are outlined below.

The findings from the CFA were used to support the quantity of factors that resulted from the EFA test. Both the EFA and CFA findings indicated that a single variable should be removed from SC and SO due to cross-loading. Thus, the end results provided strong factor constructs that formed a base for the next model

examination. All the statistical tests performed resulted in reliable NC, SC and SO measures.

The analysis and the discussion on the association between safety behaviour and national culture were presented in this chapter. The construction of the hypotheses was detailed in this chapter together with correlation analyses and the findings. The end of the chapter was dedicated to associating the findings of the correlational test with the literature review articles on safety. Similarities and differences in results from prior studies were discussed and concerned the impact of the selected safety indicators together with those of the current research study.

Chapter Six – Qualitative analysis (objective 4)

To enhance our understanding of the fundamental safety culture in a certain environment, it has been suggested that quantitative techniques should be supported by qualitative techniques (Nielsen, 2014). This section of the study was put together to further examine the safety perspectives of key safety personnel and was concerned with the features impacting the safety operation in the construction sector in Kuwait. The interviews conducted supplied valuable details on the perspectives of the workers regarding safety conditions in the work environment and they also served to mirror the wider perspective of the construction industry in Kuwait and the safety culture they indicate.

The interviews outlined four primary themes that affect construction safety: insufficient budgets, safety culture, work pressure, and national culture. Management's role and commitment to safety were emphasised with regard to safety outcomes. The data obtained from the results of the interviews backed the results of the survey.

The interviewees specified that one of the primary difficulties linked to health and safety operations was working with a workforce composed mostly of expatriates. "*The drawback is the language barrier that is some of the barrier*" (P1). "The most important thing I think that affects the performance of safety is the language where the majority does not speak English and does not know any language that betrayed his mother tongue besides there are many illiterate workers." (P10). This perspective is in keeping with Al-Humaidi and Tan (2010) who indicated that the

primary element affecting Kuwait's safety operations was its reliance on a workforce of diverse cultural and linguistic backgrounds that also is mostly composed of low-skilled or semi-skilled workers. The dependence of the construction sector on expatriates who are poorly educated if at all was also indicated by Kartam et al. (2000). "*The majority of the workers are illiterate; I am talking at the labourer level, the majority of the people are illiterate.*" (P8). "*So naturally you bring in a cheap labourer, train him for ten days and make him a welder. Naturally, he will not know the basics and will be experienced in safety matters*." (P6).

The part played by the managers was continuously highlighted with respect to working as a team and communicating honestly in their project groups. Zohar (2002) detailed how safety behaviour was led by the mangers. Consequently, the workers' thoughts on safety behaviour mirrors their managers' dedication to safety. This can have a positive impact on safety operations (Zohar, 2002). One means of enhancing staff safety was outlined and involved various aspects including team-leading by mangers, instigating procedures that facilitate efficient communication across ranks, adequate training and meetings. "*If a good leader is with them, they feel confident that they are being taken care of, but if a contractor employee does not have a good leader - because the thing is that's why there is a level of procedures, that's why they don't have the higher procedures because they need a good leader*" (P4).

The reporting of incidents was deemed an essential means for educating employees and enhancing employee commitment to safety concerns. The interviewees were not sure of the extent of confidentiality of the process and critiqued the feedback that was given following reported incidents. Lack of interest and incentive to report new incidents was seen to cause under-reporting behaviour and to lead to fewer educational opportunities. "*We've come across situations where a project management consultant has hidden an incident, and we have also come across situations where the report of the investigation is not done properly*" (P6). Burke and Richardsen (2019) indicated that the invalidity of the safety records was the result of inconsistency between the real number of incidents and reported incidents. "*most importantly what we observe is they don't report; the contractors don't report many of the times we observe that contractors don't report. And we've come across situations that a project manager consultant has hidden incidence, and we have also come across situations that the investigations report is not done properly. So*

these are all we can say the tip of the ice break. That means there are so many hidden things which we as company management may not come across all of these things" (P6). Recommendations aim to enhance the process through incentivising workers, supplying rapid feedback and applying a strict incident reporting process.

The impact of the senior supervisor's safety commitment was underlined by most of the interview participants. "*I am not saying that the workers do not maintain safety standards, but that we have to keep after them to ensure that they do. Instead, we should be leading them. If there is one very good supervisor, if the job supervisor for that particular group of people is very good, then life is so easy*" (P7). The obligation of supervisors to safety was reported as the most popular factor affecting safety climate (Mearns et al., 2003). The impact of higher management levels on safety was underlined by most employees. The presence of higher management together with effective employment of communication pathways was indicated as a high requirement. The participation of management in safety practices was stressed emphatically as it establishes the importance of safety and the importance of it to the employees.

The implementation of rules and regulations concerning safety was indicated as just as important as the challenges of staff not considering such rules and regulations important. Moreover, efficient communication approaches within groups and between them, the provision of the right resources and training and education to assist worker safety were all considered important. "*So if they have like budget and competent people and supervision this can be improved much*" (P3). "*Because safety if you don't know how to communicate with the different divisions and you don't know how to assess the hazards yourself, then definitely you will have difficulty in interacting with them*" (P4). "*They can improve their performance if they have the good people, the competent people and supervisor worker, and they provide the resources to the people like standard specifications or whatever it should be the company to procure the the PPE's and they give proper training like certified trainings for the workers and the supervisors - especially for the scaffolding, gas testing confined space and working at height. There are activities that they are doing and they give certified training courses and they give the right material then they can improve of course*" (P3).

Insufficient budgets were also the reason behind the hiring of cheap labour from overseas of varying nationalities, which enhanced the difficulties relating to communication and working procedures. Earlier safety studies indicated overseas employees as statistically greater risks (HSE, 2012). Several participants indicated that for the most part the lowest bid would always win the construction work but that doesn't always translate to the optimum value. "*If you select lowest bidder, we will get the services also affecting the service also will be poor, if there is a proper contractor and they get the good company it will improve actually this is affecting HFC performance*" (P3).

This research supported the notion that cost and safety are associated and indicated that a reduced budget would mean having to manage the issue of additional safety risks including serious pressures in production, cheap instruments and tools and cheap migrant labour. "*So because of that he will be compromising only on safety because he cannot compromise on other Construction materials. Company wants to give out projects only to locals fine that's good. And we have a budget when we see a local we know, there is so much of difference. The project budget and the contract was quoted, a big vast difference with that itself we will know that this guy cannot rule the project, he will not have considered on safety because any one thing we say he will try to bring in the lowest rate. Even the materials he will go and compromise on the cheapest qualities - but now we have a system where all of the PPE's are approved … are supposed to buy, what he does he is trying to compromise he's going to cut everything so that he can make profit. And the only thing that he can't cut on is only on safety. They bring safety people with less value and less experience, so less salary*" (P7). It is anticipated that the results of this research will help bids on construction work establish the advantages of safety that may be overlooked at the time of bidding. Thus, both construction businesses and their clients will be educated on the extra safety risks that are linked with a short schedule and a small budget which can impede the management of safety.

