CROSS CULTURAL MANAGEMENT OF QUALITY PERFORMANCE OF CHINESE CONSTRUCTION FIRMS IN NIGERIA

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DECLARATION

I hereby declare that the thesis is my original work and it has been written by me in its entirety. I have duly acknowledged all the sources of information, which have been used in the thesis. This thesis has also not been submitted for any degree in my university previously.

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Babatunde Oluwayomi Kayode

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SUMMARY

China's economic reforms have seen the country engaging with the rest of the world, particularly resource-rich countries, to meet its huge resource needs and to attract foreign direct investments. China has developed its construction industry's competitiveness, from its need to service the world's most populous and urbanized nation. Chinese construction firms (hereinafter referred to as Chinese firms) undertake infrastructure construction in almost all the 53 African countries. Nigeria has become China's fourth largest investment partner and the second largest export market in Africa. Chinese firms face challenges on the quality of their construction services in Nigeria. Cross-cultural differences between Chinese and Nigerians and corresponding impacts on the perceptions of quality of construction services need to be investigated.

By integrating two perspectives including Hofstede's five national cultural dimensions (NCDs) and the eight quality management principles towards total quality management (TQM) implementation, this study developed a conceptual framework (CF) to achieve the research aim. The CF is underpinned by the bi-directional and culture-specific relationship between national culture and TQM implementation. The theoretical framework developed postulates that Chinese firms that are able to identify and manage differences of the influences of national culture on TQM implementation are perceived as firms with good quality performance in Nigeria.

The research methods were based on questionnaire survey, Delphi technique and case studies; data collection instruments were purpose-designed questionnaires for different stages of the study; and data were collected using e-mail, face-to-face interview and observations. In total, 48 and 80 completed questionnaires were received from the Chinese and Nigerians with prior working experience with each other in Nigeria. At the data analysis stage, relative rank revealed *customer focus*, *leadership*, and *people*

involvement as the top-3 ranked significant TQM principles to achieving good quality both among the Chinese and Nigerians.

Friedman tests revealed no significant difference among the Chinese on perceived significance of the TQM principles and NCDs to achieving good quality in their firms and among the Nigerian firms. Among the Nigerians, Friedman tests only revealed a significant difference in their perceived significance of the TQM principles to achieving good quality in their firms, but no significant difference in their perceptions for the Chinese firms. Using the frequency of ranks 1 to 3, Wilcoxon rank sum tests showed that there is a significant difference in the perceived influences of TQM principles and NCDs on quality management among the Chinese and the Nigerians. The study also found a significant association between Hofstede's NCD scores for China and Nigeria and their perceptions of the influence of national culture on TQM implementation.

Following 2-round surveys among the Chinese and the Nigerians, thirty pairs each of important TQM and NCD attributes, being culture-specific TQM, were generated among the Chinese (Matrix 1A) and Nigerians (Matrix 2A), of which eighteen pairs were found to be common (Matrix 3) after cross analysis. Following a 3-round Delphi and four case studies and triangulating the results of the survey, Delphi and case studies, the eighteen common pairs (Matrix 3) were analyzed thematically. Matrix 3 consists ten pairs relating to the stated needs of the Nigerians and the basic requirements of the Chinese in Nigeria; four pairs were found relating to the implied needs of the Nigerians and the strategic abilities of the Chinese in Nigeria, and the last four pairs were found relating to the potential needs of the Nigerians and risk appetites of the Chinese in Nigeria.

Matrix 3 was developed into a model based on the thematic categories for validation with additional two case studies that confirmed the prediction, predictive capability and effectiveness of the 18-pair model. The quality management assessment matrix (QMAM)

developed in this study underpinned the development of the model. It is recommended that the Chinese firms in Nigeria adopt the model for strategic decision making on the stated needs, implied needs and potential needs to minimize conflicts related to their quality. Other non-Chinese firms can also adopt the model for insights into important considerations when engaging with the Chinese and the Nigerians. The QMAM developed in this study can be adopted by a future study to investigate the culture-specific TQM involving some another countries to further complement and validate the QMAM.

Keywords: Chinese, Conflict, Construction, Model, National culture, Nigerians, Service quality performance, Total quality management.

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LIST OF ABBREVIATIONS

ABEA	Australian Business Excellence Award
AfDB	African Development Bank
AEC	Architecture, Engineering and Construction
AQA	Austrian Quality Award
ASQ	American Society for Quality
BBC	British Broadcasting Corporation
BMI	Business Monitor International
CBN	Central Bank of Nigeria
CBR	Case-Based Reasoning
CCQIM	Cross-cultural Quality Implementation Model
CCS	Center for Chinese Studies
CHINCA	China International Contractors Association
CIA	Central Intelligence Agency
COSIMO	Conflict Simulation Model
CQCM	Culture-quality conflict management
CS	Construction Supervision
CWQC	Company Wide Quality Control
D&B	Design and Build
DP	Deming Prize
ECOWAS	Economic Community of West African States
EFQM	European Foundation for Quality Management
ENR	Engineering News-Record

EPC	Engineering, Procurement and Construction
EQA	European Quality Award
ERA	Executive Research Associate
ESCAP	Economic and Social Commission for Asia and the Pacific
EXIM	Export-Import
ExQMAM	Expanded QMAM
FDI	Foreign Direct Investment
FGN	Federal Government of Nigeria
GCI	Global Competition Index
GII	Global Innovation Index
GPNQA	Golden Peacock National Quality Award
GQA	German Quality Award
HIIK	Heidelberg Institute for International Conflict (Konflikt)
ICJ	International Court of Justice
IDV	Individualism
IMCRBNQA	IMC Ramakrisha Bajaj National Quality Award
IMF	International Monetary Fund
ISO	International Organization for Standardization
IVR	Indulgence versus Restraints
JQA	Japan Quality Award
JUSE	Union of Japanese Scientists and Engineers
JV	Joint Venture
LTO	Long-Term Orientation
MANCAP	Mandatory Conformity Assessment Program

MAS	Masculinity
MBNQA	Malcolm Baldrige National Quality Award
MDG	Millennium Development Goal
MNC	Multinational Corporation
MNQA	Mauritania National Quality Award
MOFERT	Ministry of Foreign Economic Relations and Trade
NCD	National Cultural Dimension
NCPPRC	Nigeria Council for Promotion of Peaceful Reunification of China
NEEDS	National Economic Empowerment and Development Strategy
NEPAD	New Partnership of Africa's Development
NIS	Nigerian Industrial Standards
NIST	National Institute of Standards and Technology
NOTAP	National Office for Technology Acquisition and Promotion
NQA	National Quality Award
OECD	Organization for Economic Co-operation and Development
PDI	Power Distance Index
PPP	Purchasing Power Parity / Public Private Partnership
PM	Project Management
PMI	Project Management Institute
PMBOK	Project Management Body of Knowledge
PMO	Project Management Office
PMP	Project Management Professional
QDM	Quality Dynamic Model
QM	Quality Management

QMAM	Quality Management Assessment Model
RCT	Rural Construction Team
RGNQA	Rajiv Ghandi National Quality Award
SAEA	South Africa Excellence Award
SAR	Special Administrative Regions
SEZ	Special Economic Zone
SOE	State-owned Enterprise
SON	Standard Organization of Nigeria
SONCAP	Standard Organization of Nigeria Conformity Assessment Program
SSA	Sub-Saharan Africa
SWOT	Strengths, Weaknesses, Opportunities, Threats
TKI	Thomas-Kilmann conflict mode Instrument
TQC	Total Quality Control
TQM	Total Quality Management
UAI	Uncertainty Avoidance Index
UNDP	United Nations Development Program
UNECA	United Nations Economic Commission for Africa
URC	Urban and Rural Collectives
USIP	United States Institute of Peace
WEF	World Economic Forum
WHO	World Health Organization
WTO	World Trade Organization

CHAPTER 1: INTRODUCTION

1.1 Background

Internationalization has brought about a collision of economic and political forces, which, continue to erode companies' erstwhile inherent rights to their domestic markets (Gunhan and Arditi, 2005: 273; Mead, 1998: 13). The constantly evolving competition necessitates that companies strategize business operations from the international perspectives in order to derive competitive advantages towards meeting their bottom line (Mead, 2002: 12). Construction activities remain the hallmark of civilization (Cokinos, 2009: 9), and the construction industry would account for about 13.4% and 14.6% of world output and gross domestic product (GDP) respectively by 2020 (BDO, 2010).

Quality is an all-embracing phenomenon in companies' approaches to businesses both in the domestic and international markets. Thus, quality has become subjective and dynamic (Goetsch and Davis, 2006: 5) that each person or sector has its own definition (American Society for Quality (ASQ), http://asq.org/glossary/q.html). Quality management (QM) approaches are diverse, with the total quality management (TQM) concept providing companies with the capacity to change to adapt to the environment in which they operate (Mead and Andrews, 2009: 263). Similarly, the Deming Prize Committee of the Union of Japanese Scientists and Engineers (JUSE) has also submitted that TQM embraces a set of systematic activities carried out by the entire organization to achieve objectives at a level of quality that satisfies customers and at the appropriate time and price (Deming Prize Committee, 2011: 2).

Noronha (2003) established that when TQM is implemented in a cultural context, a fusion exists between the underlying cultural values and fundamental TQM principles to derive

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a culture-specific TQM. Sousa-Poza, Nystrom and Wiebe (2001) also established that a bi-directional relationship exists between culture and TQM implementation, while Zairi and Baidoun (2003) posited that TQM implementation should consider a country's culture. Previous studies have demonstrated that culture shapes perceptions (Lindsay and Norman, 1977), culture is a source of conflicts (Hofstede, 1984) and the conflicts affect the quality of services by a company (Low, 1998), attributable to resultant damages/reworks, wasted time and loss of productivity.

The People's Republic of China (henceforth, China) embraced economic reforms in the early 1970s (Corkin, 2006a: 12; Corkin and Burke, 2008: 41), which initiated the "going out" strategy in support of Chinese firms' overseas investments to develop resources and attract foreign investments into China (Chen and Orr, 2009: 1202). Having developed one of the world's largest and most competitive construction industries, with particular expertise in the civil works critical for infrastructure development (Foster *et al.*, 2008: 5), China found strategic undertakings in African countries, with concentration of projects in Angola, Sudan and Nigeria (ERA, 2009: 68). Angola and Nigeria had the highest number of active *Engineering News-Record* (ENR) top 225 international Chinese firms in Africa based on findings from a survey undertaken by Chen *et al.* (2007).

Officially, there are over 30 Chinese firms in Nigeria (AfDB *et al.*, 2011: 13; Chinese Embassy, 2004; Ogunkola, Bankole and Adewuyi, 2008: 5). These Chinese firms are involved in construction of roads, bridges and railways; oil and gas plants as well as dams; rural and urban information and communication technology (ICT); development of schools, training centers and quarters; stadiums, hospitals and mass housing; and expanding as Momoh (2009) earlier identified. Total Chinese investments in Nigeria rose from USD 6 billion in 2009 (CCS, 2009) to USD 8 billion in 2010 (CCS, 2011) to an

estimated USD 10 billion as at end 2012 (Deng, 2012), constituting about 6.13% of total of Chinese investments in Africa. Unsurprisingly, Oluwakiyesi (2011: 13) reported the position of the leading firm in Nigeria's construction industry as now pressured with the entry of the Chinese firms while Foster and Pushak (2011: 45) submitted that Nigeria has proven to be an attractive destination for China.

However, in the midst of the seemingly advancing business operations of Chinese firms in Nigeria, the firms have faced (and still facing) challenges with regard to quality in the delivery of their services. Among Nigerian construction practitioners, the perceptions of the Chinese firms' quality of services vary and remained kaleidoscopic that Babatunde and Low (2008) theorized the perceptions as culturally influenced, pending empirical findings. Alleged conspiracy with local practitioners (Ukaoha, 2009; Wang, 2008), hoarding of information on operations (Aginam, 2010; Oyeranti *et al.,* 2010), importation of home labor and non-compliance with technology transfer (Alike, 2011), discriminatory management style (Deng, 2011a) and proliferation of Nigeria's market with shoddy products and services (Djeri-wake, 2009; Utomi, 2008) are some of the challenges confronting Chinese firms in Nigeria.

1.2 Research problem

Following years of adhering to a closed-door policy, Chinese firms, in their going-out strategy, have embraced incorporation of new management techniques including TQM (Li, Anderson and Harrison, 2003: 1026). TQM implementation considers a country's culture (Zairi and Baidoun, 2003: 20) while making appropriate modifications to a prevalent culture (Muriithi and Crawford, 2003). Thus, foreign construction practitioners may not understand or know how to manage Chinese firms due to the different cultural backgrounds (Ling, Ang and Lim, 2007: 502) between them and the Chinese.

TQM is the art of managing the whole to achieve excellence (Besterfield *et al*., 1995: 1); it is a journey and not a destination (Burati and Oswald, 1993: 458) and requires the considerations for the human behavioral attributes in its implementation (Low, 1998: 44). As a result, the most significant determinant of a successful TQM implementation is the ability to translate, integrate and ultimately institutionalize TQM behaviors into daily practice on the job (Low and Teo, 2004: 8). TQM must continue to consider the internal and external factors (McAdam and Henderson, 2004) to incorporate the key behavioral and technical aspects of QM (Calvo-Mora Schmidt *et al*., 2013; Leong, Zakuan and Saman, 2012).

In addition, the cultural misunderstandings impact the perceptions of quality by taking cues from Kano *et al.*'s (1984) model, which considered the objective and subjective aspects of quality, the latter involving customers' perceptions of satisfaction. In essence, firms' strategic operations to meeting and exceeding customers' expectations either through simplistic means (Yang, 2005) or complex models (Md Mamunur, 2010) need to take into account the bi-directional (Souza-Poza, Nystrom and Wiebe, 2001) and culture-specific (Noronha, 2003) relationships between TQM and culture.

Culture is the collective programming of the mind (Hofstede, 1980: 13). It is a construct applicable at the level of the society or nation (Hofstede, 1980: 26), thus the term "national culture". National culture is comparable between two cultures since one culture is not so unique that any parallel with another culture is meaningless (Hofstede, 1980, 40). Premised on the fore going notion, Hofstede (1991) has derived five national cultural dimensions (NCDs) commonly adopted to compare one culture from the other. The NCDs include *Power Distance,* which describes the handling of inequality and reflects in the score on the Power Distance Index (PDI). *Individualism* describes the relationship

between the individual and the collectivity and reflects in the score on the Individualism Index (IDV). *Masculinity* describes the duality of the sexes and implications on emotional and social roles and reflects in the score on the Masculinity Index (MAS). *Uncertainty Avoidance* describes the handling of the uncertainty about the future and reflects in the score on the Uncertainty Avoidance Index (UAI). *Long-term Orientation* describes the Chinese sage Confucius' virtues of persistence and thrift to personal stability and respect for tradition and reflects in the score on the Long-term Orientation Index (LTO).

TQM strives to establish a behavior of a continuous change while national culture is the collective programming of the mind. This creates challenges ranging from minor disputes to full-fledged conflicts. Similarly, challenges that Chinese firms face in Nigeria with regard to the quality of their services cannot be generalized as reports and findings from some other authors (Aminu, 2011; Chao, 2010; Corkin, Burke and Davies, 2008: 7; Oluwakiyesi, 2011; Osakwe, 2012; People's Daily Online, 2010) have also justified good quality construction services by these firms. TQM covers people, processes and environments (Goetsch and Davis, 2006: 5; Mahmood *et al.*, 2006: 1) as discussed earlier. As a result, TQM lends itself to cross-cultural conflicts arising from the encounters with people, groups and nations, who think, feel and act differently as supported by both Hofstede (1991: 3) as well as Hofstede, Hofstede and Minkov (2010: 4).

Notable authors (Sousa-Poza, Nystrom and Wiebe, 2001; Noronha, 2003; Flynn and Saladin, 2006; Teh *et al*., 2009) have; thus, argued the importance of national culture to TQM. Green (2012) investigated the link between TQM implementation and organizational culture and found that the success of the former is contingent on the latter. From the fore goings, it is essential to investigate how Chinese firms in Nigeria manage the total quality of their construction services to delivering good quality construction

projects in Nigeria, given the cultural differences between the Chinese and the Nigerians. The research problem, on one hand, aims to investigate the management of cross-cultural differences between the Chinese and the Nigerians. On the other hand, it also aims to investigate the potential impacts of the management of the cross-cultural differences on the perceptions of quality of services for the Chinese firms operating in Nigeria.

1.3 Knowledge gap

There has yet to be a study on the influence of national culture on the perceptions of quality in Nigeria's construction industry. In corollary, the potential significant impacts of national culture of Chinese firms affecting and giving rise to differences in the perceptions of quality of construction services between them and their Nigerian counterparts have yet to be investigated as well. Filling this gap is crucial in view of the roles that the Chinese firms continue to play in Nigeria (Babatunde and Low, 2013). In addition, filling the gap by adopting the five NCDs mentioned earlier will substantiate the sustained Chinese firms' operations in Nigeria unlike the other foreign firms.