A vast number of construction staff were not accustomed to the policies and guidelines and considered them excessive. They thought it was unrealistic that they would have to uphold all the PPE policies on a continuous basis. Health and safety engineers believed that some workers occasionally did not adhere to rules simply

because they did not want to put on PPE and did not consider the safety advantage of it. "*Okay, to be frank, like the Arabs and Egyptians, they will not comply with the safety standards and they don't even bother to comply with the procedures. That is the main thing*" (P8). "*Pretty much, in the sense people you know comes from various background various part of work. And even from the same part of the world or from the same country it's from various cultural behaviours you can say. And all of this reflects in the mental activity on site, so some have been brought up in a safe mind-set basically. For some of them they found the safety to be a really fresh topic, so it's a mixture of many so it is a challenge in fact*" (P9). It was also suggested that increased inclusion of the staff in safety problems was required when scheduling work tasks for the future. Such inclusion can result in staff feeling they are valued more as their perspectives would be listened to and the staff could also be offered further information which would help them to understand the rules and reasons for them. This could make the rules easier to comprehend, particularly rules that they don't agree with, and it can increase the degree of flexibility in applying the rules to new tasks when risks are evaluated.

Chapter 7 Research findings validation and discussion

In this study, experts opinion were sought to evaluate the results' credibility, since this method enables participants to identify the extent to which the findings represent reality. Four experts participated in the validation: a professor of civil engineering from Kuwait University; a professor of industrial engineering from Kuwait University; senior safety engineer from Saudi Aramco; safety engineer from the Kingdom of Bahrain. Findings indicate that, as a whole, the expert opinions were positive and contained some recommended factors to be considered related to lack of oversight to safety measures from government bodies and the allocation of safety personnel during bidding and tendering phase. Every expert showed satisfaction with the classification of the research themes. The final study findings after the validation highlighted six primary factors that affect construction safety: insufficient budgets, safety culture, work pressure, national culture, government role, and allocation of safety personnel during tendering.

Chapter 8 Conclusion and recommendation (objective 5)

The findings of the study are briefly presented in this chapter together with an explanation of how this study contributes to the literature, research

recommendations, and conclusion.

8.3 Contribution to Knowledge

The contribution of these findings will be seen in their promotion of the safe development of occupational environments in the Kuwaiti construction industry, thereby safeguarding the rights of workers as well as the profitability of firms working in these areas. It will contribute to the existing body of literature regarding national culture and safety behaviour by retaining its focus on Kuwait. In the last two decades, although several studies have focused on safety behaviour as well as performance, few studies have examined safety behaviour and performance in relation to the construction industry in developing countries or examined how national culture affects these countries' safety behaviours in construction, especially in Kuwait.

This study makes specific contributions to the existing literature. It provides empirical evidence that Kuwait construction projects are considerably impacted by national culture. As this subject has not been previously examined, this study will suggest an approach for improving safety in these projects. The study offers a methodological contribution to knowledge through a mixed methodology combining document analysis, interviews, and questionnaires. It investigated and highlighted the factors impacting safety performance in Kuwaiti oil and gas construction projects. The current study offers knowledge of these factors and addresses the literature gap regarding the identification of these factors in the Kuwaiti construction industry.

Since earlier studies demonstrated that unsafe actions are a frequent cause of accidents, it stands to reason that avoiding such unsafe actions in the construction sector would greatly aid in the reduction of accidents. The participants in the interview's analysis indicated that one of the greatest difficulties linked to management of safety operations in Kuwait was the large number of labourers from overseas. This finding agrees with that of Al-Humaidi and Tan (2010), who indicated that Kuwait's construction industry is heavily reliant on workers from overseas who are from various cultures, speak different languages and are low- or semi-skilled. This was further supported by Kartam et al. (2000), who indicated that the Kuwaiti

construction industry was heavily dependent on overseas workers, of whom most were poorly educated and some hardly knew how to speak English. The use of a mixed-methods approach made the impact of national culture on unsafe practices quite clear. It is anticipated that the findings of this study will aid construction work in the future by ensuring the implementation of safer measures.

This study authenticates the part played by national culture as indicated in earlier studies. Furthermore, Kuwait's construction industry has not been specifically tested in prior literature. Therefore, this study provides new information on the association between safety and national culture by examining Kuwait's construction jobs. It offers a theoretical contribution to cross-national safety research by increasing comprehension of the way that Hofstede's elements are related to safety participation and safety compliance. These outcomes point toward a negative correlation between PDI and safety compliance levels; notably, nations with high UAI dimension have a comparatively lower rate of safety compliance. Furthermore, nations with a low IDV dimension have a comparatively high rate of safety participation. These outcomes are significant for multinational companies and similar organisations that have to implement occupational health and safety among culturally uniform work teams that consist of individuals from different countries. Of particular importance is the level of consideration that should be given to country-specific cultural features in managing labourers from certain cultural backgrounds.

This study's findings can be used to facilitate improvement of construction project safety performances throughout many sectors, including the oil industry. Additionally, work efforts can be guided in a more informed manner to reach safety management targets more effectively.

8.4 Recommendations

The practices that are recommended below aim to provide workers, their representatives and responsible employers with a versatile framework that can allow them to address health and safety issues on a wide spectrum of construction sites. Specifically designed for the construction industry, these recommendations could be used by sites of any size. These recommendations also provide guidance for a

multi-employer work situation, as well as for staffing agencies and general contractors.

8.4.1 Research Recommendations for Practice

Earlier discussions have shown that the oil and gas construction projects of Kuwait currently has a number of complex problems due to the government, employers, and employees. Organisations must prioritise safety to see improved safety performance, and in the current context, various entities must become more responsible for this oversight by establishing suitable measures for various levels of the government, construction companies, and workers. The results of this study suggest a number of measures that could minimise the adverse impact of national culture on safety culture. First among these measures is promoting the use of safety culture assessment tools that are specific to the cultural context in which they are applied. This will facilitate the evaluation of core and relevant dimensions of safety culture as they relate to the nation under consideration. Moreover, the development of safety protocols should be undertaken in the cultural context in which they will be applied. Safety outcomes will improve as a consequence. This was demonstrated by Burke et al. (2008), who found that the likelihood of safety training being transferred to safety behaviour was influenced by national culture.

PAM's laws describe some very basic health and safety regulations, which state that employers must offer safe working conditions for their employees and that workers need to adhere to safety laws. The research study showed that employers and employees lack awareness and knowledge regarding their responsibilities in this respect. A further problem is the limited application of the laws involving employer and employee responsibilities regarding safety, indicating that construction firms do not meet their responsibilities. However, as inspections are limited and enforcement by PAM is weak, these companies do not feel pressure by the government to maintain safe working conditions. It was found that the majority of firms do not address employee health and safety needs, leading to more accidents, which necessitates the Kuwait administration to act and establish an health and safety regulatory body for the development, monitoring, and application of health and safety policies. A government health and safety regulatory body must be established. Frequent government health and safety expert inspection will also

boost safety performance over time by encouraging greater compliance. For disciplinary cases, fines and even closures of sites can be applied.