There has yet to be a study that proposed a model to simultaneously identify cultural differences and impacts on perceptions of quality for international contracting parties. Lim and Firkola (2000) also noted that there has been an absence of theory capable of explaining the role of culture in organizational behavior. Previous studies have found that different TQM models exist (Padhi, 2005: 2), more models would evolve (Nitin, Dinesh and Paul, 2011) and relationships exist between culture and TQM (Sousa-Poza, Nystrom and Wiebe, 2001; Noronha, 2003) to evolving a model for cross-cultural encounters (Ling, Ang and Lim, 2007). However, these models did not address a system to identifying cultural differences and impacts on the perceptions of quality. Filling this gap will ensure the systematic design of a more responsive culture-specific TQM.

For this study, Chinese firm is defined as a Chinese company headquartered in China and having a registered subsidiary in Nigeria, which undertakes construction and/or construction-related services. A Chinese is a construction practitioner (citizen of China) working in a registered construction firm in Nigeria. In congruence, a Nigerian is defined as a construction practitioner (citizen of Nigeria) working in a registered firm (including Chinese firm), which undertakes construction and/or construction-related services.

1.4 Research aim and objectives

The aim of this study is to investigate the strategies that would enable the Chinese firms to achieve good quality performance in Nigeria, given the cultural differences between the Chinese and the Nigerians.

The specific objectives are to:

1. Design a model to investigate the influence of national culture on TQM implementation between two international firms;

2. Investigate important TQM principles and their attributes that affect project quality in Nigeria as perceived by the Chinese and the Nigerians;

3. Investigate important NCDs and their attributes that affect project quality in Nigeria as perceived by the Chinese and the Nigerians;

4. Develop a model that integrates TQM principles and NCDs of the Chinese and the Nigerians to boost the Chinese firms' project quality in Nigeria; and

5. Test the model and recommend effective quality management strategies for Chinese firms in Nigeria to achieve good quality performance.

1.5 Research hypotheses

To fulfill the aim and objectives, the following hypotheses are set out.

Corresponding to Objectives 2 and 3,

Hypothesis 1 (**H₁**): Differences exist in the perceptions of the influences of national culture and TQM principles on the management of quality between the Chinese and the Nigerians.

The corresponding sub-hypotheses are:

> **H₁.₁**: There is no significant difference among the Chinese on their perceived influences of national culture and TQM principles on quality management;
>
> **H₁.₂**: There is no significant difference among the Nigerians on their perceived influences of national culture and TQM principles on quality management; and
>
> **H₁.₃**: There is a significant difference in the perceptions of the influences of national culture and TQM principles on quality management between the Chinese and the Nigerians.

Corresponding to Objective 4,

Hypothesis 2 (**H₂**): Quality perceptions of the Chinese and the Nigerians are influenced by their national cultures.

The corresponding sub-hypotheses are:

> **H₂.₁**: There is significant association between China's NCD scores and the Chinese' perceived influences of national culture on quality management among themselves and the Nigerians.

H$_{2.2}$: There is significant association between Nigeria's NCD scores and the Nigerians' perceived influences of national culture on quality management among themselves and the Chinese.

H$_{2.3}$: There is significant association between the Chinese and the Nigerians' rankings of the perceived influences of national culture on quality management among themselves and for each other.

Corresponding to Objective 5,

Hypothesis 3 (**H$_3$**): Chinese firms that are able to identify and manage differences on the influences of national culture on TQM, between them and the Nigerians, are perceived as firms with good quality performance.

The corresponding sub-hypotheses are:

H$_{3.1}$: There is no significant agreement between a perceived good quality Chinese firm and a perceived poor quality Chinese firm on the important TQM and NCD attributes to achieving good quality performance in Nigeria.

H$_{3.2}$: There is significant agreement between a perceived good quality Chinese firm and another perceived good quality Chinese firm on the important TQM and NCD attributes to achieving good quality performance in Nigeria.

H$_{3.3}$: Important attributes of the five NCDs (PDI, IDV, MAS, UAI, and LTO) combined with an important attribute of a TQM principle leads to significantly good quality performance.

1.6 Research scope

Major engineering, procurement and construction (EPC) and design and build (D&B) infrastructure projects in Nigeria are considered in this research due to the active involvement of Chinese firms in the projects procured through these methods. A reason for the involvement of Chinese firms in these projects is attributable to Nigeria's awards of extractive projects (oil and gas) to Chinese firms that required the Chinese firms' commitments to provide infrastructure projects in Nigeria. The contractual arrangements advanced the involvements of Chinese firms in EPC and D&B projects in Nigeria.

The target respondents in this research include:

1. Chinese firms (large state-owned corporations and medium-sized private companies) with track records of major infrastructure projects in Nigeria, through the Federal or State Government, in the ten (10) years prior to 2013.

2. Locally owned Nigerian firms (large-, medium- and small enterprises) offering construction consultancy and contracting services possessing working experience with Chinese firms in the ten (10) years prior to 2013.

For this study, the Nigerian firms are locally owned firms and preclude other non-Chinese foreign owned firms offering construction services so as to obtain more reliable information. Separate responses from the Chinese and Nigerian firms also aim to address generalization that could arise based only on feedback from a single group without considering the other.

1.7 Research methodologies

To achieve the objectives established in section 1.4, several research methods are adopted:

1. Literature review of TQM implementation in cross-cultural settings, filtering down to observable TQM principles and attributes of national cultural dimensions (NCDs) for Objective 1.

2. A two-pronged research design, which involves two-round separate surveys of both the Chinese and the Nigerians to be followed by a three-round Delphi technique for Objectives 2, 3 and 4. The Delphi technique adopts semi-structured questionnaires.

3. Case studies involving four Chinese firms to be adopted to accomplish Objective 5. Observations, review of documents and face-to-face interviews, using semi-structured questionnaires, allow for further in-depth investigation of the firms.

4. Case studies involving another two Chinese firms to be adopted to accomplish the second part of Objective 5, which involves validating the predictive capabilities of the model developed for Chinese firms in Nigeria to make recommendations.

1.8 Research significance

This study is important for the following reasons:

1. It proposes a model that integrates national culture and TQM, with the practical implication of generating a system to identifying the significant attributes of NCDs and TQM principles between the Chinese and the Nigerians.

2. It investigates the influences of national culture on quality management, with the practical implication of identifying the potential areas of conflicts between the Chinese and the Nigerians with respect to the influence of national culture on TQM implementation.

3. It advances Hofstede's (2001) findings to quality management, with the practical implication of an improved knowledge on how differences along the five NCDs impact the perceptions of quality between two international contracting parties.

4. It validates the impacts of culture-specific TQM on quality performance, with the practical implication of providing insights into the business strategies adopted by some Chinese firms to delivering good quality construction services in Nigeria.

1.9 Structure of the report

This report is structured into nine chapters:

Chapter 1 provides the research background and defines the key tenets for subsequent discourse. It discusses the research aim and objectives, hypotheses and scope. This chapter also discusses the research design adopted, methodology, potential findings, significance and contributions.

Chapter 2 reviews the literature on international construction; quality and quality management concepts; culture and conflicts and the relationships, which are buttressed with the case studies. It established the relationships between the national culture and potential effects on quality implementation.

Chapter 3 and Chapter 4 reviewed China and Nigeria respectively. Each chapter discusses historical developments; expounds on the socio-economic developments; traces

developments in each local construction industry with highlights of the perceived strengths, weaknesses, opportunities and threats (SWOT) of each country.

Chapter 5 appraises the relationships between the Chinese and the Nigerian construction industries. It traces the historical developments of the collaborations; discusses the international construction ventures and investments between the two countries as well as the quality performances of the Chinese firms in Nigeria's construction industry.

Chapter 6 models the underpinning theories of the research. It links the problem under study to previous research in the form of a theoretical framework. Within the context of the study, it discusses models proposed for conflict-crisis dynamics; quality dynamics; cross-cultural quality implementation model and the ultimate transformation into a proposed quality management assessment matrix.

Chapter 7 organizes the procedure of this study for data collection to test the hypotheses. It reviews the various research designs and methods; it justifies the study's proposed designs and methods with respect to the research objectives; it discusses the sampling frame and the study elements selected for this study.

Chapter 8 discusses the findings of the different phases, data analyses, and hypotheses testing for this study. It discusses the progression and triangulation of the results of the different methodology. It discusses the development, application and interpretation, validation, and optimization of the model.

Chapter 9 summarizes the key findings of the study, discusses the theoretical and practical contributions, limitations and recommendations for future research. It also provides some guidance on the use of the model, characteristics of application architecture, by drawing on the service quality performance indicators developed.

CHAPTER 2: REVIEW OF LITERATURE ON TQM AND NATIONAL CULTURE

2.1 International construction

Weber (1947) has long identified competition as focusing on wealth, power and prestige. With globalization, competition has now expanded to covering strategic business undertakings involving multiple parties from different cultural backgrounds. Technological innovation, economic internationalization and the hegemony of neo-liberal ideology are the three primary movers of globalization (Lubbers and Koorevaar, 1999: 17). As a result, some authors (Gunhan and Arditi, 2005: 273; Mead, 1998: 13) have posited that globalization has eroded exclusive rights to the domestic market.

The construction industry is one of the top four economic sectors in terms of inter-sectoral linkages (Riedel and Schultz, 1978). Its important role has spanned a complex set of inter-relationships (Ofori, 1990) composing several inter-related sub-entities, each with its own set of activities are attributed (United Nations, 2009). The role of the construction industry to a country's economy has been construed as backward and forward linkages (Riedel and Schultz, 1978), as bi-directional causal relationships (Chan, 2001) and as layers of benefits (PricewaterhouseCoopers, 2011).

An international construction project is one in which the contractor, the lead consultant, or the employer is not of the same domicile, and at least one of them is working outside its own country of origin (Stebbings, 1998; Ofori, 2003: 381). Construction is one of the world's biggest industries estimated to account for 13.4% of world output and 14.6% of global gross domestic product by 2020 (BDO, 2010). With globalization, international

construction firms embrace new opportunities (Gunhan and Arditi; 2005: 273), plausibly, through lowered barriers for increasingly fierce competition (Lu, 2010).

2.2 Quality Management and Quality Management System

2.2.1 Quality Management

The quality experts: Crosby (1979), Deming (1986) and Juran (1988) defined quality as "conformance to requirements", "by the agent i.e. customer", and "fitness for purpose" respectively. It is the totality of features and characteristics of a product or service that bear on its ability to satisfy implied or stated needs (ANSI/ASQC, 1987). It is the degree of congruence between expectation and realization (Lock, 1994: 5). Quality has become the organizational equivalent of truth (Stupak and Leitner, 2001: 4) and moved beyond an act to becoming a habit (Fung, 2008: 22).

Since subjectivity is associated with quality, quality management (QM) is what an organization does to ensure that its products conform to the customer's requirements (ISO, 2000). QM is the process of identifying and administering the activities needed to achieve the quality objectives of an organization (Stupak and Leitner, 2001). The QM system (QMS) establishes guidelines for pro-active approaches to achieving quality and overall business success (Taormina and Brewer, 2002: 61).

In 1946, the International Organization for Standardization (ISO) came to existence to develop standards to facilitate, among other things, international trade. The ISO 9001 standards provides the requirements for QMS, which is now the globally implemented standard for providing assurance about the ability to satisfy quality requirements and to enhance customer satisfaction in supplier-customer relationships (ISO, 2009). ISO 9001 prescribes the following eight QM principles: (1) *Customer focus*; (2) *Leadership*; (3)

People involvement; (4) *Process approach*; (5) *System approach to management*; (6) *Continual improvement*; (7) *Factual approach to decision making*; and (8) *Mutually beneficial supplier relationships*.

2.2.2 Total Quality Management (TQM)

Quality applies not just to the products and services provided but also to the people and processes that provide them and the environments in which they are provided (Goetsch and Davis, 2006: 5). Once a QMS is in place, firms should implement a total quality management (TQM) system that is aimed at changing a company's culture, since TQM offers a plan to manage and improve the quality system continuously (Abdul-Rahman, 2008: 8). Simply, TQM is the art of managing the whole system to achieve excellence (Besterfield *et al.*, 1995: 1) and a TQM organization is one that has the capacity to change itself to adapt to the environment it operates (Mead and Andrews, 2009: 263).

Long implicit in the ISO 9000 QMS is TQM; however, TQM has hitherto remained fraught with short-termism from survival because of other more pressing needs (Love and Holt, 2000). Complacency with the ISO 9000 certification (Zairi and Baidoun, 2003: 7) due in part to shunning by the majority of the firms (Yusof and Aspinwall, 2000: 234) has also limited TQM implementation. Other TQM challenges include not wanting to subject employees to the cultural shock of TQM implementation (Low and Teo 2004: 10) and organizations' difficulties with measuring TQM (Arumugam *et al*., 2009: 49). Implementation of TQM involves a change to the culture (Pun, 2001) and a strategic planning process of a commitment to change (Stupak and Leitner, 2008: 15).

TQM is a set of systematic activities carried out by the entire organization for the purpose of effectively and efficiently achieving the organization's objectives so as to provide

products and services with a level of quality that satisfies customers, at the appropriate time and price (Deming Prize Committee, 2012: 2). It then follows that the degree of involvement of the total organization serves as the key difference between TQM and ISO 9000 (Goetsch and Davis, 2012: 237). Nevertheless, ISO 9000 is compatible with and can be viewed as TQM since the two are not in competition as expounded in the detailed review carried out by Goetsch and Davis (2012: 236-239).

2.2.3 ISO 9000 and TQM

Human behavioral attributes should be considered when implementing and maintaining a QMS for effective TQM (Low, 1998: 44). ISO 9000 QMS is an excellent first step towards TQM (Besterfield *et al.*, 1995: 241; Kemp, 2006: 199; Texeira-Quiros, Almaça and Fernandes-Justino, 2010: 266) and ISO 9000 could certainly be adapted to a TQM organization at a reasonable cost (Kemp, 2006: 200). In 2000, the ISO 9000 standards were rewritten to incorporate the TQM concepts (Goetsch and Davis, 2010: 8). Still, the ISO 9000 standards and TQM have continued to be the two pillars to improve and manage quality (Heras, Casadesus and Garvin, 2002: 72).

Internationalization has motivated firms in most countries to be actively engaged in trying to achieve internationally accepted quality levels based on two major framework of TQM, namely the ISO 9000 and quality award criteria (Mahmood *et al.*, 2006: 2). Thus, ISO 9000 has been construed as being a subset of TQM (Noronha, 2002: 31). The key changes in the revised ISO 9001: 2000 standards underscore a significant move towards TQM as exemplified by the positive TQM performance measures found in top management commitment, customer involvement and satisfaction, employee involvement and empowerment, customer-supplier relationships, and process improvement and management (Rizwan and Syed, 2009).

ISO 9000 and TQM have some common points, and these common points may help ISO 9000 certified companies to be more similar in character to a TQM company (Martínez-Lorente and Martínez-Costa, 2004). Countries like Australia, Canada, Europe, Hong Kong and Singapore have attempted to implement TQM practices in the building and construction industry, mostly relying on the ISO 9000 and ISO 14000 standards (Hoonakker *et al*., 2010: 954). Nevertheless, TQM emphasis has shifted to an assessment as to whether an organization has developed a unique brand of TQM (Deming Prize Committee, 2012: 3) and become an important QMS of the 21st Century (Goetsch and Davis, 2012: 7).

2.2.4 The future of TQM

TQM is one form of management practices that have received great attention in the last two decades (Jung *et al*., 2006). TQM is a journey and not a destination (Burati and Oswald, 1993) so much so that a successful TQM implementation is the ability to institutionalize TQM behaviors into everyday practice on the job (Low and Teo, 2004). In combating its criticism of poor performance and productivity, the construction industry has turned to TQM as an initiative to solve its quality problems (Hoonakker, Carayon and Lushine, 2010: 953).

TQM is timely in the search for productivity improvement and customer satisfaction as the complexity of the construction industry and its customers continues to grow both in intensity and diversity (Hassan, Khalid and Onyeizu, 2011: 285-6). TQM keeps evolving to becoming the latest management mantra in globalized and drastically changing business environments (Bikshapathi, 2011). A key inspiration behind the Global Innovation Index is derived from TQM, which has a long history in benchmarking and data analysis to evolving into a broader notion of business excellence (Dutta, 2011: 6).

TQM is a culture and inherent in the culture is an attitude expressed by everybody's involvement in the process of continuous improvement of products and services through the use of innovative scientific methods (Nitin, Dinesh and Paul, 2011: 220). With award-based frameworks and researcher-based frameworks for TQM, the future will see more of the former through improved knowledge of TQM culture from the latter (Nitin, Dinesh and Paul, 2011). Similarly, increasing globalization, focus on continuous improvements, and flexibility to adopt suitable and innovative forms of TQM (Deming Prize Committee, 2011), point to the challenges and opportunities that lie ahead for TQM, as a concept, and TQM organizations.

2.3 Culture, national culture and national cultural dimensions

2.3.1 Culture

Culture's definitions vary and are quite diverse so much so that the all-encompassing anthropological definitions of culture (Kluckhohn and Kelly, 1945; Tylor, 1871) saw to Kroeber and Kluckhohn (1952) identifying over 150 definitions. Hofstede's (1980) seminal study defined culture as the collective programming of the mind, which distinguishes the members of one group from another; and shifted attention away from anthropology. Following this, culture has been construed as influencing every aspect of the management process (Harris and Moran, 1987: 12) as well as the acquired knowledge people use to interpret experience and actions (Ahlstrom and Bruton, 2010: 36).

Culture has been defined in many ways (Hofstede, 2001: 9) to the extent that understanding culture is critical because individual's cultural orientation is present in every interaction (Zion and Kozleski, 2005). Since communication is made up of basic characteristics involving symbols according to Myron and Koester (1996: 28-9), it should

have a shared meaning (Griswold, 1994: 19). Culture, in comparison with tradition, is the possession of multiple traditions, which spans different domains of behavior (Whiten and van Shaik, 2007: 191). Culture is different from identity, since groups from the same country in a face-off on the basis of different identities often share the same cultural values (Hofstede, Hofstede and Minkov, 2010: 23).

Most scholars of culture would agree on the characteristics of culture as being *learned*, *shared*, *transgenerational*, *symbolic*, *patterned*, and *adaptive* (Luthans and Doh, 2012: 108). And it remained valid that Hofstede's (1980) position that about 80 percent of the differences in employees' attitudes and behaviors are influenced by national culture still has resonance today (Ochieng and Price, 2009: 527).

2.3.2 Forms of culture

With the characteristic complex nature of culture, it makes theoretical sense to have micro/sub cultures and macro cultures (Hofstede, Hofstede and Minkov, 2010: 364). Similarly, multicultural construction project teams exhibit different cultures in the forms of shared values and beliefs, being perceptions of how things are done in home countries (practices) and about how things should be done (preferred practices and beliefs) (Ochieng, 2010). In congruence, authors have delineated among the different forms of culture as are discussed subsequently in this section.

The business culture, the way of doing business, of a company is a subsystem of a national culture and is easier to change than are national culture (Tashiro, 1997: 79), which is more deeply entrenched in an individual (Low and Leong, 2000: 309). The national culture consists of deeply held values and beliefs (Low and Shi, 2001: 276), thus influencing how managers and employees make decisions and interpret their roles (Mead,

2002: 3). Similarly, *organizational culture* in comparison with *corporate culture* includes the notion of culture in private, state, and not-for-profit sectors whereas the latter is restricted to the private sector (Mead and Andrews, 2009: 80).

The significant influences of national culture is also buttressed in the realization that management can only exert control over the organizational culture to the extent that they influence members' attitudes to work, such that they cannot change the national culture (Mead and Andrews, 2009: 84). Thus, national culture subsumes the organizational culture, corporate culture and the business culture (and in that order). National culture is based on values while an organizational culture is based on practices (Hofstede, Hofstede and Minkov, 2010: 346). As a result, national culture, being premised on values, is widely held within a nation while the organizational culture varies a great deal from one organization to another (Deresky, 2011: 95) due to varying practices.

2.3.3 National cultural dimensions

There exist criteria to classifying phenomenon as cultural to allow detailed comparative analyses between two different human cultures (Whiten and van Shaik, 2007: 191). A *dimension* is an aspect of a culture that can be measured relative to other cultures (Hofstede and Hofstede, 2005: 23). The four major frameworks useful for analyzing and understanding the many dimensions of culture, according to Ahlstrom and Bruton (2010: 44-59), include:

a) Kluckhohn and Strodtbeck's (1961) *dimensions of value orientation*: regarded as a *sociological framework*. The six dimensions identified include: (1) Time orientation; (2) Space orientation; (3) Activity orientation; (4) Relationships among people; (5) Relations to nature; and (6) Basic human nature.

b) Hofstede's (1980) *dimensions of national culture*: regarded as a *psychological framework*. The four primary dimensions identified include: (1) Power Distance; (2) Individualism vs. Collectivism; (3) Uncertainty avoidance; and (4) Masculinity vs. Feminity. Hofstede (1991) and Hofstede, Hofstede and Minkov, (2010) later added the Confucianism dynamism or Long-term orientation and the Indulgence vs. Restraint aspects respectively.

c) Trompenaars and Hampden-Turner's (1997) *dimensions of national culture*: regarded as an *expansive framework* based on Hofstede's work. The seven dimensions identified include: (1) Individualism vs. Collectivism; (2) Time orientation; (3) Universalism vs. Particularism; (4) Neutral vs. Affective; (5) Specific vs. Diffuse; (6) Achievement vs. Ascription; and (7) Relationship to nature.

d) House *et al.*'s (2004) *Global Leadership and Organizational Behavior Effectiveness (GLOBE)* study: based on the afore-mentioned three frameworks. The nine cultural dimensions identified include: (1) Power Distance; (2) Uncertainty Avoidance; (3) Humane Orientation; (4) Collectivism I (Institutional); (5) Collectivism II (In-Group); (6) Assertiveness; (7) Gender Egalitarianism; (8) Future Orientation; and (9) Performance Orientation.

2.3.4 Hofstede's national cultural dimensions

Hofstede's framework has been the most frequently cited regarding the relationship between national culture and work-related values (Bhagat and McQuaid, 1982) and instrumental in furthering an understanding of cross-cultural management theory and practice (Fernandez *et al.*, 1997: 43). It has been the architecture that has characterized

much of contemporary cross-cultural quantitative research and the standard to which others must make reference (Bing, 2004: 81). It has been the most widely accepted and frequently cited model for cross-cultural research (Van Ness *et al.*, 2005: 2). It has been the most influential work in the field of cross-cultural management (Fang, 2010: 155), plausibly, based on the largest organizationally based study ever conducted (Ahlstrom and Bruton, 2010: 47). Hofstede (2009: 15) also predicted that the model would stand the test of time best and be the best building block for future development of theory due to its simplicity, empirical base and predictive power. Consequently, Hofstede's framework has also been applied to study the construction industries in Singapore (Low and Shi, 2002), Hong Kong (Phua and Rowlinson, 2003), and Turkey (Giritli and Oraz, 2004), China (Tsai and Chi, 2009), and Nigeria (Okolie and Okoye, 2012) amongst other countries. Following from the fore going similar studies, this study likewise adopts Hofstede's framework as discussed subsequently.

From Hofstede's previous studies (Hofstede, 1991; 2001; Hofstede and Hofstede, 2005), the five national cultural dimensions (NCDs) include:

a) Power Distance: The extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally. The Power Distance Index (PDI) informs us about dependence relationships in a country. As against counter dependence, Authority survives only where it is matched by obedience.

b) Individualism or Collectivism: The extent to which the ties between individuals are either loose (individualism) or integrated into strong, cohesive in-groups (collectivism). The Individualism index (IDV) reflects prevalence of individual

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interests over groups. In collectivist societies, the power of the group prevails over the power of the individual.

c) Masculinity or Femininity: The desirability of assertive behavior (masculine) against modest behavior (feminine). A masculine society is where emotional gender roles are clearly distinct as against feminine society where emotional gender roles overlap; that is both men and women are supposed to be modest and tender. The Masculinity (MAS) scores reflect this.

d) Uncertainty Avoidance: The extent to which a society feels threatened by ambiguous or unknown situations. This could be expressed through intolerable anxiety or nervous stress and in a need for predictability (written and unwritten rules). The Uncertainty Avoidance Index (UAI) reflects the avoidance of uncertainty in countries.

e) Long Term Orientation (LTO) or Short Term Orientation: The extent of persistence (perseverance), thrift, ordering relationships by status, and having a sense of shame against on the one hand; and reciprocation of greetings, favors, and gifts, Respect for tradition, Protecting one's face, and Personal steadiness and stability on the other hand. LTO was formerly called "Confucian dynamism".

2.3.5 Hofstede's sixth national cultural dimension

Hofstede's (1980) seminal study based on data of employee values scores collected at IBM between 1967 and 1973, covering more than 70 countries, generated the first four dimensions. Hofstede (1991) added the fifth dimension (LTO), originally Confucian dynamism, following Michael Bond's led research on the Chinese Values Survey (Chinese Culture Connection, 1987). Bond constituted the research as an additional

international study among students with a survey instrument developed together with Chinese employees and managers (Hofstede, 1991: 161).

Bond's study applied the LTO, based on Confucian dynamism, to 23 countries while another study conducted by Michael Minkov in 2010 extended the LTO to a total of 93 countries. Minkov's analysis of the World Values Survey data for 93 countries also generated a sixth dimension called Indulgence versus Restraint (Hofstede, Hofstede and Minkov, 2010). Minkov derived the sixth dimension by analyzing and then splitting an earlier construct of Wellbeing versus Survival into two beings conceptually and statistically (Hofstede, Hofstede and Minkov, 2010: 280). The next paragraph provides a brief discussion on the sixth dimension.

Indulgence versus Restraint (IVR): Indulgence stands for a tendency to allow relatively free gratification of basic and natural human desires related to enjoying life and having fun. Conversely, its opposite pole, restraint, reflects a conviction that such gratification needs to be curbed and regulated by strict social norms (Hofstede, Hofstede and Minkov, 2010: 281). While this study acknowledges IVR as a new dimension to the existing five, it has viewed IVR as being relatively new and has yet to be validated by other studies thus not considered further. Arguably, IVR also shares similarities with LTO as defined under the fifth dimension.

Figure 2.1 presents the other five national cultural dimension (NCD) scores for China and Nigeria, which are central to this study, as well as that of the US due to its *de factor global reference* (www.globethics.net). Figure 2.1 accords well with findings from other studies (such as, Anedo, 2012; Utomi, 2008). From Utomi (2008: 44, 46), while significant difference exists between China and the US in their operations in Africa, cultural differences, nonetheless, weigh heavily against the transfer of technological skills

between the Chinese and the Nigerians. Hence, Anedo (2012: 92) has rightly noted that there are cultural differences between the Chinese and the Nigerians alike that need to be studied for greater mutual understanding (see Anedo, 2011). These cultural differences affect business strategies, decision-making (risk-taking or risk-avoiding), work-group characteristics, motivation system, and conflict management (Anedo, 2012: 94-95).
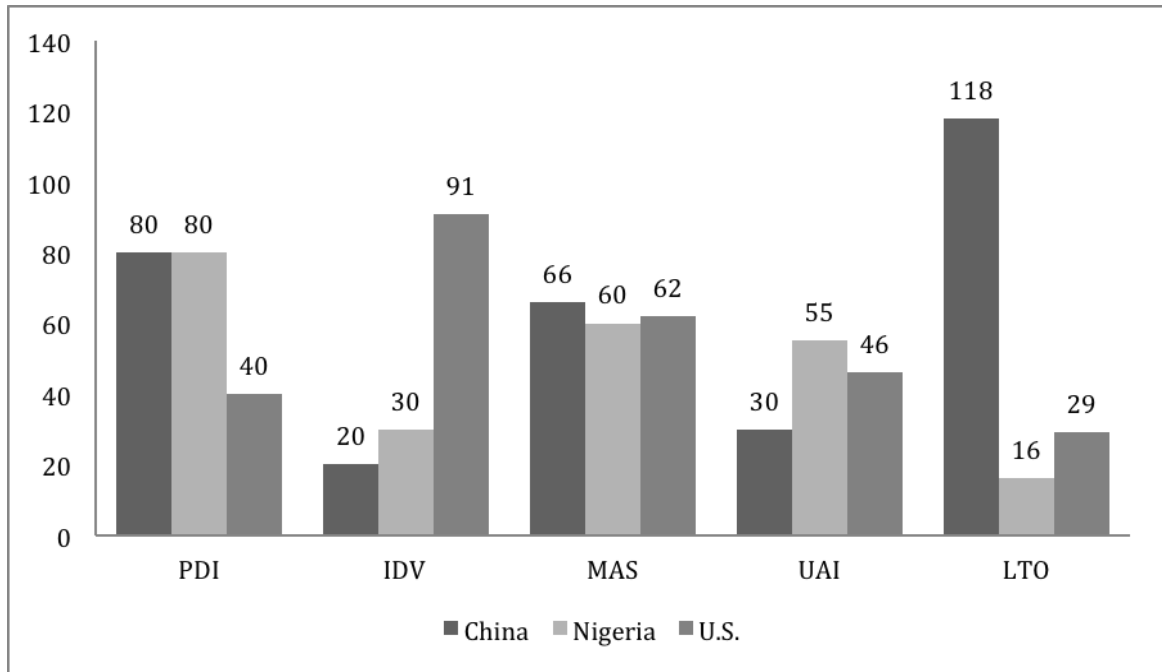
Figure 2.1: NCD scores for China, Nigeria and the US.

2.4 Culture as a source of conflict in international construction

2.4.1 Managing culture in international construction

International construction has created platforms for complex blends of cultures and nationalities (Rosenzweig, 1998: 644). Multicultural team integration is a particular problem for clients and project managers (Ochieng and Price, 2009: 529; Ochieng and Price, 2010: 1160). While national culture is more deeply entrenched in an individual, changing the business culture can also be fraught with risks as the business culture

reflects the national culture in strong forms (Low and Leong, 2000: 309; Low and Shi, 2001: 276).

International construction creates opportunities to develop products using the most up-to-date expertise and knowledge in a cost-effective manner (Clark and Ip, 1999) through strategic pooling of resources and expertise for rewards or risks (Ling, 2005: 510). Thus, greater cultural understanding and sensitivity in terms of personnel management by the parties involved in international construction projects is critical to the successful undertaking of such projects (Chan and Tse, 2003: 375-6).

Cross-cultural issues present a further layer of complexity for international project managers (Henries and Souza-Poza, 2005) and mismanaging cultural differences can render otherwise successful managers and organizations ineffective (Ling, Ang and Lim, 2007: 502; Low and Shi, 2001: 276). International project managers are confronted with unfamiliar challenges that could lead to some degree of project failure (Burchell and Gilden, 2008: 1054), which stems from "perception gap" arising from serious cultural assumptions (Ochieng and Price, 2009: 529; Tashiro, 1997: 1).

Culture is, and increasingly becoming, important in international construction as cultural differences often result in varying degrees of conflicts (Mohammed, White and Prabhakar, 2008: 3). Cultural patterns in project environments reflect cultural patterns in the wider society (Mohammed, White and Prabhakar, 2008: 4). Cross-cultural project environments create a web of patterns especially more evident in infrastructure projects, which by nature often include global economic assets and huge investments (Gerritsen, 2009). As seen earlier in Figure 2.1, differences exist between China and Nigeria along all the NCDs, save for PDI. Thus, project success transcends the ultimate based on the

triple constraints of time, cost and quality to the ways that project parties approach problems and conflicts (Mohd Danuri *et al.*, 2010: 350).

2.4.2 Cultural misunderstandings in international construction

Project procurement and construction disputes are two of the major concerns in the construction industry with conflicts and disputes causing major disruptions to the industry (Latham, 1994). The industry has the unenviable reputation of being highly adversarial (McGeorge and London, 2007: 8). Joint ventures (JVs), as a strategic alliance in international construction, is also facing major setback due to lack of complementarities between partners (Geringer, 1991). This is caused by a failure to understand how cultural assumptions influence the development of a JV (Swierczek, 1994: 40).

International contracting parties come from different cultural frameworks with different values, which can affect both the agreed objectives and the organizational design criteria for carrying out the objectives (Swierczek, 1994: 46). The cultural differences also impede the smooth resolution of conflicts since conflict management behavior differs as a function of cultural values (Morris *et al.*, 1998: 741). Particularly, the Chinese culture has been found to be a significant contributing factor to conflict and its resolution in dealings with them (Chan and Suen, 2005; Tsai and Chi, 2009).

Cultural diversity in international projects cannot be avoided. A better understanding of the influential cultural factors will, however, help to reduce and manage conflicts in international construction projects (Chan and Tse, 2003: 380). Conflicts are intrinsic in any construction development project, but when it gets in the way of executing the project efficiently, it adds undue burden and expenses to all the parties involved (Chinyere, 2011: 61). If a project manager is familiar with the host culture, cultural misunderstandings are

more likely to be avoided (Low and Shi, 2001: 284) or resolved (Mohd Danuri *et al*., 2010: 350). By and large, while strategies exist to resolve the disputes, the only good construction dispute is one that is avoided (Skene and Shaban, 2002) in the first instance.

2.4.3 Interaction between culture, perceptions and conflict

The definition of conflict has generated much debate that almost every academic discipline has its theoretical approach of understanding conflicts (Axt, Milososki and Schwarz, 2006: 2). In a broader sense, conflict is the clashing of interests on national values of some duration and magnitude between at least two parties that are determined to pursue their interests and win their cases (HIIK 2005: 2). Pragmatically, conflict is a perception, by one or more people, that one or the other is interfering with each other's goals (Geisler, 2011); it is the conditions in which people's concerns appear to be incompatible (Thomas, 2006: 2).

Similarly, culture is also about one of the most enigmatic and controversial terms, which itself triggers conflicts very often (Bonacker and Imbusch, 2005: 69). Culture is a determinant of perception (Avruch, 1998), defined as the process whereby a sensory stimulation is translated into organized experience (Lindsay and Norman, 1977). Hofstede, Hofstede and Minkov (2010) upheld that culture is more often a source of conflict than of synergy and that cultural differences are a nuisance at best and often a disaster. Culture frames the contexts in which conflict occurs by indicating among other things: resources for competition or objects of dispute; rules for contests; and cognitive, symbolic, and effective frameworks for interpreting actions (Avruch, 1998).