Employers are responsible for offering a safe workplace to their employees. A safe worksite can only exist in the wider context of a robust safety culture, where all individuals involved in the organisation are committed to health and safety. Construction firms in Kuwait must make adjustments to their organizational safety culture. Workplace health and safety should be a construction company's leading priority, with no tolerance for jeopardising safety. Management should demonstrate commitment to continuously improving workplace health and safety and eliminating hazards. The obligation of management to safety problems by supplying staff with suitable data and the necessary safety equipment and instruments.

Safety policy must explicitly state the senior management's commitment regarding health and safety. In order for the policy's targets to be achievable, senior management must distribute adequate resources and support must be provided for the health and safety programme, and ongoing support should be available to review and address issues that may arise. Construction site activity must strictly follow organizational health and safety rules and procedures.

The majority of work in the construction sector of Kuwait is completed by subcontractors, with specialist professionals selected for various projects. In most cases, subcontractors are chosen through a bidding process; even when they have a poor health and safety track record, they are chosen if their price is low. Professionals with low health and safety commitment often begin work without meeting health and safety requirements, as they lack the budget for it. Maximising profit is their key aim, so they hire unskilled workers at a low salary for skilled work and do not make the required resources and safety equipment available to these individuals. Therefore, unsafe conditions are created and accidents occur. It is the responsibility of subcontractors to hire workers with sufficient skills for their assigned work and also to provide sufficient resources for their particular projects. Construction firms need to understand the importance of subcontractors when it comes to safety performance results and subsequently to choose subcontractors with a strong safety culture and commitment to worker health and safety.

Any incidents, including injuries and near misses, should be thoroughly investigated to identify the root causes, as this facilitates the identification of future hazards and prevents them from occurring. Accidents and near misses must be reported and examined in line with health and safety procedures. Employers should also ensure that workers will not be discriminated against or intimidated if they report concerns; if any kind of blame culture is inherent in the company, this should be swiftly corrected. It is necessary to respect the accident investigation findings and for management to apply the suggested changes within the investigation report.

8.4.2 Research Recommendations for Policy

Since only minimal data is accessible on the construction sector in Kuwait's safety. Kuwait's construction industry faces many difficulties regarding safety. The outcomes of this study can help to inform decisions undertaken in the future and to construct future approaches that can be implemented by different authorities and decision makers in Kuwait and other Gulf nations. Methods and procedures must be developed and put into place by policy makers and supervisors to ensure there is a system-dictated safety strategy. An educational ethos should be encouraged, rather than the present one of liability and ill repute. This ethos should encourage employees to report mistakes and adverse events, reassuring them that there will be no risk of punishment and culpability. Legal protection could also be given to workers who do highlight any occurrences, in collaboration with PAM and the general legal system. Those who implement policies may also be able to develop a reporting scheme reaching a national scale, whereby employee groups can collectively adopt a sense of responsibility to report and act upon any safety issue they many observe.

8.5 General Limitations and Strengths

8.5.1 Research Limitations

Apart from the all-inclusive and demanding studies and analytical techniques used in this research, the outcomes reported here should be read in light of a number of limitations revealed during the research. On construction sites, there are two types of safety: physical safety and behavioural safety. While physical safety concerns unsafe construction site conditions, behavioural safety refers to unsafe onsite

employee actions. As the present study focuses on behavioural safety, the checklist in this survey includes only the safety factors related to behavioural conditions. The extent of association was a major limitation of this research as it was only correlational and thus failed to determine causality conclusively. This occurred because of the present study's small sample size. No research can be conducted without limitations, which should always be revealed to aid studies in attempting to resolve them. Accordingly, various limitations were experienced in this study and these will be explained by section below.

8.5.1.1 Time Challenges

The researcher was faced with difficulties throughout data collection. For instance, at one point the month of Ramadan and the summer vacation took place at the same time. Ethical approval was not granted in the expected time due to delays in the review process by Kuwait's oil industry. This meant the survey and interviews could not be performed until such time. Time allotted to data collection was difficult as the researcher was required to interview participants and complete surveys with them and they were located at various construction sites.

8.5.1.2 Interviews Language

For the most part the interviews were held in English, although three were in Arabic as requested by the interviewee. The majority of construction workers in Kuwait spoke English as a second language. Although both Arabic and English are commonly used in Kuwait, it would have been better to interview all participants in their first language as this would have allowed participants to provide more detailed accounts of their experiences and opinions.

8.5.2 Research Strengths

Regardless of limitations, this study's outcomes deliver significant practical data in relation to the suggested backgrounds of employee safety behaviours in Kuwait. This serves to inform safety researchers and construction managers meaningful guidance about how safety may be improved in construction projects.

The use of a mixed-methods approach was an added advantage in examining the safety culture as this brought together the generalisability afforded by the

quantitative questionnaire and the detailed investigation provided by the qualitative interview strategy. Thus, this led to a deep and broad understanding of the social constructs related to the safety culture and supplied extra data in this context. Following the collation of data, 546 were collected; the response rate was 78% and 72.6% were fully completed. Of the 546 collected questionnaires, 508 were considered, 38 were disqualified because they were partially completed. Out of the 508 respondents, 468 questionnaires were accepted to obtain the desired matched sample required for the national culture analysis. Thus, the validity of the data was approved as the sample was large and representative. Afterward, a psychometric and descriptive analysis was performed. Due to the significant amount of data, it was also able to be separated for factor analysis. In accordance with suggested methods, psychometric analysis included the combined practicality of CFA and EFA. In order to accurately report the results, it was necessary to ascertain the averages of all elements. Using the mixed methods approach helped to compensate for the limitations of the methodology and fortified the importance of the research, by allowing the findings to support and validate one another.

Briefly put, the mixed-methods strategy resulted in a comprehensive understanding of the safety culture in the oil and gas construction projects in Kuwait. It also provided possible means of resolving the issues and enhancing our comprehension of the outcomes of the survey.

8.6 Recommendations for Future Work

This research examined unsafe actions at several levels of work at a massive construction establishment, and in doing so it revealed issues that needed to be examined more as well as other issues that required more attention. Recommendations for possible future studies are as follows:

- Further research is needed into the safety climate in Kuwait. This will aid in improving comprehension of the Kuwait safety climate.
- Some limitations were encountered when attempting to collect specific information on unfortunate events. Further studies might employ various research techniques to acquire effective data records regarding safety performance in the construction sector.

- The current research also indicated that funding was insufficient and that schedules were too short and that these seemed to add elevate safety risks and also contributed to unsafe behaviour. It is expected that these findings will aid the construction businesses and their clients when performing the tender bidding process and also afterwards. Future research should examine the means that this sector can employ to ensure such budgets and schedules are not an issue and therefore aid in enhancing the safety operation.
- There is no question that the financial approach used leads to employment of a cheaper expatriate workforce, further study is needed to comprehend and establish a managerial process for safety that can help to lessen or reduce further risks introduced through obstacles to communication and varied means of working.

8.7 Conclusion

The literature review shows that the Kuwaiti construction sector has a number of health and safety issues to address. The safety performance of this industry is poor because of the large number of accidents that occur. The literature reviewed in Chapter 3 highlights national differences in safety culture in various industries, such as those described by Casey et al. (2015), Lu et al. (2012) and Noort et al. (2016). However, there are few published papers exploring the effect national culture has on safety culture in oil and gas construction projects, indicating a gap in the literature. Three different data collection techniques confirmed that the Kuwaiti construction industry safety performance must be urgently addressed. The studies conducted in this research reveal that individuals' behaviours relating to safety are influenced by national cultural.