The fore going is underscored since by the fact that culture affects many of the communicational or interlocutory processes that lie at the heart of most conflict resolution

techniques (Morris *et al.*, 1998; Chan and Suen, 2005). People's experience with structural features of procedures, directly or indirectly, impacts a sense of what to expect (Morris, Leung and Iyengar, 2004: 128). Hence, culture has been construed as: influencing every aspect of the management process (Harris and Moran, 1987: 12); the software of the mind (Hofstede, 1991); the lens through which people ascribe meanings to the world (Núñez, 2000: 1072); a moral compass (Hofstede, 2009: 18); and the acquired knowledge people use to interpret experience and actions (Ahlstrom and Bruton, 2010: 36; Moran, Harris and Moran, 2011: 45). Figure 2.2 presents the interaction among culture, perceptions and conflict.
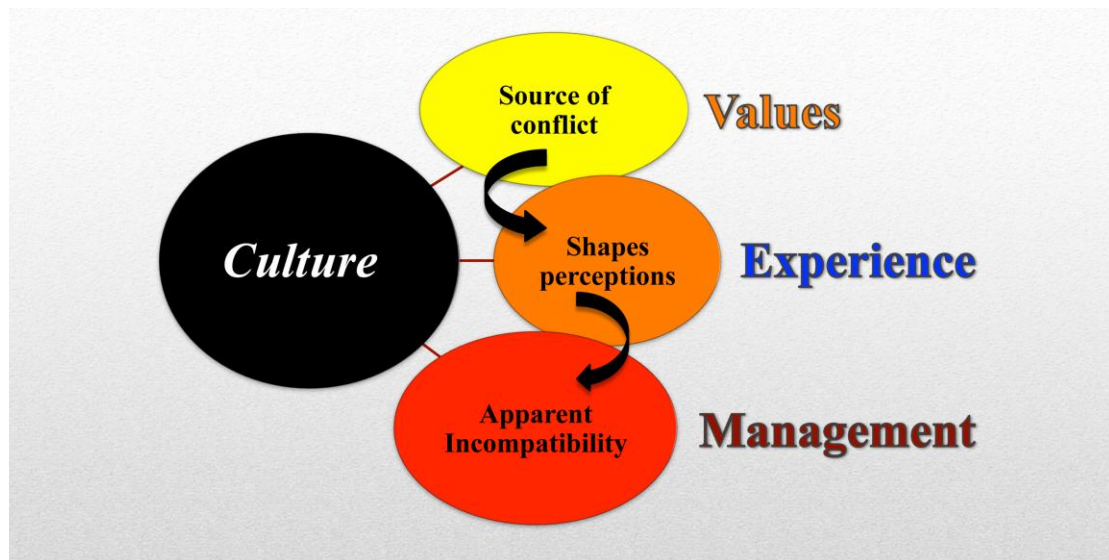
Figure 2.2: Relationship between culture, perceptions and conflicts: A model

From Figure 2.2, culture differentiates between groups through shared values, and is thus a potential source of conflicts (Hofstede, 1980). Through experience, values create mental frameworks for interpreting actions, thus shaping the perceptions (Avruch, 1998) and expectations (Morris, Leung and Iyengar, 2004: 128) of a particular group. These create apparent incompatibilities with another group, which, without careful understanding and management (Chan and Tse, 2003: 380), degenerate into conflicts.

2.4.4 Conflict intensities

Conflict is a feature of all human societies, and potentially, an aspect of all social relationships (Avruch, 1998: 24). Conflict management is the main difference between a healthy relationship and an unhealthy one. However, when embroiled in a controversy that cannot be dealt with by managing conflict, learning to resolve conflict (conflict resolution) is the next step. Conflicts occur at the personal, national and international levels such that it is possible to identify intrapersonal conflict, interpersonal conflict, intragroup conflict, and intergroup conflict (SDD, 2003: 24). Figure 2.3 presents the progressive phases of conflict.
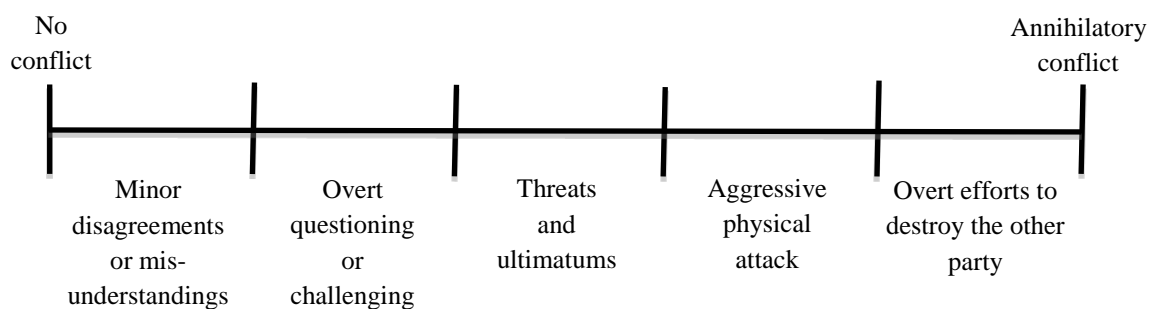
Figure 2.3: Conflict intensity scale
Source: SDD (2003: 32)

From Figure 2.3, since a conflict develops in intensity over time, cross-cultural teams should develop flexible disposition with regard to their perceptions and expectations. More critically, during the early stage of a minor disagreement or misunderstanding, so as to better harness the latent benefits that seeming threats may have over-shadowed. The longer that conflict is left to escalate, the harder it becomes to use constructive communication and negotiation skills to resolve the conflict (SDD, 2003: 33). A conflict does not just happen nor escalate on its own, people make choices that either escalate conflict or lead to more constructive outcomes (Tjosvold, 2006: 91).

A research project COSIMO (Conflict Simulation Model) has developed a methodology for evaluating the dynamic model of conflict (HIIK, 2005). The HIIK's (2005) model incorporates five intensity stages: latent conflict, manifested conflict, crisis, severe crisis, and war. As presented in Table 2.1, the most important difference between the five stages of conflicts is that the first two are non-violent in nature, while the subsequent three include the use of violence during the conflict.

Table 2.1: Conflict intensity stages

State of violence	Intensity group	Level of intensity	Name of intensity	Definition
Non-violent	Low	1	Latent conflict	A positional difference on definable values of national meaning is considered to be a latent conflict if respective demands are articulated by one of the parties and perceived by the other as such.
		2	Manifest conflict	A manifest conflict includes the use of measures that are located in the preliminary stage to violent force. This includes for example verbal pressure, threatening explicitly with violence, or the imposition of economic sanctions.
Violent	Medium	3	Crisis	A crisis is a tense situation in which at least one of the parties uses violent force in sporadic incidents.
	High	4	Severe crisis	A conflict is considered to be a severe crisis if violent force is repeatedly used in an organized way.
		5	War	A war is a type of violent conflict in which violent force is used with certain continuity in an organized and systematic way. The conflict parties exercise extensive measures, depending on the situation. The extent of destruction is massive and of long duration.

Source: HIIK (2005: 2)

From some of the literatures reviewed on the operations of Chinese firms in Nigeria (Aginam, 2010; Alike, 2011; Ukaoha, 2009; Wang, 2008), the conflicts experienced by the Chinese firms have transcended from being latent to being manifest as will be discussed in detail in a later Section.

2.4.5 Conflict-handling modes

The Thomas-Kilmann Conflict Mode Instrument (TKI) is one of the world's best instruments for understanding how different-handling styles affect interpersonal and group dynamics. The over 30 years successful adoption of the TKI to help individuals in a variety of settings to understand how different conflict styles affect personal and group dynamics (Schaubhut, 2007: 1) underscore its continued relevance. The TKI measures five "conflict-handling modes" or ways of dealing with conflicts, which include: competing, collaborating, compromising, avoiding, and accommodating as presented in Figure 2.4.
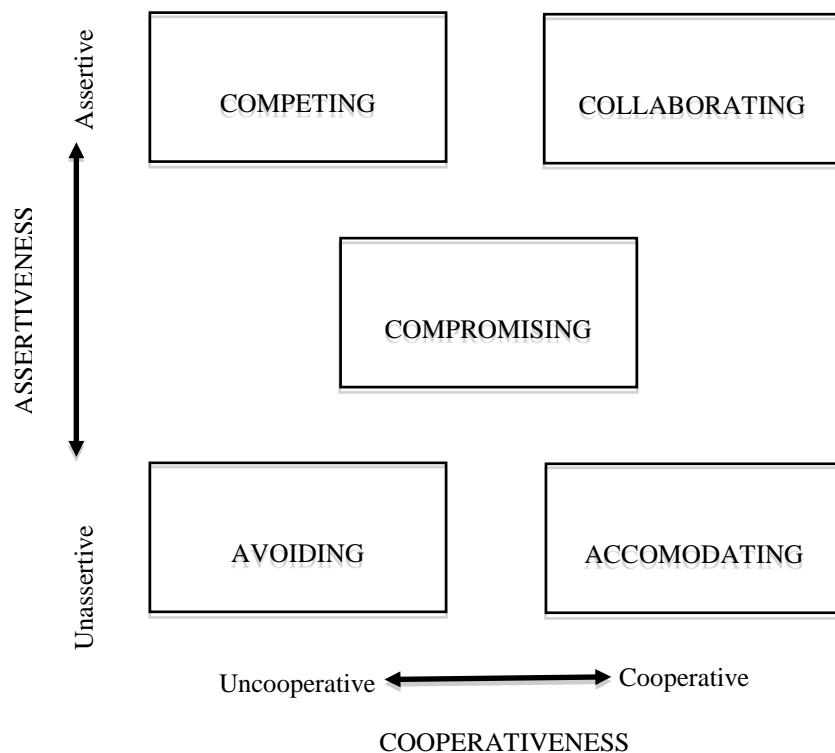
Figure 2.4: Dimensions and Conflict-Handling Modes for the TKI Assessment
Source: Thomas (2006)

The five modes can be described along two dimensions of assertiveness and cooperativeness. The former refers to the extent to which a party tries to satisfy its own

concerns while the latter refers to the extent to which a party tries to satisfy the concerns of another (Thomas and Kilmann, 1974; 2007).

a) Competing is assertive and not cooperative.

b) Accommodating is cooperative and not assertive.

c) Avoiding is neither assertive nor cooperative.

d) Collaborating is both assertive and cooperative.

e) Compromising falls in the middle of both dimensions.

2.5 National culture and TQM

2.5.1 Influence of national culture on TQM implementation

National culture influences organizations and their operations (Joynt and Warner, 1985: 25). Past studies (Brian *et al.* 2001; Jäger, 1996; Krüger, 1999; McAdam, 1996; Ngowi, 2000; Nitin, Dinesh and Paul, 2011) also support the need for quality implementation to be responsive to national culture. Souza-Poza, Nystrom and Wiebe (2001) and Noronha (2002), respectively, theorized bi-directionality and culture-specificity between TQM implementation and national culture. The relationship is premised on minimizing conflicts encountered in a cross-cultural organization, which impacts the implementation of TQM (Low, 1998).

While TQM organizations are constantly evolving in response to external influences, national culture remains an influencing factor that creates risk when conducting and managing international business (Sennara and Hartman, 2002). Previous studies exist on appropriate quality for Northern Ireland (McAdam, 1996), TQM in Austria with respect to a National Quality Award (NQA) system (Jäger (1996), impact of national culture on

quality management in Europe (Brian *et al.*, 2001), TQM consideration for the quality heritage of the national business culture in Europe (Krüger, 1999), and the influence of national culture on receptivity of TQM in Botswana (Ngowi, 2000).

There are more than one hundred NQAs in different categories with the Malcolm Baldrige National Quality Award (MBNQA) of US, Deming Prize (DP) of Japan and European Quality Award (EQA) being the most renowned (Bu, Tang and Tian, 2012: 25; Nitin, Dinesh and Paul, 2011). NQAs serve as proxies to culture-sensitive TQM implementation (Hendricks and Singhal, 2000), which means that foreign firms need to adopt suitable TQM in different cultures. Contrastingly, this will need to be balanced against their deep-seated cultural values since the business culture reflects the national culture in strong forms (Low and Leong, 2000: 309; Low and Shi, 2001: 276).

2.5.2 National culture and TQM implementation

Often times, it has been very difficult to implement TQM successfully due to a failure to pay sufficient attention to the cultural and structural variables that influence TQM (Tata and Prasad, 1998: 703). The need for companies to increase their level of competitiveness for strategic market positioning and continuity due to increasing global demands (Texeira-Quirós, Almaça and Fernandes-Justino, 2010: 258) has necessitated the adoption of NQAs. From Calingo's (2002) study to Mohammed and Mann's (2010) study, concerted efforts are continuously being intensified to understand, measure, and document excellent global NQAs for adoption at the different levels of strategic operations. Some other studies have focused on regional NQAs such as in Africa (Alonso-Almeida, 2011) and Asia (Mann, 2011) and how they compare globally. NQAs serve to encourage and minimize conflicts inherent in an otherwise direct TQM implementation (Mohrman *et al.*, 1995). Table 2.2 presents some of the common NQAs.

Table 2.2: National quality awards in selective countries

S. No	Name	Abbreviations used	Countries
1	Australian Business Excellence Award	ABEQ	Australia
2	Canada Awards for Excellence	CAE	Canada
3	China Quality Award*	CQA	China
4	Deming Prize	DP	Japan
5	Egyptian Quality Award	EgyQA	Egypt
6	European Foundation for Quality Management	EFQM	Europe
7	German National Quality Award	GQA	Germany
8	Golden Peacock National Quality Award	GPNQA	India
9	Hong Kong Management Association Quality Award	HKMA	Hong Kong
10	Kenya Quality Award	KQA	Kenya
11	Malcolm Baldrige National Quality Award	MBNQA	USA
12	Mauritian National Quality Award	MNQA	Mauritius
13	Moroccan National Quality Award	Morocco	Morocco
14	Singapore Quality Award	SQA	Singapore
15	South African Excellence Award	SAEA	South Africa
16	Taiwan National Quality Award	TNQA	Taiwan

Sources: Alonso-Almeida (2011), Nitin, Dinesh and Paul (2011) and *Xiang *et al.* (2010)

The list is not exhaustive but suffices to corroborate the need for TQM implementation with respect to national culture. Alonso-Almeida and Fuentes-Frías (2011) provide a comprehensive list of NQAs from the mid-1950s to the early 2000s, collectively referring to them as international quality awards and excellence quality models (IQA & EQM). With many models and where foreign companies fail to adopt a pragmatic approach, conflicts result. These are manifested through role conflicts among the employees (McNabb and Sepic, 1995), which spiral into affecting other TQM practices (Lin, 2012).

2.5.3 Case studies of TQM implementation

From the preceding Section, TQM implementation in different countries must bear on the national culture to minimize the chances of conflict, which can affect productivity and, ultimately, quality. NQAs and other similar initiatives serve as possible panaceas for effective TQM implementation to derive maximum benefits both to the implementing firms and the markets they operate in. Some case studies of such approaches include:

2.5.3.1 United States

The great commercial success of Japanese companies and their extensive penetration of the European and US markets reflected changing commercial needs and quality expectations of customers (Krüger, 1999: 261). TQM began to be introduced in the US around 1980, primarily in response to severe competitive challenges from Japanese companies (Prajogo and Sohal, 2001: 539). Quality campaign was initiated and led to the Malcolm Baldrige National Quality Improvement Act of 1987 (Public Law 100-107).

Widespread TQM adoption became a win/win proposition for stakeholders, including employees benefiting from increased involvement and implementation of work processes with better control over performance (Mohrman *et al*., 1995). The US adopted quality management as a way of life and of giving something back to the society (Koetsier and Rütjes, 1995; NIST, 2010: 2; Ortner, 2000). And while TQM's origin has been linked to Japan (Powell, 1995: 16), in a better perspective, the fact is that most theoretical developments in the advancement of TQM were made in the US whereas Japan held the initiative in terms of application (Martinez-Lorente, Dewhurst and Dale, 1998).

From Japan's original total quality control (TQC), the US advanced TQM replacing the word "control" with "management" with the reasoning that quality is not just a matter of

control, it has to be managed (Martinez-Lorente, Dewhurst and Dale, 1998). Having, hitherto, adopted management by control, US' forced realization was a result of international competitive pressures and increasing demands for quality products and services (Arditi and Gunaydin, 1997: 237). The adaptation persisted that although most US companies have their quality goals, their systems and processes do not completely relate to Deming's 14 points; thus not achieving TQM to the maximum extent (Rizwan and Syed, 2009). Thus, despite TQM having contributed to the global competitiveness of many Japanese organizations, it has been difficult to implement in European and US organizations due to the ethnological cultures (Sousa-Poza, Nystrom and Wiebe, 2001) This has been attributed to the different corporate cultures being practiced due to the different cultural orientations of the different regions (task- or people-oriented).

2.5.3.2 China

TQM was adopted in Hong Kong with greater emphasis in the supply chain context on the notion that TQM works horizontally across functions and departments, involving all employees, top to bottom, and extends backwards and forwards to include the supply chain and customer chain (Wong and Fung, 1997). Generally, TQM is driven by production efficiency in China and by the government's directive with a centralized hierarchical organization in which resources, products and services were allocated almost exclusively by administrative means (Chen, 1998: 714). Consequently, TQM has been found being extensively adopted in China with the benefits of its practices evident among the Chinese firms (Yusuf, Gunasekaran, and Guo, 2007). The widespread adoption of the ISO 9000 QMS in China (ISO, 2011) also lends credence to the fore going.