The purpose of the quantitative study (Chapter 5) was to determine the influence of national culture dimensions on the employee's safety behaviour. The results of that study indicated that there was a significant association between national culture and safety behaviour. According to the results, there was this study found PDI and safety compliance levels to be negatively correlated. Results also indicate that nations with high UAI dimension have a comparatively lower rate of safety compliance. Furthermore, nations with low IDV dimension have a comparatively high rate of safety participation. Employees apply culturally induced knowledge

regarding compliance with rules and goals benefiting the collective, uncertainties and power and authority structures. It can therefore also be seen that national culture influences both employee decisions and choices of practice, which are critical in safety-related behaviour in the workplace. It is evident that the attitudes and behaviours of the participants were negatively influenced by uncertainty avoidance. Because they are uncertain about the potential consequences, these individuals are reluctant to report mistakes or offer criticisms. As Chapter 2 highlights, the lack of government policies and associated penalties that support safety make it easy for management to devise and implement safety protocols. Thus, employees are more reluctant to voice their concerns about safety issues, as they may be fearful of the consequences of doing so. This indicates that factors other than national culture influence safety culture; factors such as government and management safety policies are also influential, which was revealed from the results of the second study described in Chapter 6. These can either strengthen or weaken the relationship between national culture and safety culture. Mearns and Yule (2009) describe how management's commitment to safety largely affecting risk-taking behaviour.

This study used document analysis and semi-structured interviews to obtain data related to factors that influence safety performance. The final study findings after the validation (Chapter 7) highlighted six primary factors that affect construction safety performance: insufficient budgets, safety culture, work pressure, national culture, government role, and allocation of safety personnel during tendering. Management's role and commitment to safety were emphasised with regard to safety outcomes.

The majority of construction workers in Kuwait are foreigners from Asia, and they often lack the training or experience to complete skilled jobs such as masonry, welding or carpentry, which also carry the greatest risks. These workers are hired due to their low salary requirements compared to local Kuwaiti workers. In turn, foreign workers are instructed to undertake certain tasks that they are untrained to perform without being given the required time to learn about their workplace or responsibilities. Thus, unsafe circumstances are created through the poor knowledge they have regarding occupational risks.

It is necessary for supervision to be adequate in order to maintain workplace safety and protect workers. This study found that if supervision is poor, then construction site safety performance is also poor. Supervision is particularly important for new workers and those involved in high-risk activities, but this is not often the case, and workers themselves overlook safety rules when they are not supervised. In Kuwait, organisational safety culture is not strong, and, in most cases, workers will follow safety rules only when supervised by a responsible party or safety officer. The interview participants also noted that, because of work pressure, supervisors might instruct workers to operate faster and ignore safety procedures, thus facilitating risky situations for workers.

It is the organisation's responsibility to uphold safety in the workplace and limit accidents. Specifically, poor planning, limited training, low awareness,, lack of safety in working conditions and poor safety culture in an organisation are the key causes for substandard safety performance in construction sites. Construction sites containing hazards will have a higher incidence of accidents, and organisations in the current context are not consistently establishing safe working conditions for their workers, seemingly through a lack of concern regarding safety. The work of Al-Humaidi and Tan (2010) supported this notion, stating that Kuwaiti construction sites did not meet basic safety requirements and involved a high level of risk. The health and safety regulations of developed countries mean that employers must offer safe working conditions to their workers, as well as sufficient resources, by order of the government. Construction firms in Kuwait do not focus on workplace safety due to the lack of enforcement of any H&S policies.

The current study also found that poor safety culture was a critical organisational factor regarding accident occurrence. Safety culture impacts employee attitude to a large degree, as employees will be more safety-conscious working in an organisation with a good safety culture. However, when there is a poor safety culture in the workplace, safety policies will not be taken seriously and unsafe practices will happen more often. Kuwaiti construction firms' safety culture is weak, meaning that employees are not interested in safety matters. In order to build a strong safety culture, management must play a significant role in the implementation of safety policies and safety programs in the workplace. In turn, this will facilitate a robust safety culture. Management commitment regarding safety was a key element

discussed during the interviews. Extra effort and commitment from leaders are necessary in the Kuwaiti construction sector. For example, certain work projects lacked sufficient planning, and workers were not given the required safety equipment or suitable tools for the work they were instructed to complete. Safety must be of the utmost concern to management because they have a great responsibility for safety to their workers. Management provides instructions for their workers; if the former lacks commitment, then the latter will also overlook safety matters, leading to weak safety performance.

Every firm has a safety policy that describes the actions the employer will take regarding their safety goals. Safety policy is often a formality shown to a client as part of the project's requirement, without necessarily any appropriate implementation thereafter. Companies do not invest in appropriate safety measures; thus, the safety policy targets are not met. Importantly, this research supported the notion that cost and safety are associated and indicated that a reduced budget would mean having to manage the issue of additional safety risks including serious pressures in production, cheap instruments and tools and cheap migrant labour.

Multicultural construction projects present particular challenges for safety culture, as individuals from different national cultures have different safety cultures. These challenges have practical implications; interventions that are effectively implemented in one country may be ineffective in another. For example, using the same strategies that work in the UK in Kuwait is unlikely to produce the desired result. In the UK, speaking up does not typically require encouragement; however, speaking up requires reassurance in the high power distance culture of Kuwait. This is particularly relevant when most of the workers hail from backgrounds with high power distance.

To summarise, this research confirmed the presence of a relationship between national culture and safety culture in oil and gas construction projects. There is no single national culture that stands out as being a model culture for safety. The cultures that are strongly hierarchical and do not encourage junior staff to speak out are the same cultures that inherently encourage teamwork and harmony. In addition, cultures that foster a strong desire to avoid uncertainty may promote adherence to following regulations and guidelines; however, this tendency

negatively affects the ability to find creative solutions to unexpected situations. These dichotomous attributes indicate that all national cultures have the capacity for safety, but the differences lie in its practice. To optimise the safety performance of the staff, managers of oil and gas construction projects need to identify the weaknesses that require remediating and emphasise desirable attributes.

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Appendix I

Ethical Approval

Research, Innovation and Academic Engagement Ethical Approval Panel

Research Centres Support Team
G0.3 Joule House
University of Salford
M5 4WT

T +44(0)161 295 5278

www.salford.ac.uk/

27 October 2017

Mohamed Al Mutairi

Dear Mohamed,

RE: ETHICS APPLICATION STR1617-110: The Influence of National Culture on Health and Safety Performance in Kuwait Oil and Gas Sector Construction Projects

Based on the information you provided, I am pleased to inform you that your application STR1617-110 has been approved.

If there are any changes to the project and/ or its methodology, please inform the Panel as soon as possible by contacting S&T-ResearchEthics@salford.ac.uk

Yours sincerely,

APHigham.

Dr Anthony Higham
Chair of the Science & Technology Research Ethics Panel

Appendix II

Questionnaire

Section A Personal Information

1. Are you: Male ☐ Female ☐
2. How old are you? Under 20 ☐ 20-24 ☐ 25-29 ☐ 30-34 ☐ 35-39 ☐
   40-49 ☐ 50-59 ☐ 60 or over ☐
3. Nationality: _____
4. What was your nationality at birth (if different)?
   _____
5. How many years of formal school education (or their equivalent) did you complete (starting with primary school)?
   10 years or less ☐ 11 years ☐ 12 years ☐ 13 years ☐ 14 years ☐
   15 years ☐ 16 years ☐ 17 years ☐ 18 years or over ☐
6. If you have or have had a paid job, what kind of job is it / was it?
   No paid job (includes full-time students) ☐
   Unskilled or semi-skilled manual worker ☐
   Vocationally trained craftsperson, technician ☐
   Academically trained professional or equivalent (but not a manager of people) ☐

Section B Values Survey Model 2013

Please think of an ideal job, disregarding your present job, if you have one. In choosing an ideal job, how important would it be to you to (please circle one answer in each line across):

Rating scale	Of utmost importance	Very important	Of moderate importance	Of little importance	Of very little importance
	①	②	③	④	⑤

7	Have sufficient time for your personal or home life.	①	②	③	④	⑤
8	Have a boss (direct superior) you can respect.	①	②	③	④	⑤
9	Get recognition for good performance.	①	②	③	④	⑤
10	Have security of employment.	①	②	③	④	⑤
11	Have pleasant people to work with.	①	②	③	④	⑤
12	Do work that is interesting.	①	②	③	④	⑤
13	Be consulted by your boss in decisions involving your work.	①	②	③	④	⑤
14	Live in a desirable area.	①	②	③	④	⑤
15	Have a job respected by your family and friends.	①	②	③	④	⑤
16	Have chances for promotion.	①	②	③	④	⑤

In your private life, how important is each of the following to you: (please circle one answer in each line across):

Rating scale	Of utmost importance	Very important	Of moderate importance	Of little importance	Of very little importance
	①	②	③	④	⑤

17	Keeping time free for fun.	①	②	③	④	⑤
18	Moderation: having few desires.	①	②	③	④	⑤
19	Doing a service to a friend.	①	②	③	④	⑤
20	Thrift (not spending more than needed).	①	②	③	④	⑤

Rating scale	Always	Usually	Sometimes	Seldom	Never
	①	②	③	④	⑤

21	How often do you feel nervous or tense?	①	②	③	④	⑤
22	Are you a happy person?	①	②	③	④	⑤

Rating scale	Yes, always	Yes, usually	Sometimes	No, seldom	No, never
	①	②	③	④	⑤

23	Do other people or circumstances ever prevent you from doing what you really want to?	①	②	③	④	⑤

Rating scale	Very good	Good	Fair	Poor	Very poor
	①	②	③	④	⑤

24	All in all, how would you describe your state of health these days?	①	②	③	④	⑤

Rating scale	Very proud	Fairly proud	Somewhat proud	Not very proud	Not proud at all
	①	②	③	④	⑤

25	How proud are you to be a citizen of your country?	①	②	③	④	⑤

Rating scale	Never	Seldom	Sometimes	Usually	Always
	①	②	③	④	⑤

26	How often, in your experience, are subordinates afraid to contradict their boss (or students their teacher?)	①	②	③	④	⑤

To what extent do you agree or disagree with each of the following statements? (please circle one answer in each line across):

Rating scale	Strongly agree	Agree	Natural	Disagree	Strongly disagree
	①	②	③	④	⑤

27	One can be a good manager without having a precise answer to every question that a subordinate may raise about his or her work.	①	②	③	④	⑤
28	Persistent efforts are the surest way to results.	①	②	③	④	⑤
29	An organization structure in which certain subordinates have two bosses should be avoided at all cost.	①	②	③	④	⑤
30	A company's or organization's rules should not be broken - not even when the employee thinks breaking the rule would be in the organization's best interest.	①	②	③	④	⑤

Section C Safety Performance

Please think about the last 12 months and rate the frequency off occurrence for each statement... (please circle one answer in each line across):

Rating scale	Never	Seldom	Sometimes	Usually	Always
	①	②	③	④	⑤

31	Falling from a height accident.	①	②	③	④	⑤
32	Falling objects accident.	①	②	③	④	⑤
33	Heavy lifting accident.	①	②	③	④	⑤
34	Tools accident.	①	②	③	④	⑤
35	Materials accident.	①	②	③	④	⑤
36	Electric Shock accident.	①	②	③	④	⑤
37	Burns and explosion accident.	①	②	③	④	⑤
38	Transportation Means accident.	①	②	③	④	⑤
39	Chemicals and Gases accident.	①	②	③	④	⑤
40	Injuries due to slips.	①	②	③	④	⑤
41	Near misses and unsafe conditions.	①	②	③	④	⑤
42	Accidents resulted in less than one day absence	①	②	③	④	⑤
43	Accidents resulted in 1-3 days absence	①	②	③	④	⑤
44	Accidents resulted in more than three days absence	①	②	③	④	⑤

Section D Safety Behaviour

For each statement, please indicate whether or not you personally agree... (please circle one answer in each line across):

Rating scale	Strongly agree	Agree	Natural	Disagree	Strongly disagree
	①	②	③	④	⑤

45	I voluntarily carry out tasks or activities that help to improve workplace safety.	①	②	③	④	⑤
46	I help others when they are working under risky conditions.	①	②	③	④	⑤
47	I often make suggestions to improve how safety is handled around here.	①	②	③	④	⑤
48	I take action if I see something unsafe.	①	②	③	④	⑤
49	I believe that I have some responsibilities in promoting safety policy and practices.	①	②	③	④	⑤
50	I put in extra effort to improve the safety of the workplace.	①	②	③	④	⑤
51	I don't need to follow all safety rules and procedures to finish my job safely.	①	②	③	④	⑤
52	I carry out my work in a safe manner.	①	②	③	④	⑤
53	I use the correct safety procedures for carrying out my job.	①	②	③	④	⑤
54	I use all the necessary safety equipment to do my job.	①	②	③	④	⑤

Thank you for completing the survey

Appendix III

Interview Agenda

Introduction

Could you briefly give an overview of your position and responsibilities?

National Culture

Do you think that having a multicultural workforce affects construction safety performance? If yes, how does national culture influence the safety performance in construction projects?

Safety Behaviour

What do you think about employee safety behaviour in construction sites?

Prompt

Do employees:

- Follow safety rules and procedures?
- Maintain the highest level of safety?
- Work in a safe manner even under time pressure?
- Attend safety training courses or workshops?

Safety Performance

Can you please comment on construction sites' safety performance over the last five years?

From the questionnaire results, many responses stated that there is a high rate of near misses and accidents that result in up to three days of the injured employees' absence. What do you think about this incident rate?

What are the factors affecting safety performance in the construction industry?

How can contractors improve their safety performance?

Thank you for your cooperation.

Appendix IV

Related Publications

- Almutairi, M., & Wood, G. (2018). The Influence of National Culture on Health and Safety Performance in Kuwait Oil and Gas Sector Construction Projects. Paper presented at the SPARC 2018 Conference, University of Salford, Salford, UK.