Chinese firms realized the need to transform themselves into being consistent with the TQM paradigm in order to be able to meet the requirements of a market economy (Chin,

Pun and Hua, 2001) and they realized that making such a transformation was difficult because it transcends mere change of techniques to encompassing change of systems and practices (Pun, 2001). Thus, while China's "open door" policy involved the incorporation of new management techniques, including TQM (Li, Anderson and Harrison, 2003: 1026), the impact of TQM on the performance of the Chinese firms has been found to be depending on the degree of its adoption (Yusuf, Gunasekaran, and Guo, 2007). A reason being that at the core of TQM is leadership and empowerment, which relate to the organizational culture influenced on the other hand by the national culture. And without profound knowledge, management action could cause ruination (Deming, 1989).

Further, Li, Anderson and Harrison's (2003) study on TQM in China revealed an uneven implementation with substantial differences especially in the application of quality measures across different forms of ownership. Similarly, Chen *et al.*'s (2007) study also revealed that a majority of the active international Chinese firms in Africa were from Beijing, the capital. As a result, with China's large population, there is bound to be variance in the adoption and implementation of TQM across the country with firms in the capital in better stead to adopting new management techniques.

Noronha's (2002, 2003) studies on China, Hong Kong and Taiwan found close relationship between the underlying cultural values and the fundamental TQM principles to theorize culture-specific TQM. With rapid adoption, TQM has been found to be having positive impacts on the performance of Chinese firms that have adopted the concept with more widespread application in congruence with TQM growing adoption (Yusuf, Gunasekaran and Dan, 2007). More critically, emphasis has also shifted to the macro institutions in China, which has also been found constituting serious impediments to Chinese firms' effective TQM implementation (Wu and Zhu, 2012).

2.5.3.3 Nigeria

While many top executives of organizations in Nigeria are aware of TQM, the level of implementation has been very low (Akinola, Akinradewo and Olatunji, 2012: 233; Nosakhare, 2000: 7). Nonetheless, the successful implementation of TQM will assist Nigerian firms in strategic positioning to compete locally and globally (Nosakhare, 2000). In particular, environmental factors such as political will backed with commitment will drive and improve TQM in the Nigerian context (Adeoti, 2011: 20). In addition, the roles of holistic training on TQM and its application in the Nigerian construction industry have also been highlighted as exemplified by Iruobe *et al.*'s (2011) study.

With a drastic lag in quality certification (Osagie, 2012), Nigeria could certainly promote the quality of its training by embracing quality in a more holistic manner, establishing internal quality assurance mechanisms and establishing the culture of quality (Akeusola and Ofulue, 2011: 15). The Standards Organization of Nigeria (SON) has been active in ensuring quality conformance in Nigeria, which suggests that the search for TQM in Nigeria through benchmarking and localization efforts, through the SON Conformity Assessment Program (SONCAP) and Mandatory Conformity Assessment Program (MANCAP) is already gaining momentum.

Idrus and Sodangi (2010: 36) proposed a quality performance evaluation model covering the company and site levels of construction projects in Nigeria, identifying TQM under the corporate level. TQM practice is not prevalent among the Nigerian construction firms due to clients' inadequate knowledge and SON's leniency and/or incapacitated abilities to enforce quality requirements (Akinola, Akinradewo and Olatunji, 2012). Still, previous studies have underscored leadership styles and reward systems (Ehigie and Akpan, 2004) as well as environmental factors (Osuagwu, 2002) as being important to TQM

implementation in Nigeria. Following, a domesticated version of TQM that responds better to the Nigerian culture has been launched (Irechuckwu, 2010), validating the bi-directional and culture-specific relationships between culture and TQM.

2.5.4 Future directions of TQM

There is the bi-directional causative model in which TQM implementation plan is adapted to the national culture in which it is being implemented (Sousa-Poza, Nystrom and Wiebe, 2001: 747-8) as well as a culture-specific TQM created when TQM is implemented in a cross-cultural context (Noronha, 2003: 355). However, these models are only useful after significant cultural differences between contracting parties have been identified. It follows that cultural differences need to be addressed before devising strategies to achieving successful TQM implementation. This study aims to fill this identified gap in the relevant literatures reviewed.

2.6 Summary

This chapter reviewed the literatures on this study's key tenets, namely quality, culture and conflict. It found ISO 9001 QMS as being the launch pad into TQM, premised on continuous improvement. As such, TQM practicing construction firms are able to adapt to changes internally and externally. However, TQM successful implementation is contingent on how well it relates to the national culture, which subsumes the other forms of culture. Consequently, the bi-directional and culture-specific relationships between culture and TQM necessitate locally-responsive approaches by the adopting firms including in China and Nigeria. This minimizes conflicts that, otherwise, detract on the quality performance of the firms. This study is significant by investigating the fore going for the Chinese working in Nigeria given their cultural differences with the Nigerians.

CHAPTER 3: CONSTRUCTION INDUSTRY IN CHINA

3.0 Introduction

For centuries, China outpaced the rest of the world in the arts and sciences. In the 19th and early 20th centuries, civil unrests, major famines, military defeats, and foreign occupation beset China. After World War II, the Communists under Mao Zedong established an autocratic socialist system that ensured China's sovereignty under strict controls (CIA, 2013a). After 1978, Mao's successor Deng Xiaoping focused on market-oriented economic development and quadrupled output by 2000. China's unabated global investments have made it the world's largest capital-surplus economy (Salidjanova, 2011: 1). China's fast growing economy consumes enormous resources; thus, necessitating its strategic engagement with resource-rich countries in exchange for China's infrastructure development in the countries through its competitive construction industry.

3.1 Overview of China

Since the early 1990s, China has increased its global outreach and participation in international organizations. It is the world's most populous country, with a continuous culture stretching back nearly 4,000 years (BBC, 2013a). It has the world's fastest-growing economy and is undergoing what has been described as a second industrial revolution. China's ruling party, the Communist Party, has remained the world's biggest political party and has, as a result, been ruling the Peoples' Republic for decades.

3.1.1 International relations

The normalization of relations between China and the U.S., and the West in general, began in 1972 with Nixon's visit to China. Moreover, it was in December 1978, following the economic reforms that Washington and Beijing announced that the two

countries had agreed to establish official diplomatic ties (Wen, 2005: 5). There on, China's development has progressed at an unprecedented pace.

China is one of the world's top exporters attracting record amounts of foreign investments. In turn, it is investing tremendously abroad, particularly in the resource rich countries of Africa to compensate for the huge resource demand back home. In 2011, it formally toppled Japan to become the world's second-largest economy after the U.S. measured on the purchasing power parity (PPP) basis (BBC, 2013a; CIA, 2013a). The fast-growing economy has made China home to many of the most populated cities and has fuelled the demand for energy, making China the largest oil consumer after the U.S., and the world's biggest producer and consumer of coal (BBC, 2013a).

3.1.2 Demographics

China's population, as at 2011, was about 1.35 billion people (UNFPA, 2011: 116) with the age range 15 to 64 years constituting about 74% of the total population according to CIA (2013a). Major cities in ascending order of population include Shanghai 16.58 million; Beijing, the capital 15.59 million; Chongqing 9.40 million; Shenzhen 9.01 million; and Guangzhou 8.88 million (CIA, 2013a). The major ethnic groups include the Han Chinese 91.5%; with the remaining 8.5% shared among Zhuang, Manchu, Hui, Miao, Uighur, Tujia, Yi, Mongol, Tibetan, Buyi, Dong, Yao, Korean, and other nationalities (CIA, 2013a). Major languages include standard Chinese or Mandarin (Putonghua, based on the Beijing dialect) (official), Yue (Cantonese), Wu (Shanghainese), Minbei (Fuzhou), Minnan (Hokkien-Taiwanese), Xiang, Gan, Hakka dialects and minority languages (CIA, 2013a). Figure 3.1 presents the map of China with some of its neighboring countries.

Figure 3.1: Map of China
Source: National Geographic (China Guide)

3.1.3 Climate and resources

Climate is extremely diverse and ranges from the tropical in the south to sub-arctic in the north. The 9.6 mil sq. km land area composes of 11.62% arable land, 1.53% permanent crops and 86.84% others (CIA, 2013a). Natural resources include coal, iron ore, petroleum, natural gas, mercury, tin, tungsten, antimony, manganese, molybdenum, vanadium, magnetite, aluminum, lead, zinc, rare earth elements, uranium, and hydropower potential (world's largest) (CIA, 2013a). Main exports include manufactured goods, textiles, garments, electronics and arms.

3.1.4 Legal system

China gained independence on 1 October 1949, when the People's Republic of China was established. From BBC's (2013a) accounts, notable earlier dates include 221 BC (unification under the Qin Dynasty) and 1 January 1912 (Qing Dynasty replaced by the

Republic of China). The current administrative divisions include 23 provinces (*sheng*, singular and plural), 5 autonomous regions (*zizhiqu*, singular and plural) and 4 municipalities. China's legal system is based on the civil law system derived from Soviet and continental civil code legal principles (CIA, 2013a).

The legislature retains power to interpret statutes, constitution is ambiguous on judicial review of legislation and party organs exercise authority over judiciary (CIA, 2013a). China has yet to accept the compulsory International Court of Justice (ICJ) jurisdiction; the current constitution was the promulgation on 4 December 1982 with amendments in 1988, 1993, 1999 and 2004 (CIA, 2013a).

3.2 Development of the construction industry in China

3.2.1 Overview of China's construction industry

The rapid economic expansion in China has resulted in many construction activities and as a result created the largest construction market in the world (Sjoholt, 1997). China has been developing at an amazing speed since 1980; the construction industry is huge and widespread with the high growth rate attributable to the extreme shortage of infrastructure and building space (Chen, 1998: 711-2).

The three major types of construction work force acting as contractors in China include: state-owned enterprises (SOEs), urban and rural collectives (URCs), and rural construction teams (RCTs). In 1994, there were more than 94,000 construction enterprises in China. These were composed of about 7,250 SOEs with 8.18 million employees, 16,980 URCs with 6.36 million employees and 69,840 RCTs with 9.7 million employees. The construction industry in China is labor-intensive, wages are low and therefore the value added by the construction industry itself is rather low (Chen, 1998).

3.2.2 Domestic and international markets

With competition mounting in the local industry, Chinese firms are increasingly becoming involved in international contracts for engineering projects and manpower services. Since 1979, about 219,900 workers have been sent abroad mostly for civil works contracts in developing countries. Licenses for construction enterprises abroad are issued by the Ministry of Foreign Economic Relations and Trade (MOFERT), but mainly to SOEs. Since the year 2000, several Chinese corporations have appeared in the list of the top 225 international contractors published by the ENR.

Prior to the economic reforms, the whole industry was viewed as a single large enterprise with a centralized hierarchical organization (Chen, 1998: 714). Prior to 1979, SOEs were among the few Chinese institutions permitted to leave China to engage the outside world (Corkin, 2006b: 73). While the size and capacity of private companies has been growing rapidly, the SOEs still dominate China's construction market winning the majority of the infrastructural aid projects in countries where China has expanded its sphere of influence (Corkin, 2006b) and competing both strongly and strategically.

3.2.3 Major players in China's construction industry

In general, foreign contractors have restricted entry to the Chinese market. Most of the foreign entries have been in the form of JVs, where advanced technology and technology transfer to China are required. As at 1997, 118 foreign contractors have been given licenses to work in China and implemented about 140 construction projects (Chen, 1998). China has a well-established system of design institutes that in 1994, nearly 10,250 design institutes employed 752,000 employees, double that of 1990.

About 44% of the employment in this field was under the administration of line ministries while the municipal governments managed the rest of the employments. Although design institutes had done some consulting work in the past, they were not called consultants (Chen, 1998: 716). In general, the technical qualifications of Chinese engineers were very good; still, engineering training was limited to specific sectors to derive some of the following challenges faced in China's construction industry, according to Chen (1998).

3.2.4 Challenges in China's construction industry

From Chen (1998), significant challenges faced by stakeholders in the Chinese construction industry include the following:

a) Legal and regulatory frameworks – non-establishment of unified construction law.

b) Pricing mechanism in the construction industry – determining construction price adjustment factors and profit margins through the quota system.

c) Competitive bidding – centrally planned system of jobs assignment lend to "partial bidding".

d) Quality control – poor designs, materials, weak management, ambitious completion targets and lack of work skills.

e) Tax framework – varieties of taxes and fees, which were separated further into engineering construction and management, national and local taxes and fees.

f) Construction financing – while a number of established banks provide project financing, this facility generally was available to large national projects only.

g) Human resource development – the massive need to develop competent professionals for the rapidly changing construction business environment.

As such, the Chinese construction industry was formerly known for its low efficiency and effectiveness (Liu *et al.*, 2004: 203). The Chinese government then initiated some changes to attract more foreign investments (Chan, Wong and Scott, 1999: 259-60). These included the establishment of Special Economic Zones (SEZs), foreign investment privileges and the reformed legislative regulations (Chan, Wong and Scott, 1999). The reforms promoted competition, improved effectiveness, and moved the Chinese construction market towards international practices (Shen and Song, 1998).

3.2.5 Project management in China's construction industry

Professional construction project management (PM) was introduced to China in 1988 and widely referred to as construction supervision (CS) (Liu, *et al.*, 2004). CS companies managed about 41% of the public projects in 1998. Following, the emergence and growth of CS dramatically improved the performance of construction project management in China (Yan, 2000). Notable quality improvements, cost reductions and time shortening were observed in a variety of projects managed by CS companies.

The formal introduction of CS and construction PM by the Ministry of Construction in 2003 replaced the traditional approach of project management by the project headquarter (Liu *et al.*, 2004; Zuo and Ma, 2008). The move was unpopular due to reasons attributable to disruption to the local industry since construction PM in the West differed significantly from the Chinese CS; thus, presented unique challenges. This stresses the importance of national culture in the adoption of foreign technology in China.

As a result, PM practices in China differed from the Western practices on all project phases because the Chinese culture and the local work habit could not be changed

drastically except to adapt management methodology that might eventually change the established practices to a well-structured delivery process (Vaughan, 2008: 7).

PM knowledge was officially introduced to China in the year 2000 to the relief of organizations that were hoping to experience its benefits (Vaughan, 2009). However, the success recorded in the West remained a myth until China acknowledged that a well-structured process through structured Research & Development processes should replace the more prevalent project deliveries through brute forces (Vaughan, 2009).

Major developments are catching up that there were more than 37,000 active Project Management Professional credential holders in China as at 2011 (*PMI Today*, 2011: 19). The development was a result of the cooperation between the State Administration of Foreign Experts Affairs and the Project Management Institute (U.S.) to mutually promote the development of project management in China (*PMI Today*, 2011).

While PM in China dates back as evident in the construction of the Great Wall and the Forbidden City (Zhu, 2009), well-structured PM is relatively new (Vaughan, 2008; 2009) Modern PM practices by Chinese firms feature better and standard methodologies for managing individual and multiple projects respectively as well as corporate strategy for improving performance across the entire enterprise (Pells, 2009: 3).

Similarly, Project Management Office (PMO), an important feature within an organization designed to facilitate the management of projects and linking projects to organization strategy, was relatively new to China and also an emerging interest among organizations (Ma and Yao, 2009). The knowledge and understanding of PMO in China was still limited with the need for formal training and education for project participants to understand the *Project Management Body of Knowledge* (Ma and Yao, 2009: 8).

3.3 Foreign investments in China's construction industry

3.3.1 Key drivers for foreign investments

During the Maoist era (1949 – 1978), Chinese workers engaged in decision-making in work places and enjoyed lifetime employment and benefits that fostered elevated sense of ownership and a corporate culture unique to China (Wen, 2005: 4-5). Conversely, China's reform era (1978 – 1999) saw to the breaking up of rural communes, designating SEZs and introducing "market mechanisms" into the SOEs (Wen, 2005: 5).

3.3.2 The Chinese market and considerations for the future

The present scale and future potential of the Chinese economy have instilled confidence in international investors that the Chinese economy would continue to develop at an accelerated pace (Talwar and Smith, 2007: 1). Consequently, China will become a significant influence on the long-term strategies of MNCs and Chinese multinationals and business practices will influence international businesses (Talwar and Smith, 2007).

Following, there have been insights into enhancing firms' competitiveness through Chinese military principles (Li *et al.*, 2009) as well as the potentials of alternative leadership styles through classical Chinese philosophy (Man, 2011: 18-20). Indeed, China's economic growth coupled with its construction market has fuelled improved performance of the Chinese firms in the international market (Li *et al.*, 2009).

China offers a huge opportunity for inbound construction activities as its development continues through extensive infrastructure and a multi-billion pound stimulus package (BDO, 2010). The major challenge has remained that local construction firms are dominant that foreign players may find it difficult to move into some areas of the Chinese construction industry (BDO, 2010; Ling, Ang and Lim, 2007).

China has been instrumental in the Africa's construction boom by engaging with many of 54 African countries, providing aid and building infrastructure while extracting resources (Renzio *et al.*, 2013: 7-8; Shinn and Brown, 2012: 2). Thus, China's increasing inward foreign direct investments (FDI) (Chen, Goldstein and Orr, 2009: 75) and its being one of the biggest recipients of FDI inflow from the African countries (Long, 2005: 315-6).