- Almutairi, M., & Wood, G. (2019). Assessing the Safety Performance In Kuwait's Oil and Gas Sector Construction Projects. Paper presented at the IPGRC 2019 Conference, University of Salford, Salford, UK.

Appendix V

Research Participant Consent Form

Title of Research Project: The Influence of National Culture on Health and Safety Performance in Kuwait Oil and Gas Sector Construction Projects.

Name of Researcher: ……..

- I confirm that I have read and understood the Participant Information Sheet for the above research study and that I have had the opportunity to ask questions about the research. ☐
- I understand that my participation is voluntary and that I can withdraw from the research at any time without giving any reason. ☐
- I agree to take part in the above research study. ☐
- I understand that, if I decide to participate in this study, then the results obtained from this study may be kept for possible use in future studies. ☐
- I understand that my anonymity is assured and that only the researchers involved in this study at the University of Salford, will use the data. I thus give permission for these individuals to use this information as they wish within academia if they agree to preserve the confidentiality of the information as required in this form. ☐
- I agree to the interview being tape recorded ☐
- I agree to the use of anonymised quotes in publications. ☐

Name of participant	Date	Signature
_____	_____	_____
Researcher's Name	Date	Signature
_____	_____	_____

Appendix VI

University of Salford MANCHESTER
The Crescent,
Salford, M5 4WT,
United Kingdom
0161 295 5000
www.salford.ac.uk

Dear,

I am a PhD student in the School of Science, Engineering and Environment at the University of Salford. The aim of my research is to understand how the safety behaviours of construction workers are affected by the national culture within the oil and gas sector in Kuwait and to find the factors affecting safety performance. I have finalised my findings and wanted you to review them and provide your feedback. Please add any further comments, and feel free to add or remove factors.

For further information, please contact:
Name: Mohammad Almutairi, PhD Candidate
Address: Room 344, School of Science, Engineering and Environment, Maxwell Building, The University of Salford, M5 4WT, Manchester, United Kingdom
Tel: +965 55582899 E-mail: m.almutairi1@edu.salford.ac.uk

Supervisors contact details:
Name: Dr Gerard Wood
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Yours sincerely,
Mohammad Almutairi, PhD Candidate

The study's findings highlighted four primary factors (Table 1) that affect construction safety: insufficient budgets, safety culture, work pressure, and national culture. Management's role and commitment to safety were emphasised with regard to safety outcomes. Three aspects of national culture were found to have a significant impact on workplace safety: power distance, individualism, and uncertainty avoidance.

Table 1. Factors affecting safety performance in Kuwait's oil and gas construction projects.

Themes	Subthemes
Insufficient budgets	Incompetent workforce
	Illiteracy
	Poor safety facilities
	Inadequate resources
	Lack of safety gear
Safety culture	Management's commitment
	Communication
	Training/information
	Employee involvement
	Compliance with procedures
Work pressure	High turnover
	Tight schedule
	Large number of workers
	Working hours
National culture	Power distance
	Individualism
	Uncertainty avoidance

Insufficient budgets

Several participants indicated that, for the most part, the lowest bid will be awarded the construction work, but this does not always translate to optimum value. This research supported the notion that cost and safety are closely related and that budget reductions result in having to manage issues of additional safety risk, including serious pressures in production, cheap instruments and tools, cheap migrant labour that exacerbates communication difficulties, and safety equipment of poor quality. The main concern of contractors was keeping costs to a minimum, and safety was regarded as a waste of money. Larger companies tended to have more sophisticated knowledge regarding safety programmes that improve productivity and prove to be cost-effective. They took such costs into account more often than small and medium-sized businesses with limited budgets.

Safety culture

Although safety management policies were strikingly similar amongst the companies observed, in practice they were typically not implemented effectively, and safety management performance fluctuated. A correlation was identified between maintaining clean and tidy living and working areas, strict inspections, immediate rectifications following warnings, effective safety training, and strong on-site communication, and a lower probability of safety rule violations by the workers. Typically, there is a link between the frequency of worker violations and the quality of safety management. This is in accordance with research by Mullen (2004) that verified a strong connection between safety behaviours and organisational factors. Mearns and Yule (2009) stated that management commitment to safety exerts a greater impact on worker behaviour than do fundamental national values.

In this study safety training for construction workers on both the use of safety equipment and on safe working conditions was rudimentary or non-existent; the use of protective equipment was barely evident. Safety policies were often not enforced or applied inconsistently. Workers often argued that they dislike wearing personal protective equipment, as it is uncomfortable. This indicates poor safety management with a weak commitment to enforcing safe working practices. There were discrepancies among the participants as to their knowledge of the risks associated with their jobs. Most were unaware of the proper procedures for confronting worst-case scenarios. It was clear from various answers that employees were expected to complete their work quickly despite safety considerations. Many workers had little awareness of the safety risks, and efforts to educate them through the use of posters or training sessions were minimal. While teamwork and discussions within the team were stressed, communication problems associated with professional, cultural, and rank differences arose among the various levels of experienced construction personnel. The majority of issues mentioned were linked to language and cultural difficulties amongst the workers.

Work Pressure

The pressure brought on by production scheduling was noted on every level and resulted in increased risk-taking in striving to meet deadlines. The supervisors admitted that the schedule was too short and confirmed the practice of risk-taking. Turnover was high on the project, which was attributed to poor pay levels. Many

jobs in construction are short-term, and workers find it necessary to work at several sites at once, often travelling long distances between them. This and the lack of job security lead to a high turnover of labourers in this sector. At each site, workers must learn on the job, with no training or precautions about the dangers they may face, and no induction for new entrants into the construction sector. These factors all increase the chance of workers being involved in accidents. Even the hot weather in the Kuwaiti summer has an effect on safety. Workers can become unfocused and even dizzy, particularly given the long working hours imposed by managers who are keen to exploit the dry conditions—bad winter weather can hold up work, and companies seize on summer conditions to try to make up lost time. These factors can lead to construction site hazards being overlooked or undervalued and contribute to elevated injury rates.

National culture

Power distance

Hofstede et al. (2010) stated that individuals from high power distance (PDI) cultures are more likely to follow rules, as they are accustomed to an authoritarian culture. Merkin (2004) further suggested that those from high PDI cultures are likely to comply with instructions and procedures, as they value obedience. It may thus be inferred that cultures with a high PDI will have fewer injuries and a lower frequency of time lost to injury as a result of their greater tendency to comply with rules and regulations. In contrast to the extant literature, this study found PDI and safety compliance levels to be negatively correlated. This was attributed to management's lack of commitment to safety. Hofstede’s (2010) observation about high PDI hampering two-way communication means that employees are frequently unwilling to question decisions made by their superiors.

Individualism and collectivism

Individualism (IDV) is seen in societies where people expect to look after themselves and their immediate families only, while collectivism is characteristic of societies comprised of people who belong to cohesive groups to whom they remain loyal throughout their lives (Hofstede et al., 2010). Hofstede (2011) also noted that collectivism generates obedience, conformance, and cooperative communication. Such cultures tend to value group goals over individual goals and are more likely to comply with rules that benefit the group or the collective. It may therefore be concluded that safety performance would be positively impacted by a collectivist

culture. Accordingly, results indicate that nations with low IDV dimension have a comparatively high degree of safety compliance.

Uncertainty avoidance

Hofstede et al. (2010) considered that a society's tolerance for ambiguity or uncertainty is manifested in uncertainty avoidance (UAI). Cultures with high UAI make great efforts to minimise the likelihood of unforeseen outcomes, as they are uncomfortable with uncertainty; they thus create their own rules and regulations (Lu et al., 2012). Similarly, Bird (2000) posited that people from low UAI cultures are more self-determining and thus more tolerant of uncertain situations. High UAI societies would be expected to produce stricter and more thorough safety guidelines, thus having a positive effect on safety performance. On the other hand, high UAI cultures may also have overly structured decision-making environments causing people's responses in critical situations to be inflexible. Results indicate that nations with a high UAI have a relatively lower rate of safety compliance.

The conclusion of this study was that the safety culture in Kuwaiti construction companies, is the overarching indicator of the likelihood of accidents. Managers' commitment to safety has been shown to reduce accident levels. Little research has been conducted into quantifying a culture of safety and correlating it with available data on accident risk, but the accident statistics among Kuwaiti construction firms are troubling. Management must pay greater attention to safety and prioritise it over cost-cutting. Focusing on the well-being of their workers—improving working hours, conditions, and equipment—can bolster worker–management relations and consequently productivity, affirming that safety is not a cost but an investment. Specifically, the following key areas in health, safety, and welfare require improvement within the Kuwaiti construction industry:

- On-site management, including areas of control, communication, and training;
- Improved incident reporting system, monitor performance and progress;
- Improved working conditions during peak summer months;
- Improved enforcement of regulations and increased resources for health and safety management.

Appendix VII

Interview Transcript

Could you briefly give an overview of your position and responsibilities?

My name is …. and I am working as a safety engineer. I am in Kuwait for the last 20 years, and I am in …. since 2006. I've joined as a safety engineer and I have been assigned a responsibility of taking care of the safety in projects. And so I have been working in Projects Department. Literally I deal with for example I work with many project, one project was, I'd started my career in our …. and it was carried by …. Like that I have done so many projects, and currently I am working with a project …., it's a north time form project it's having 10 numbers of time. I take care of the safety of the people and I ensure that the safety system is been followed by the contractor. The safety system what …. has which is involved with international standards.

I ensure that the contractors in line with that, and before the contract starts they have to submit a plan saying that we will be doing, and we give everything to them - and they say our procedure will be in power with the documents and all of those things. And then after submitting it I ensure that they are following what is mutually agreed between the company and the contractor. Starting from the mobilization to the complete demobilization of the project, I ensure that it's completed, that is to ensure that is followed strictly. Other than that I do Periodical and I do daily site visits. And we have audits there are audits to different level from the top managing level to the local supervisor level. So as an engineer I have an audit schedule with me, and I carry out an audit at site and ensure that their complaints are given to the contractor, and why are the company and The Company means the group because we are independent we don't work under the projects.

We are independent we have given that to assist them in the Project Department. So we do audits and the audits accommodations are given to them, there are various audits and even we do the camp audits to ensure that the people's

accommodations are welfare of the workers. And we do the bus boarding audit, and the bus boarding means that we had a lot of issues boarding in this boarding. And then we do the contractor safety performance audit, and then we have got safety performance audits alone, and then we do the different types of occupation audits, like noise measurement noise level measurement at the site - heat assessment what the heat what is the values of the Heat and humilities and all of those things. Other than that we also do the elimination - 10 different types of Occupational audits we do.

And then we do radio site inspection we are supposed to do, and then every day when we go to the site we are supposed to do a work permit audit. Take the work permit and Ensure that the complaint of this is done on site, that is the basic line of being through all of these things. And not only that any documents submitted by the contractor we review it. For example, any procedure any work before they do they submit a procedure, we review the procedure and what the deviation is we identify it with the aspect to safety. And we asked them to comply with the department as for our …. guidelines and International standards.

Do you think that having a multicultural workforce affects construction safety performance?

It's a basic problem in our - but the thing is our people are multilingual people, especially in a construction site we have got people from Thailand China Korea, Bangladesh India - and now we have got people from Egypt and Jordan's everybody is there. So what we try to communicate, Afghanistan so everything - but what we try to communicate is not we are having a difficulty communicating down the line. Okay to the top management and the middle management we are able to communicate very well, but ultimately the workers who are working on site. For example, in excavation you cannot expect a guy to be a very educated guy, even if he's a bit educated he becomes as the foreman or the supervisor. So they are all labourers and the labourers as for the …. regulations, we are supposed to give them a training and we are supposed to give them desk - don't know if you can allow them to enter a confined space.

But after so much of discussion now they have made it like we will do every verbal test it's not a routine test. We are trying to change so many gaps to avoid the gaps, like for example a person who is not educated who does not know how to read and write, we will start giving them verbal examinations - we will give the training and for example, I cannot know all of the languages even though I know six languages now I have got assistance. For example, if I want to train an Arab guy or an Egyptian guy, I want an Egyptian guy who will do the training - but ultimately I will be witnessing and I will be giving the test. This is what now we are trying to, but still when we communicate the toolbox talk in the morning we will be having some difficulties because of that, but still now each we have design it in such a way that each Workforce should have a foreman who is of the same language. Wo that we can communicate so that this bridge can be removed.

How does national culture influence the safety performance in construction projects?

Because when I tell you that certain people are very good; they've not known anything about the safety in their life they just know how to do the work that's it period. They know how to do the work if you give them a job they will do it, and they will jump - and people nowadays if you go to some areas you will get a lot of workers standing on the road. And these guys are working on buildings outside, you will see the scaffolding outside of the refinery and it's very dangerous, they think that yeah I have work there and I have been living until now. So why are you asking me to work on a scaffolding with a tall board or with braces or anything. They just stand on a single plank but here we don't allow that, we say you close it and you put tool guard everything. You should be inspected and certified, and not only that if you are going to work at scaffolding, that person should undergo in a third party certification training. We have made it so stringent and these people try to - they don't this is one issue and the second thing is they don't have a safety culture, the safety culture is not there. So they try to initiate the safety culture when they come inside of the refinery, and so we have a lot of problems we have a lot of problems. These guys cannot, the safety cultures these guys are so addicted to smoking, they are so addicted to smoking. So we keep so Vigilant but still …. and we see cigarette butts lying here and there. They are not knowing that while here you are working in a refinery which is a money-making machine for Kuwait you cannot do these things.

Even though they are not working inside of units, but anything can happen inside of the refinery, but how much of this culture this is not getting inside of their mind. So even though we give out lots of training and we give penalties and we give infringements. The infringement has become so too much nowadays, when I was working as a contractor into the …. I was scared of infringements. I was working on six years as a contractor with …. when the companies won't give me an infringement of the company, we used to get scared of them because even though it was 50 KD but now it has increased to 1000 KD, but still those guys are not worrying. In certain companies the safety culture is not there so then okay you take, the company is ready to pay the money you do a violation the management is saying you do violation I will pay 1000 KD the safety culture is not there. The safety culture can come only when the top management, and not only they are taking everything for low cost. So they want to compromise on so many things, they want to compromise on even small, small things and that's …. that's the main issue.