3.3.3 Strengths, weaknesses, opportunities and threats (SWOT) of China's market

With the massive internationalization of social and economic activities in China, strengths, weaknesses, opportunities and threats (SWOT) abound. International firms venture into the Chinese market due to its sheer size, the low cost of labor and China's growing capacity for innovation. Conversely, combating bureaucracy, corruption and lack of intellectual property protection (Talwar and Smith, 2007) are major challenges.

Figure 3.2 presents some SWOT that foreign firms in the Chinese construction market could face as noted by Gammon Construction Limited.

Strengths	Weaknesses
1. Technological advancement	1. No local network
2. International experience	2. Lack of local resources
3. Awareness on Health, Safety and Environment	3. High costs
4. Preference for foreign clients	4. Unfamiliarity with the local statutory regulation
Opportunities	Threats
1. Increasing turnover	1. Local protectionism
2. Joint venture with local strong contractors	2. Unforeseen risk
3. Public Private Partnership (PPP) or Public Finance Initiative (PFI)	3. Price / currency fluctuation
4. Higher returns	4. Increasing competitiveness of the local contractors

Figure 3.2: SWOT of Foreign Contractors Operating in China
Source: Sridharan (2007)

Gammon Construction Limited is reputed as being one of the largest construction firms in Hong Kong (Sidharan, 2007: 27). Nonetheless, the views might not be readily generalized for other foreign construction firms operating in China. Shen, Zhao and Drew's (2006) SWOT for "foreign-invested construction enterprises" operating in China presented in Figure 3.3 complements Gammon Construction Limited's views.

Strengths	Weaknesses
1. Good project management skills	1. Limited number of professionals
2. Better information management facilities	2. Higher production costs
3. Advanced machinery and equipment	3. Limited channels for market information
4. High labor productivity	4. Lack of knowledge of regulations
5. Good finance-raising ability	5. Lower business qualification grades
6. Proper debt/asset ratio	6. Limited business relationships
7. Good control skills	
8. Attraction to good human resources	
Opportunities	Threats
1. Reformed policy for foreign businesses	1. Reduction of the investment in fixed assets
2. Governmental promotion of construction	2. Certain restrictions on foreign investments
3. Establishment of credit system	3. Increasingly intense competition
4. Market access protected by WTO agreement	4. Risk of breaching contracts
5. Adoption of international practices	

Figure 3.3: SWOT of Foreign-invested Construction Enterprises in China
Source: Shen, Zhao and Drew (2006)

Ling and Gui (2009) as well as BMI (2011) have also advanced SWOT for the Chinese firms and Chinese business environment as presented in Figure 3.4 and Table 3.1 respectively. Ling and Gui (2009) suggested that foreign firms about to enter China could form JVs and partnerships with the Chinese firms to leverage on the Chinese firms' strengths in exchange for the superior services of the foreign firms.

Strengths	Weaknesses
1. Low operation costs 2. Familiarity with local cultures and industry practices	1. Inferior design and/or technical ability 2. Lack of experience in complex and megaprojects 3. Unfamiliar with modern project management techniques 4. Lack of general management abilities 5. Poor financial capacity
Opportunities (Post-WTO membership)	*Threats*
1. Increase construction revenue 2. Learn from foreigners 3. Improve service standards 4. Increase export opportunities	1. Fierce competition from domestic Chinese firms 2. Fierce competition from foreign firms entering China's construction industry

Figure 3.4: Summary of Chinese Consulting Firms' SWOT
Source: Ling and Gui (2009: 631)

Table 3.1: China's Business Environment SWOT

Strengths	China is continuing to open up various sectors of its economy to foreign investments.
	With the vast supply of cheap labor, the country remains the top destination for foreign direct investments in the developing world.
Weaknesses	Foreign companies continue to complain about the poor protection of intellectual property in China.
	Chinese corporate governance is weak and non-transparent by Western standards. There is a considerable risk for foreign companies in choosing the right local partner.
Opportunities	China's ongoing urbanization and infrastructure drive will provide major opportunities for foreign investments and enhance the transfer of skills.
	The Chinese government is giving more protection and encouragement to the private sector, which is now the most dynamic in the economy.
Threats	China's government will block attempts by foreign firms to take over assets of national importance.
	China is experiencing rising labor costs, prompting some investors to turn to cheaper destinations such as Vietnam.

Source: Business Monitor International, (2011: 10)

3.4 Chinese firms' development and strategies in overseas market

3.4.1 China's export of construction services

Following its economic reforms, China has achieved significant economic growth arising from massive exports and infrastructure spending as well as gradual market liberalization, and entry into WTO in 2001 (IBM, 2006). While projections have been that China's economy would surpass the size of the U.S. by 2035 (IBM, 2006), the Pew Research (2011) have suggested that China has been seen to be overtaking the U.S.

Chinese firms' growth in the global market has been traced back to the 1950s provision of economic and technical aid to other developing countries by the Chinese government (Low, Jiang and Leong, 2004). The introduction of the Act that allowed Chinese specialized companies to invest in other countries in 1979 served as a major boost and the Chinese construction industry began to change (Low, Jiang and Leong, 2004).

Consequently, rapid economic growth, booming global trade, FDI in China, and investments abroad have driven China's integration into the world economy (IBM, 2006: 1). China's competitiveness in the building of infrastructures as expounded by Foster *et al.* (2008) has proved instrumental in infrastructural development in the different African countries China engages with in strategic operations (BMI, 2009: 40).

Post-WTO (2002 to 2008) witnessed Chinese firms' global market dominance with contracting value reaching US$ 113 billion with Asia and Africa being China's two largest markets (Yi and Yong, 2011). In 2007, Nigeria recorded the highest number of active Chinese firms in Africa (Chen *et al.*, 2007). In 2008, the World Bank identified Nigeria as one of the biggest recipients of China's infrastructure finance deals making China one of Nigeria's top ten investments partners (AfDB *et al.*, 2011: 13).

3.4.2 Chinese overseas business strategies

The search for and increasing number of JVs between the Chinese and the foreign firms pose risks due to the different management systems, technological practices, and cultural background (Shen, Wu and Ng, 2001). International construction activities with the Chinese at home or overseas are predisposed to these risks so much so that strategically managing these differences impact on project performance (Ling et al., 2007).

And while the Chinese firms value extensive international experience and good reputation in potential foreign partners (Ling and Gui, 2009), traditional theories may not explain Chinese firms' development (Low and Jiang, 2003). Similarly, paying great attention to customer satisfaction transcends creating competitive advantage (Ling, Ibbs and Cuervo, 2005) to extensive *guanxi* (social) networks (Luo, 2007) among the Chinese.

To the fore going, it has been found that the Chinese culture contains some core values their way of conducting business; hence, are important in determining successful partnering (Kwan and Ofori, 2001). Consequently, the Chinese firms have entered the African market differently from other firms by establishing representative offices, engaging in construction contracting, and financing programs (Chen *et al*., 2007).

Through the Chinese government's involvement, Chinese firms enter the African market in an ad hoc, yet, strategic manner. Operationally, they are selective in maintaining a manageable portfolio of works mostly secured through international bidding and project financing (Chen *et al*., 2007). Materials and equipment are sourced from China mostly because of business reasons with the majority of their workforce still being Chinese while increasing localization effort (Chen, Goldstein and Orr, 2009). And this localization strategy has reportedly paid off in Nigeria (People's Daily Online, 2010).

3.4.3 Chinese Special Economic Zones Strategy

Another strategy of the Chinese firms involves leveraging on the Chinese government's creation of special economic zones (SEZs). Bräutigam and Tang (2009) have noted that the SEZs serve as China's unique, experimental model of development cooperation in Africa. The SEZs catalyze industrialization and synergize the relationship between the Chinese and the African governments (Bräutigam and Tang, 2009) to materialize into being a potential platform for improved performance for the Chinese firms.

Arguably in the interest of improving their performance, Chinese firms are infamous for importing workforce among the Chinese firms, especially with regard to trained managers and supervisors (Chen *et al*., 2007). Thus, the shared responsibility of imposing firm requirements on technology transfer and basic working conditions in order to maximize the benefits of SEZs (Kim, 2013). Nigeria has reportedly been active in addressing this challenge to boosting the performance of the Chinese and the Nigerian firms.

Since China's economic reforms, its SEZs have performed successfully to being a negotiation strategy in its partnering discussions in the African countries (Davies, 2008). Chinese firms' entry into the strategically-selected African countries have soared and expanded through mergers and acquisitions to the extent that competitor firms have integrated their businesses to their Chinese counterparts (Davies, 2008) to being acknowledged as a mutually-beneficial relationship (Power and Mohan, 2008).

From Bräutigam and Tang's (2013) investigative study, Nigeria received two of the nineteen Chinese SEZs awarded as of 2007. These two large industrial estates have performed well through linkage to national development programs that SEZs were being planned to be opened in the other sectors of the Nigerian economy (Lim, 2013).

3.4.4 Chinese differentiation strategy from other foreign firms overseas

As discussed earlier, traditional multinational enterprise theories may not adequately explain Chinese firms' development overseas (Low and Jiang, 2003). This can be buttressed by the Chinese firms' tangential ad hoc, yet, government-backed entry into the African market unlike their Western counterparts (Chen *et al*., 2007). This explains the growing international involvement of the top Chinese firms as that of the other foreign firms have been declining as noted inter alia by Low, Jiang and Leong (2004).

In comparison to other foreign firms in the international construction market, the strengths Chinese firms include skilled and adaptable workforce, competitive pricing, advancement in certain technologies, comparatively closer proximity to the critical markets, and good relationships (Zhao and Shen, 2008). The strengths accord well with the conclusion that competitiveness is premised on emerging managerial ideas including shifting a construction firm towards continuous learning (Flanagan et al., 2007).

The Chinese firms have also been noted as being able to weaken international competitors by up to 25-50% of the price of the overall bid and attributable to their project financing through the China export-import (EXIM) Banks (Babatunde and Low, 2013). Consolidating the fore going as a strategic objective is a firm's overhead costs and bidding price being contingent on its management system as well as its work organization and employment of available assets (Ŝiŝkina, Juodis and Apanavičienė, 2009).

The multi-faceted approaches on the one hand underscore Chinese firms' localized competitiveness, or more aptly "localized learning" and "embeddedness" (Kao, Green and Larsen, 2009) On the other hand, it brings to the fore China's "glocalization" strategy, the country being a civilization but pretending otherwise (Wu, 2008).

3.5 Summary

This chapter reviewed China and its construction industry. It found post-Mao era as instrumental in the economic reforms that have resulted in Chinese firms' rapid overseas engagements. Nevertheless, China has remained conservative against Western influences and the construction industry has remained labor-intensive and difficult to penetrate for foreign firms except where technology transfer is a key component of a JV. Structured PM is at its infancy in China's construction industry in favor of the more common CS, which has replaced the former project administration through the traditional approach by the project head quarter. By and large, there are challenges both with the adoption of PM and CS in China and it is expected that the rapid formalization of these methodologies as demonstrated by the increasing PMP certification will raise the industry standard.

This chapter also found China's economic reforms to continue to be the main drivers to the opening up of more of the domestic market. The SWOT analysis revealed that the strengths were advanced machinery and equipment; high labor productivity and good finance-raising ability; the weaknesses were lack of knowledge or unfamiliarity with the regulations, limited or restricted business relationships due to *guanxi*, and limited number of competent professionals; the opportunities were reformed policies for foreign businesses, development towards international practices and increased construction revenue and export opportunities; and the threats were fierce competition from the domestic Chinese and the other foreign firms; certain restrictions on foreign investments by the government and the risk of breaching contracts due to the unfamiliar practices.

International construction activities involving the Chinese present different challenges with culture being at the core of these. Consequently, strategies adopted differ for working with the Chinese in China and working with the Chinese outside China.

CHAPTER 4: CONSTRUCTION INDUSTRY IN NIGERIA

4.0 Introduction

The British influence and control over what would become Nigeria and Africa's most populous country grew through the 19th century (CIA, 2013b). Series of constitutions after World War II granted Nigeria greater autonomy and independence came in 1960. Following nearly 16 years of military rule, a new constitution was adopted in 1999, and a peaceful transition to civilian government was completed (CIA, 2013b). The government has continued to face the daunting task of reforming a petroleum-based economy, whose majorly undivested revenues have, often times, been squandered through corruption, mismanagement and institutionalizing democracy (CIA, 2013b). Nigeria continues to experience longstanding ethnic and religious tensions and is currently experiencing its longest period of civilian rule since independence following April 2007 first civilian-to-civilian transfer of power (CIA, 2013b).

4.1 Overview of Nigeria

Nigeria faces the growing challenge of preventing Africa's most populous country from breaking apart along ethnic and religious lines (BBC, 2013b). Inter-faith violence is rooted in poverty, unemployment and the competition for land (BBC, 2013b). Government's efforts to boost the economy, which experienced an oil boom in the 1970s and is once again benefiting from high prices on the world market, have been undermined by corruption and mismanagement. Oil-rich Nigeria has been hobbled by political instability, corruption, inadequate infrastructure, and poor macroeconomic management but in 2008 began pursuing economic reforms (CIA, 2013b). The economic reforms

initiated in 2006 have improved economic policies, strengthened financial institutions, and created more business-friendly contexts (AfDB and OECD, 2007: 441).

4.1.1 International relations

Since 2008, the government has begun to show the political will to implement the market-oriented reforms urged by the IMF, such as modernizing the banking system, curbing inflation by blocking excessive wage demands, and resolving regional disputes over the distribution of earnings from the oil industry (CIA, 2013b). GDP rose strongly between 2007 to 2010 due to increased oil exports and high global crude prices in 2010.

Nigeria is Africa's leading oil producer and is always keen to attract foreign investments. The present government's sustained commitments to fighting corruption (BBC, 2013b) and the economic reforms especially with emphasis on infrastructure improvements (CIA, 2013b) have received significant boosts. A power sector blueprint initiated in August 2010 further aimed to tackle infrastructure challenges in Nigeria.

Nigeria's media scene is one of the most vibrant in Africa with all the country's 36 states running their own radios and most of them operating TV stations (BBC, 2013b). Moreover, legislation requires that locally made materials must comprise 60% of output. The private press, concentrated in the more urbanized areas of the country, often criticizes the government in open political debates. As at June 2009, about 44 million Nigerians were reported to be online (CIA, 2013b).

4.1.2 Demographics

The Federal Republic of Nigeria has a population of about 163 million (UNFPA, 2011: 118) with the age range 15 to 64 years constituting about 53% of the total population according to CIA (2013B). Major cities in ascending order of population include Lagos

10.20 million; Kano 3.30 million; Ibadan 2.76 million; Abuja, the Federal Capital Territory (FCT) 1.86 million; and Kaduna 1.52 million (CIA, 2013b). With more than 250 ethnic groups, the major ethnic groups being most populous and politically influential include: Hausa and Fulani 29%, Yoruba 21%, Igbo (Ibo) 18%, Ijaw 10%, Kanuri 4%, Ibibio 3.5%, Tiv 2.5% (CIA, 2013b). Major languages spoken include English (official), Yoruba, Ibo, and Hausa. Figure 4.1 presents the map of Nigeria with some of its neighboring countries.

Figure 4.1: Map of Nigeria
Source: National Geographic (Nigeria Guide)

4.1.3 Climate and resources

Climate varies and range from equatorial in the south, tropical in the center, and arid in the north. Terrain is southern lowland, which merges into central hills, plateaus and mountains in southeast, and then plains in the north. The 923,768 sq. km land area

comprises arable land 38.97%, permanent crops 3.46%, and others 57.57% (CIA, 2013b). Natural resources include natural gas, petroleum, tin, iron ore, coal, limestone, niobium, lead zinc and arable land. According to BBC (2013b), the main exports from Nigeria include petroleum, petroleum products, cocoa, and rubber.

4.1.4 Legal system

Nigeria, a former colony of Britain, gained Independence on 1 October 1960. The Constitution was adopted on 5 May 1999 and became effective on 29 May 1999. Nigeria subscribes to the compulsory ICJ jurisdiction, albeit with reservations (CIA, 2013b). The administrative divisions include 36 states and 1 territory (The FCT, Abuja). The three levels of government that exist in Nigeria include the federal government, state government and local government. The legal system is based on the English common law, Islamic law (in 12 northern states) and traditional law (CIA, 2013b).

Nigeria has the judicial, legislative and executive arms of government at the federal and 36 state levels (WHO, 2009). The legislative arm of government comprises of the Senate and the House of Representatives. Each state has an elected Executive Governor, an Executive Council and a House of Assembly, which has powers to make laws (WHO, 2009). Each of the 774 local government areas is administered by an elected Executive Chairman and elected Legislative Council Members from the electoral wards, which are the lowest political units (WHO, 2009).

4.2 Development of the construction industry in Nigeria

4.2.1 Overview of Nigeria's construction industry

Nigeria is reputed as one of the largest countries in Africa and the most populated country in Africa. Nigeria's construction industry is a major stimulant in the economic growth of

the country with strong interrelationships with other industries (Mansfield, Ugwu and Doran, 1994: 254). The construction industry has remained vibrant and continued to occupy an important position in the nation's economy (Aibinu and Jagboro, 2002: 593). Nigeria's infrastructure, which gathered momentum in the recent years due in part to the influx of the Chinese firms, presents some of the most promising opportunities with characteristics that could make it Africa's most dynamic infrastructure industry (BMI, 2009: 6).