What do you think about employee safety behaviour in construction sites?
Do employees:

I cannot say that they are not following but I can say that they are habitual. For example, a typical example and I'm sorry to say this - the Ukraine guys always practice for wearing this Ghutra, I give him a helmet and he puts a Ghutra and then puts a helmet which is ultimately it's not useful. I go to a site and I can pull all of the Ghutra and load in my car and go. I have done there is lots of garbage covers with full of Ghutra but when they see me you know what they remove the Ghutra and keep it, but they're addicted I don't know they want to wear a gutter on top of it or they want a helmet I don't know. So like this is one culture, and certain culture of people certain people I feel when I go talk to them, whenever I go to site I make it a habit to call all of the workers, that particular labour group and talk in their language and try to convince them and telling them why am I here.

And I tell them bluntly you die you are going to suffer I am not going to suffer, and then they understand. And even these glasses, company Contracting Company gives all of the employees glasses black and white, everything will be inside of the element. Only when they see my helmet the green helmet they just wear it, but guys you are not wearing it for me. They are saying inside it's very hot you are making us

very strict, and now we have made it that the fire assistance comes, so it's becoming hotter for them. And the summer climate there's so many things, but it's been followed but still we are to keep on that kingdom unless it goes deep into it.

Do you think they are maintaining the highest level of safety?

I can say I am not saying that they are not maintaining it all they maintain, unless we keep behind them, we should keep going ahead of them. And if there are one supervisor who is very good, if the job supervisor for that particular group of people is very good then life is so easy. If that guy is …. he changed a lot because there have been so much penalties for Ghutra, because so many incidents has happened because of Ghutra [11:54] these are the small things. These guys are very happy working without a gloves these Carpenter and all of these things. When see me they wear it but they say they are very comfortable.

Do employees attend safety training courses or workshops?

All of the people that attended the basic orientation courses all the differences with them all of these things. And whenever we push them for a particular training. For example, the carpenter skills training they go for it but they do attend the trainings. And especially now in trainings has become very good - we keep telling them whether it goes inside or not, but once we repeat one time at least it will go inside like we keep doing trainings and those people come and attend and sometimes they will get click and they will become very good.

Can you please comment on construction sites' safety performance over the last five years?

It has become, now it has increased very well because now in the initial 10 top phase itself we have included so many things, out of a previous what do we see we have just started including that, before there were safety engineer but not much qualified. So now we said we need this type of qualification for the safety engineer, the safety is …. Now we did have a role called as the environment engineer but now it has become mandatory, you need a safety engineer. And then before mobilizing these are the requirements, you should have a proper camp. We have started

enforcing it before they mobilized the people to site, you should be given the intention, they should have proper restroom and they should have proper welfare. So when we are looking into all of those things, the safety culture automatically increases. But other than before they used to sit in the outside in the open air and eat. Now there is a proper dining room and dining facilities. They have got restroom and they have got prayer room, the technology improved. So once these are improving at this end automatically the culture - I mean the company can provide all of these things, naturally the safety culture also among the employees also increases, and the number of culture is increase and the PPE compliance is increase.

So when these issues when the company management is showing all of these things, naturally the workers also are - when the company gives all of these things and they make them follow all of the safety regulations. So it has improved a lot since 98 what I have seen now it's improved drastically, and awareness on safety has …. it was not like this before. Since the last 20 years the charts have been higher, even though there are so many deviations but still, and then a lot of people are very too much inside of the refinery currently. Contractor and employees are more than 70000 people, it's a huge number.

From the questionnaire results, many responses stated that there is a high rate of near misses and accidents that result in up to three days of the injured employees' absence. What do you think about this incident rate?

These near misses and all of those things. Now with the new …. projects going on, it's the clear filed projects it's new refinery project and the number of people are more, the content of work is more. Every day one is multilingual people in certain refinery. And the content of work is more, once you go you take a vacation for one more week and come back, you see that the unit has helped and automatically has come up to so much things in the site, this is because the number of work which is going on. And almost all type of work every type of work is going on. So naturally near misses' occurrence is going on, substantial conditions like all of these are there - but still all of these are identified and we have a beautiful system called as the IS Maximum system, in which all of the recommendations are communicated to all of the employees. The lesson learned that I share, when any

incident happens when the investigation is done, and those investigations are being transferred to all of the people.

We ensure that any small incident happen this is discussed in the toolbox stop the next day, and in the meetings we take it as an issue …. what all of the incident happened during the last one month is detailed - so that the people know so when such a scenario happen when working they will take all of the precautions. So near-misses are there incidents are there, but still so many precautions have taken.

What are the factors affecting safety performance in the construction industry?

Once again the factors the multilingual factors and the safety culture has to be improved, not only among the locals and not only among the …. people, it should be among the contractors. The safety culture is the main thing the safety culture plays a very important part. And multilingual these are the two things which affects the - and education background and the country where they come from matters a lot. And the labourer cost, if you are going to bring a cheap labourer then the safety will be at stake, because you bring in a guy for 20 or 30 KD, he will be off that potential only and if it's a really good …. potential it's very-very high. So naturally you bring a labourer and you train him for 10 days and then you make him as a welder, naturally he will not know the basics he will not be able to experience matters.

Of course because the country, because they are trying to bring cheap labourers. Frankly Speaking they are trying to bring in some Bangladesh, so many people with cheap labour - those guys have not been working in the construction field so they don't have much experience. The welders come from Europe from Japan, so the way they perform the job and uneducated performance is entirely different. The more the guy is educated and he's having an educated qualification …. safety performance is improving.

How can contractors improve their safety performance?

While within the contract itself, they should give importance to safety it's not only catching the job, it's ensuring that they finish the job safely - because certain projects a lot should be done for that particular project at the initial phase itself. So

that we don't have to compromise on safety, like for example we know that certainly when you are working on height we ask them to throw the safety net, they say sir we don't have much in for it…. They cannot say no we cannot do it it's not counted in the budget, so please when you are taking your contract please see what is the requirements, and study the project very clearly and keep a budget which is allowance budget so that you can pull money from it, only they think about Construction and getting a profit out of it. Nowadays so many competitions are there so they go for a low quote, and usually whenever a company does a low quote the contractors are order to them, they don't give out contact.

So because of that he will be compromising only on safety because he cannot compromise on other Construction materials. Company wants to give out projects only to locals fine that's good. And we have a budget when we see a local we know, there is so much of difference. The project budget and the contract was quoted, a big vast difference with that itself we will know that this guy cannot rule the project, he will not have considered on safety because any one thing we say he will try to bring in the lowest rate. Even the materials he will go and compromise on the cheapest qualities - but now we have a system where all of the PPE's are approved …. are supposed to buy, what he does he is trying to compromise he's going to cut everything so that he can make profit. And the only thing that he can't cut on is only on safety. They bring safety people with less value and less experience, so less salary. So what we can say so they bring a newbie ,… they said come on keep going we are to finish this project with the local.