Nigeria is one of the fastest urbanizing countries in Sub-Saharan Africa with close to 50% of the population living in the urban areas of the country (Oluwakiyesi, 2011: 8). The complexity of the Nigerian market, coupled with its main attraction as one of the huge potentially rich countries that have yet to be developed, makes its construction industry a major target for aspiring international players (Momoh, 2011). Nigeria's urbanization has risen at an intrepid speed from 13% in 1960 following its independence from the UK to its current 50% (Oluwakiyesi, 2011: 8). Nigeria's urbanization has followed several forms of procurement methods that evolved globally and were greatly influenced by the UK. The construction industry became complex so much that the boundaries of engineering disciplines were less clearly defined (Aniekwu, 1995: 40). The complexity is still evident in the EPC and D&B procurements by the Chinese firms in which the Chinese extractive companies awarded oil blocs in Nigeria need to work closely with the Chinese firms in the delivery of the non-extractive infrastructure projects due to the "oil for infrastructure" policy.

Nigeria's construction industry was modeled after the British system with some styles of other countries, such as Italy, Germany and France being evident (Mansfield, Ugwu and Doran, 1994; Aibinu and Odeyinka, 2006: 667). Modeling the industry after the

developed industries brought about some inherent problems that came with the imported systems. Even the procurement methods in Britain were not necessarily the most suitable for the British construction industry itself (McCanlis, 1978). Modeling after the foreign systems does not take into considerations the local realities. The manifest nature of the conflict has seen to recommendations to Nigeria's construction industry that project planning and project management, which were adapted from the UK and US, should take cognizance of the local realities to be cost-effective (Mansfield, Ugwu and Doran, 1994).

In broad terms, the two major categories of contractors in Nigeria's building industry include indigenous contractors, which are wholly Nigerian-owned and foreign contractors that are either Nigerian branch of a foreign company or Nigeria/foreign JV (Aniekwu, 1995: 449). It is also possible to identify indigenized foreign firms, which are former wholly foreign firms that, afterwards, developed into indigenous firms having between 40% and 60% Nigerian equity ownership as a result of government indigenization policies (Adams, 1997: 97). Thus, from Aniekwu (1995) and Adams (1997), the three classes of contractor firms in Nigeria are indigenous or local contractor firms, foreign or expatriate contractor firms and indigenized foreign contractor firms.

4.2.2 Domestic and international markets

Developing and developed economies share different rationales and outlooks (Green, 1965: 249) due to the characteristic differential levels of developments and thus different absorptive capacities. The ailments of the construction industry in developing countries are only symptoms of the underlying problems of enterprise management (World Bank, 1984). In consequence, it makes strategic sense that developing economies should concentrate on the development of their indigenous construction capacity to achieve local economic growth (Wells, 1985).

The modeling of the Nigerian construction industry after the British and the rapid changes that followed created an untenable position for the local contractors striving to get used to the traditional construction delivery methods, procedures and framework (Aniekwu, 1995: 450). The myriad of problems plaguing the Nigerian domestic construction market have continued to be either *systemic,* resulting from the application of systems not suitable to the environment or *structural,* resulting from the inherent conditions and practices within the environment (Aniekwu and Okpala, 1988)

With these and more, the productivity of the local contractors in the Nigerian construction industry has been significantly lower than that of their foreign counterparts (for example, see Idoro (2011) and Jimoh (2012)). This is further compounded by the fact that the average Nigerian contractor is a small-scale organization, thus burdened with the challenges of modern construction and management techniques (Adams, 1997).

The participation of expatriate contactors in the Nigerian construction industry has been traced to the colonial days when Cappa and D'Alberto was established in Nigeria in 1932 (Idoro, 2004; Mayaki, 2003). While a number of smaller local companies have emerged and still emerging, the Nigerian construction industry is still largely dominated by international construction firms (Oluwakiyesi, 2011: 12).

The dominance of Julius Berger Nigeria Plc., regarded as the market leader with vast records of the public sector construction projects, faces significant threats in the long term with the entrant of Chinese firms (Oluwakiyesi, 2011: 12). Officially, China has 30 solely owned or JV companies involved in construction, oil and gas, technology, services and education sectors of Nigeria (AfDB *et al.,* 2011: 13; Chinese Embassy, 2004; Corkin, 2006a: 13; Ogunkola, Bankole and Adewuyi, 2008: 5). Moreover, inclusive of companies

involved in the non-construction services, about 200 Chinese companies now operate in Nigeria (People's Daily Online, 2012a).

4.2.3 Major players in Nigeria's construction industry

The Federal Government continued to be the major financier of construction projects in Nigeria. The characteristic bureaucratic procedures of government procurements thus lend the construction industry to allegations of misappropriation of the public funds. Budgetary allocation between 1970 and 1985 was without adequate phasing of construction projects, which led to overheating of the economy with a resultant hyperinflation (Olaloku, 1985). More specifically, the minimal sectoral deployments, the oil boom of the mid 1970s and subsequent fall in oil prices and the global recession that followed in the early 1980s affected the country's economic activities (Mansfield, Ugwu and Doran, 1994: 254).

The World Bank and other aid agencies are other dominant sources of project financing in Nigeria. The World Bank's projects under implementation in 1991 revealed that its total loans as of 1991 was US$ 6.3 million (Mansfield, Ugwu and Doran, 1994), with a substantial part invested in infrastructural development. As a result, the World Bank loans were recycled into the construction industry and benefited Nigeria alike among other African countries. And while the World Bank and other aid agencies have subsequently made significant progress in the establishment of institutional framework in Nigeria, securing government commitment and local funds to sustain the services have been major challenges (Omotayo, Chikwendu and Adebayo, 2001). These challenges have morphed into World Bank's call for governance in Africa as a whole (Harrison, 2004).

4.2.4 Challenges in the Nigerian construction industry

A challenge to the construction industry in Nigeria was the absence of a national agency to coordinate the activities of the several bodies and associations, which make the industry to appear lacking in synergy (Aibinu and Odeyinka, 2006: 667). In October 2011, pursuant to Section 5 (h) of the Public Procurement Act 2007, the Bureau of Public Procurement (BPP) has embarked on a project to classify, categorize and maintain a national database of Contractors, Consultants and Service Providers (CCSPs). In June 2012, BPP released a trial version of the national database for feedback on the Classification Logic and Model, within one week. As at April 2013, the Classification Logic and Model has been instituted for all interested CCSPs doing or intending to do business with Nigeria's Federal Government.

The national database is still an unfolding project; nonetheless, its focus on CCSPs interested in the public projects excludes the majority of CCSPs that are small and medium enterprises (SMEs), which is more prevalent in Nigeria (Ayozie, 2011). On the other hand the national database can curtail the relatively low entry barrier into the industry, which has earlier nurtured a huge number of ad hoc firms involved in project execution especially in the public sector (Aibinu and Odeyinka, 2006). The unavailability of a national registration of contractors has deepened the practice of individual public and private sector clients compiling and maintaining separate registers. This has created dichotomy and fostered non-transparency in procurement with the resultant effects of lobbying and corruption in Nigeria's construction industry (Ayodele *et al.*, 2011).

According to Aibinu and Odeyinka (2006), the contractors, consultants and public clients in Nigeria agreed on the following as the four most important challenges to Nigeria's construction industry:

a) The financing of and payment for completed works (due to overbearing burden of government project financing);

b) Poor contract management (due to inadequate experience and training managerially and technically, low level of productivity, inadequate finance, and absence of specialization);

c) Changes in site conditions (due to inadequate technical feasibility studies as a result of undue rush to commence projects and political sensitivities); and

d) Shortages of materials (due to inadequate statistics, fluctuations, long waiting times and delivery uncertainties as well as inadequate procurement funding and logistics).

Project delays are also endemic in Nigeria, which are in the four major categories: *client-caused delays*, *contractor-caused delays*, *consultant-caused delays* and *extraneous factors* (Odeyinka and Yusif, 1997). In another study (Elinwa and Joshua, 2001) construction practitioners in northern Nigeria indicated that the relative contributions to delays include the client, contractor and others were at 62%, 32% and 6% respectively. Other problems of the Nigerian construction industry also include inaccessibility to credit facilities (The Nigeria Business, 2006) and the tripartite constraints of credit, power, and security situations (Vanguard, 2013), project management practice still being at the infancy stage (Alitheia Capital, 2010; Odusami, Iyagba and Omir, 2003), non-integrated procurement method causing untimely actions and inactions of the various project participants (Aibinu and Odeyinka, 2006: 676; Oyedele and Tham, 2007: 2095) and abandonments of construction projects in Nigeria (Ayodele and Alabi, 2011: 144).

4.2.5 Project management in Nigeria

About 75% of Nigerians fall under the category of low-income group (Sani, 2006). Housing deficit rose from eight million units in February 1991 when the National Housing Policy was formulated (Madaki and Ogunrayewa, 1999: 74; Olotuah and Aiyetan, 2006: 636) to seventeen million as at July 2013 (Okoronkwo, 2013). As a result, governments at all levels are tasked with providing effective and efficient low-cost housing. PM has been identified as one of the high-level expertise required to manage low cost housing in Nigeria (Oladapo, 2002: 8). Similarly, PM is poised as a panacea to reduce the incidence of failed projects in Nigeria (Lawal and Onohaebi, 2010).

Conversely, as earlier highlighted, PM has remained at the infancy stage in Nigeria (Aibinu and Oyedele, 2006). The challenges of implementing modern project management tools, methods and techniques were identified as causes of failure of public institutions and their contractors on construction projects (Olateju, Abdul-Azeez and Alamutu, 2011: 2). Direct factors (time, cost, quality and material) and indirect factors (environment, client, project management, design and construction) have been found to be constraining the success of PM implementation in Nigeria (Nwachukwu, Ibeawuchi and Okoli, 2010: 404). Without prejudice to the size of projects, the basic steps of PM must be adhered and the government must maintain strict financial discipline (Lawal and Onohaebi, 2010: 292) to forge ahead.

The proper application of PM tools and techniques in Nigeria would benefit all aspects of projects and serve as a vehicle for change. The proper application of PM tools and techniques in Nigeria would benefit all aspects of projects and serve as a vehicle for change (Olateju, Abdul-Azeez and Alamutu, 2011: 7). The proper application of PM will constitute a training ground for future managers and skilled workers and serve as

effective means of bringing about administrative reforms in public institutions (Olateju, Abdul-Azeez and Alamutu, 2011). Nigeria's vision 20: 2020 to rank among the biggest economies by year 2020 has been deemed realizable through the implementation of infrastructural projects premised on structured PM has been considered a key to achieving the goal (Duru, 2011). Nigeria's energy industry has embraced PM practices for reasons including cost-effectiveness, optimum resource utilization and viable project delivery to complement the government's effort towards commercialization (Okereke, 2011).

4.3 Foreign investments in Nigeria's construction industry

4.3.1 Key drivers for foreign investments

The performance of the Nigerian economy has benefited both from the high world price of oil and the efficiency gains which resulted from its economic reforms (AfDB and OECD, 2007: 442). The main drivers of growth in the non-oil sector included telecommunications, general commerce, manufacturing, agriculture and services with a tremendous boom in the telecommunications through large inflows of FDIs (AfDB and OECD, 2007: 443). Following the 2006 economic reforms, Nigeria diversified its economy to boost both the oil and non-oil sectors.

4.3.2 Nigeria's market and considerations for the future

The loss of the competitiveness of the Nigerian market during the oil boom of the 1970s was attributed to a surge in imports and the inability of the market to compete with imports due to the high costs of production caused by the poor infrastructure and a deficient business environment (AfDB and OECD, 2007: 443). More than three decades later, the inadequate infrastructure still persisted that it constituted one of the key impediments to the country's growth (BMI, 2009: 7).

With Nigeria's economic reforms, concerted efforts followed that productive interventions abound. In addition, focus on employment creation is poised to complement Nigeria's economic growth so as to be meaningful to the average citizen as expounded by the World Bank's (2013) study. Despite the uncertainties and political challenges, Nigeria has potentially the largest consumer market on the African continent as the fundamentals of the Nigerian economy have been positively improving (AfDB and ADF, 2010).

Sustained growth in the past five years prior to 2011 averaged 5.6% annually (AfDB and ADF, 2010). Nigeria has crossed the IMF's 7% growth rate target and still has the potential to record higher growth from healthy revenues from strong oil prices and increasing investors' interests in bridging its infrastructure deficit, which makes it a likely destination for a construction boom in the near future (Oluwakiyesi, 2011).

While physically the Nigerian business environment poses major constraints, the market compare quite commendably relative to other markets like India, China and Brazil (Oluwakiyesi, 2011). In furtherance, latent opportunities abound in Nigeria in that the country's physical infrastructure deficit especially transportation – road, rail, airports and seaports ironically makes strongest investment case for growth optimism in the construction industry (Oluwakiyesi, 2011: 4).

4.3.3 Strengths, weaknesses, opportunities and threats (SWOT) of the Nigerian market

Major improvements in the Nigerian construction industry would be triggered from the strong growth and economic diversification, rapid urbanization, demographics and housing demand, relatively strong commodity prices in the long term, increasing capacity in cement production and PPP (Oluwakiyesi, 2011: 8-9).

Having surpassed the target of 7% growth rate predicted by the IMF and World Bank (AfDB and ADF, 2010), economic activities abound and serve as catalysts for construction. Caution should, however, be exercised as market players in Nigeria's construction industry still face challenges with shortage of technical expertise, regulations and policies, financing and poor policy implementation (Oluwakiyesi, 2011: 12-15). Similarly, the banking sector in Nigeria also face its own unique set of challenges as presented in Figure 4.2 on the SWOT analysis of the banking industry in Nigeria.

Strengths	Weaknesses
1. The economy continues to grow strongly and sustained high oil prices are supportive of continued economic growth 2. Improving regulatory environment 3. Presently well capitalized (sector capital adequacy ratio (CAR) is 25%) 4. Increasing breadth of operations lowers risk to earnings because of diversification benefits 5. Experienced bankers as senior management teams in most banks	1. Lack of national identification system and lack of fully functioning credit bureau 2. Valuation gap between Nigerian banks and international peers is significant and has widened 3. Risk controls are untested in some areas and growth into new activities may have outstripped risk monitoring systems 4. Inefficient as measured by cost to total assets - materially higher than international peers 5. Major portion of Nigerian stock exchange - the sector high CAR could cause a negative contagion 6. Lack of cross-border consolidated supervision
Opportunities	Threats
1. Low penetration rates as evidenced by low deposit to Gross Domestic Product (GDP) and loan to GDP ratios 2. PPP projects to fund infrastructure spending 3. Growth in the retail segment 4. Relaxation of onerous regulatory requirements 5. More efficient capital structures 6. Continued penetration of low cost retail deposits 7. Improved efficiency	1. Increasing competition has squeezed net interest margins 2. Consolidation 3. Growing non-performing loans (NPLs) 4. Dependence on local investors – decrease in share prices 5. Key-man dependency – many of the large banks depend on a few senior executives to secure major portions of their business

Figure 4.2: SWOT of Nigeria's Banks
Source: Compiled from Cuffe (2008: 13)

As a result, project financing is a major challenge in Nigeria with the government financing major projects; thus subject to bureaucratic procedures. The Central Bank of Nigeria's (CBN) recapitalization program initiated in the year 2004, has, nonetheless, transformed Nigeria's banking industry. As of 2005, CBN's recapitalization had seen to a 70%-reduction in the number of banks in Nigeria according to Cuffe (2008: 14).

Beyond the banking sector, BMI (2009), in a study on Nigeria's infrastructure industry, considered the Nigerian business environment SWOT as presented in Table 4.1, which agreed to a great extent with the SWOT for the banking sector presented in Figure 4.2.

Table 4.1 – Nigeria's Business Environment SWOT

Strengths	A large population means an abundant supply of cheap (albeit unskilled) labor and a growing consumer market.
	Taxation is relatively low, with Value Added Tax just 5%, corporate tax 30% and individual income tax rising to a top-rate of 25%.
Weaknesses	Corruption is endemic, with Nigeria scoring just 2.7 in Transparency International's corruption perceptions, which places it 121st out of 180 countries worldwide (2009 analysis).
	Intellectual property protection is very poor.
	Physical security, especially for foreign workers is very poor in some regions.
Opportunities	Recent banking sector reforms have led to a consolidated and much more efficient financial infrastructure.
	There has been some improvement in the corruption effort, and with a pro-market government, this should continue to improve.
	FDI has brought overseas players into Nigeria, which should help with the spread of international business norms.
Threats	Industrial action remains commonplace and can disrupt normal business activities.
	Investment in energy sector has been frozen pending an improved strategy for expanding capacity.

Source: Business Monitor International, (2009: 23)

Specifically to the construction industry, Acts of God, contractor competence, differing site conditions, contract delay and resolution, labor, equipment and material availability, changes in scope of work, defective design, permit and ordinances, inflation, labor

disputes and site access or right of way have been identified as risks (Windapo and Martins, 2010). In congruence with earlier discussions, these risks identified are both structural and systemic in nature as summarized by Aniekwu and Okpala (1988).

4.4 Nigeria's export of construction services

Nigeria's external position has been heavily influenced by developments in the international oil market, being both a major exporter of crude oil and an importer of petroleum products (AfDB and OECD, 2007: 445). The banking reforms, among other reforms, significantly increased long-term capital inflows. At the regional level, Nigeria plays important roles in the Economic Community of West African States (ECOWAS). At the continental level, Nigeria chairs the Heads of State and Government Implementation Committee of the New Partnership for Africa's Development (NEPAD). At the international level, Nigeria plays active roles in the United Nations and is an influential member of the African Group at the WTO. This strategic positioning places Nigeria at vantage points in international investments.

4.4.1 Nigeria's globalization tendencies and construction services

In addition to being Africa's most populous country and one of the most developed, Nigeria has the second largest economy in Africa (second to South Africa) and accounts for the highest production of oil and gas in Africa. With oil and gas as the major exports and revenue earners for the country, multinational corporations such as Shell, ExxonMobil, Chevron, Total and ENI dominate petroleum exploration and production operations.

Nigeria's exports to industrialized countries consist of primary and intermediate commodities. A large proportion of exports consist of unprocessed raw materials, with

the oil and gas industry contributing the greatest proportion to the country's total exports. In addition to Nigeria being a major exporter of crude oil and gas, it also exports cocoa, rubber, cashew nut and raw timber.

The Nigerian government has put in place a number of investment incentives for the stimulation of private sector investments from within and outside the country (UHY, 2011: 4). In December 1989, the Nigerian Enterprises Act was introduced which permitted 100% foreign ownership in any new venture except those involving the production of arms and ammunitions (UHY, 2011: 6). Other studies (BMI, 2009; Oluwakiyesi, 2011) have also suggested that Nigeria's large and expanding construction and civil engineering sector is supported by multiple real estate projects and development of infrastructures. With a population of over 150 million people and regional, continental and international relevance, Nigeria has become an important international conference center (UHY, 2011). Its largest commercial centers Lagos and the FCT Abuja have been destinations for major international conferences (UHY, 2011).

4.5 Summary

This chapter reviewed Nigeria and its construction industry. It found Nigeria to be composed of teeming working population, with the age range 15-64 constituting about 56% as compared to China's 74%. Also, Nigeria has maintained a more liberal stand to embracing Western influences including the acceptance of the compulsory ICJ jurisdiction. Nigeria's construction industry adopts a pull factor to attracting influx of foreign players including Chinese firms to rendering the domestic players dormant. NGOs, FGN, banks and private investors continue to play significant roles as major players. The economic reforms initiated in 2006 and the ensuing transformations, coupled with a surge in infrastructure projects have more than ever necessitated structured PM.

However, the unique challenges of the business environment in Nigeria as well as inherent structural problems of the industry remain major impediments.

From Nigeria's SWOT reviewed, the strengths include a growing economy with an improving regulatory environment, large consumer market with an abundance of cheap labor, and relatively low corporate and income tax rates; the weaknesses include corruption, lax intellectual property protection, and poor security especially for the foreign workers; the opportunities include the recent banking reforms with a resultant improved efficiency, widespread international practices arising from the diverse players, and pro-market anti-corruption moves by the government; and the threats include heavy dependence on the government as the major financier for projects, industrial actions by the local workforce, and increasing competition among banks.

CHAPTER 5: APPRAISAL OF THE RELATIONSHIPS BETWEEN THE CHINESE AND THE NIGERIAN CONSTRUCTION INDUSTRIES.

5.1 Brief comparison of the Chinese and Nigerian markets

China and Nigeria have experienced economic development at different pace. These have also filtered into their respective construction industries. From earlier discussions in Chapters 3 and 4, China, a socialist economy has remained conservative while Nigeria, a former British colony, has embraced western management style. Chinese construction market orientates toward exports while the Nigerian construction market has remained heavily dependent on imports. China's economic reforms focus on Chinese firms venturing outside of China both for resource needs and international competition while Nigeria's economic reforms aim at stabilizing the local market, thus attracting FDIs. China and Nigeria have also initiated significant economic reforms at different times, with China almost 30 years ahead of Nigeria.

Consequently, China and Nigeria were ranked 91 and 131 respectively among 183 economies in the ease of doing business as measured through quantitative indicators on regulations affecting domestic firms (World Bank and IFC, 2013: 2). Similarly, China and Nigeria were ranked 80 and 139 respectively among the 176 economies on perceived levels of corruption as measured by the Corruption Perceptions Index (CPI) (Transparency International, 2012). CPI reflects the views of observers from around the world including experts working in the economies evaluated. Still, up to 2020, China's rapidly growing construction market would remain the world's largest with Nigeria also experiencing rapid growth driven by rising population and significant infrastructure needs (Global Construction Perspectives and Oxford Economics, 2011).

5.2 Historical development of relationships between China and Nigeria

Chinese traders were navigating the Indian Ocean and visiting the east coast of Africa since the Tang Dynasty (AD 618-907) (Corkin and Burke, 2008: 40). Against all restraints, there were indications that China's trade with east Africa and many parts of the world continued well into the 19th century (Corkin and Burke, 2008: 40). After the PRC's founding in 1949, China established diplomatic relations with many African states in an effort to increase its influence through provisions of soft loans and infrastructure developments (Corkin and Burke, 2008: 40). As such, the two major underlying forces that characterized as the key thrusts behind the development of the infrastructure sectors in the Middle East and Africa are oil and China (BMI, 2009: 40).

Unofficially, China established its relations with Nigeria in 1957 when Chan Hiang-Kang, commercial officer in the Chinese Embassy in Cairo, established unofficial trade links with Nigeria (Momoh, 2009). In the 1960s, technicians and workers from Shanghai and Hong Kong came to Nigeria to start businesses. There on, Chinese businesses have surged with China's economic reforms resulting into more Chinese companies investing in Nigeria (Chinese Embassy, 2004). In 2002, Nigeria established the Nigerian Council for the Promotion of Peaceful Reunification of China (NCPPRC) in Lagos. As at 2004, there were about 20,000 Chinese including more than 300 from Taiwan living in Nigeria, mainly in Lagos, Kano and Abuja (Chinese Embassy, 2004). In 2012, the number has doubled to about 40,000 Chinese citizens living in Nigeria with the Chinese companies rising to 200 (People's Daily Online, 2012a) from the erstwhile official 30.

On the other hand, Nigerians have been venturing to China and undertaking short-term businesses in the large industrial centers (Egbula and Zheng, 2011: 17). In 2006, there were about 3,000 Nigerians in Guangdong province alone, many were sourcing products

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to sell in Nigeria while others were working with Chinese companies importing raw materials from Nigeria (Egbula and Zheng, 2011: 17). As such, the unofficial relationships that started in the 1950s (Asche and Schüller, 2008: 14; Okundaye and Schumacher-Voelker, 2011) progressed and developed into diplomatic relations. Following, Chinese investments in Nigeria hit US$ 8 billion in 2010, which was a 50% increase in the investments between China and Nigeria from the US$ 4 billion total investments recorded in 2006 based on the report from Deng (2011b).

5.3 Diplomatic and economic relations between China and Nigeria

Nigeria refrained from any form of relationship with the Communist world until 1958 when the policy was reversed for friendly terms with every nation, which promises and respects Nigeria's sovereignty (Momoh, 2009). Nigeria backed the reversed policy with unflinching support for China as was evident in the diplomatic and bilateral trade relationships that followed and continue to abound.

Discussions on the rehabilitation of the Nigerian Railways with the Chinese were commenced in the mid 1970s when deliberate efforts were made to deepen relationships between China and Nigeria following the former's completion of the turnkey TANZAM Railway project between Tanzania and Zambia. However, the railway project for Nigeria did not materialize due, primarily, to allegations of corruption (Momoh, 2009).

As a result, there was a dearth of notable involvements between the two countries until 1995 when the railway project was eventually signed. Other projects ensued beyond infrastructure such as the 1980s cultural exchanges between China and Nigeria. Notably, Nigeria's hosting of the Anhui Acrobatic Troupe from China as well as China's hosting of the Nigerian basketball team during a two-week tour of China in exchange.

Nigeria was also instrumental for the admission of China into the United Nations through an unstinting support as well as a bold retort when questioned on the support for China (Momoh, 2009). In 2002, Nigeria and China signed four agreements including consulate matters, cooperation against illicit trafficking and abuse of narcotic drugs, psychotropic substances and the diversion of precursor chemicals. Other agreements were on the exchange of notes on provision of goods and agreement of tourism cooperation (Momoh, 2009). The agreements have resulted into the composition of Chinese FDIs into Nigeria being fragmented and at best broadly categorized into JVs mainly between the Chinese and the Nigerian investors or wholly foreign owned by the Chinese or in partnership with other foreign investors (Ogunkola, Bankole and Adewuyi, 2008: 5).

5.4 Foreign direct investments of Chinese firms in Nigeria

In 2006, Nigeria and Egypt were second as recipients of Chinese total exports to Africa after South Africa, which received one quarter of the exports (Asche and Schüller, 2008: 25). In April 2005, Chinese firm ZTE Corporation signed a deal with the Nigerian Telecommunications Limited to expand Nigeria's CDMA (Code Division Multiple Access) network following a successful 10,000-line trial in one of the Nigerian states. Huawei Technologies, another competitive Chinese telecommunication company facilitated a US$20 million financial support from the China Development Bank to assist Reliance Telecommunications (RelTel) Ltd in its project execution in a bid to position the company as the biggest fixed wireless company in Nigeria.

China National Overseas Oil Company Limited (CNOOC) is reputed for its largest foreign investment ever in Nigeria in a 45% stake in OPL 246 worth US$2.7 billion in offshore deep water oil field operated by Total (the French oil giant). Genetic International Corporation of China (GICC), a SOE, also bought its first consignment of

100,000 metric tonnes of cassava chips from Nigeria in July 2005 with another 182,000 tonnes following afterwards. Over 500 Chinese experts and technicians in various fields of agriculture were in 20 states in Nigeria working with local agriculturists and farmers involved in the construction of small dams (Momoh, 2009). This holds true in view of the sheer size of the Chinese that are now in Nigeria as earlier discussed.

Chinese companies have become active participants in the annual Lagos International Trade Fair and already concluded a plan to build a vehicle assembly plant at a site close to the Trade Fair Complex (Momoh, 2009). Notable Chinese FDIs in Nigeria, which authors (Oyeranti *et al.*, 2010) have also studied to assess the impacts of Chinese investments in Nigeria include Kajola Specialized Railway Industrial FTZ, Ofada Vee Tee Rice Limited, Ogun Guangdong FTZ, China Town and Lekki FTZ. The Lekki FTZ and Ogun Guangdong FTZ have received more attention among scholars. Through a competitive bidding process, Nigeria has also emerged as one of the five African countries selected to host Chinese-led SEZs (Kim, 2013).

5.5 Operations of Chinese firms in Nigeria

The multifaceted nature of Chinese involvements has been found constituting the main attraction to the different African countries in which the Chinese operate (Corkin and Burke, 2008: 40; Egbula and Zheng, 2011: 17; Rocha, 2007: 24). Similarly, the operations of the Chinese firms in Nigeria are multifaceted and characteristic of their adopted strategies of bilateral or multilateral free trade agreements (Gu, 2009). China's multifaceted political and economic relationships with Africa, as noted by Edinger (2008: ii), have resulted into diverse business opportunities and operations in Nigeria. Other significant Chinese trade activities in Nigeria include motorcycle assembly plants, petroleum, electricity generation, manufacturing, real estate, infrastructure construction

(Okundaye and Shcumacher-Voelker, 2005: 67) as well as foods and restaurant businesses as noted by Ogunkola, Bankole and Adewuyi (2008: 6).

From 2003 to 2007, more than half of Chinese FDI flows into Africa were received by Nigeria (20.2%), South Africa (19.8%) and Sudan (12.3%) (Renard, 2011: 19). Thus, in congruence with World Bank's 2009 information, Nigeria received the lion's share of China's infrastructure commitments between 2001 and 2007 (Renard, 2011: 20-1). China, as part of its Africa strategy in the go-global agenda, has become a key thrust in Nigeria's infrastructure development (BMI, 2009: 6). China's go-global strategy announced in 2002 to encourage Chinese firms to establish an international investment presence (Davies, 2010: 24) also coincided with Nigeria's "look East policy", which emerged at the beginning of the new millennium (ERA, 2009: 41).

From 1999 to 2007, Nigeria awarded oil blocs to Chinese firms in exchange for infrastructure building commitments adopting the "oil for infrastructure" strategy (Egbula and Zheng, 2011: 5; Mthembu- Salter, 2009). Subsequently, Chinese firms have been involved in the construction, oil and gas, technology, and services sectors (Ogunkola, Bankole and Adewuyi 2008; Oyeranti *et al*., 2010). As such, while China's initial interests in Nigeria appeared to be extractive resources (Oyeranti *et al*., 2010), the interests are now diverse (Egbula and Zheng, 2011: 3). Generally, the construction industry is possibly the sector in which the Chinese firms have made the biggest inroads in Africa, particularly in road and railway rehabilitation (Corkin, 2006a: 13).

Chinese firms' involvements also include the completion of Nigeria's National Stadium, which hosted the All-Africa Games in October 2003, Nigeria's Malaria Prevention and Control Center and a 150-bed comprehensive hospital (Deng, 2012). The Chinese firms have also completed primary schools in four major cities in Nigeria (Deng, 2012) and a

railway technology training center to train the local artisans and technicians on how to manage the Nigerian construction industry (CCS, 2012). The Chinese firms have also completed the rebuilding of Nigeria's communications satellite, which has the potential to create over 150,000 jobs for the Nigerians (People's Daily Online, 2012b).

Figure 5.1 presents an overview of Chinese total investments in Nigeria for the years 2006, 2008, 2010 and 2012. In 2006, Chinese total investments in Nigeria amounted to USD 4 billion (Deng, 2011b) constituting about 5.45% of the total investments in Africa for the same year (Asche, 2008: 156). In 2008 and 2010, Chinese total investments in Nigeria amounted to USD 6 billion (CCS, 2009) and USD 8 billion (CCS, 2011) respectively. As at end 2012, estimated total Chinese investments in Nigeria stood at about USD 10 billion (Deng, 2012) constituting about 6.13% of the total Chinese investments in Africa for the same year. Hence, Chinese total investments in Nigeria have grown at the rate of about USD 1 billion per annum from 2006 to 2012.
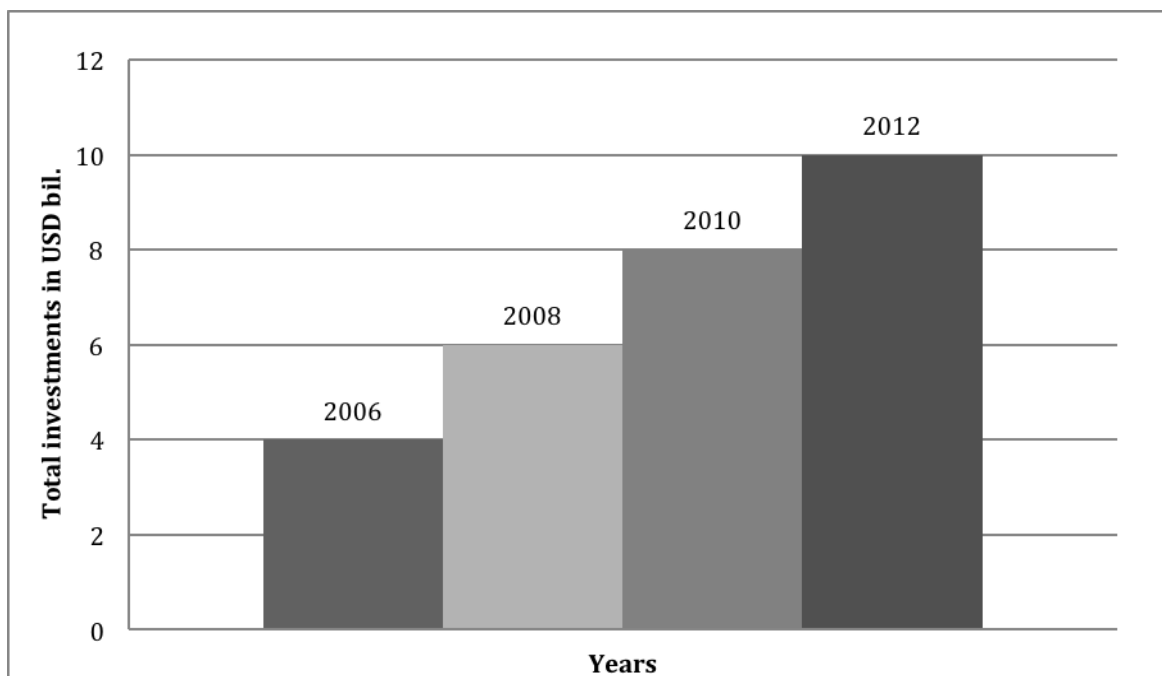
Figure 5.1: Total Chinese investments in Nigeria between 2006 and 2012

Unsurprisingly, Foster and Pushak (2011: 45) submitted that Nigeria has proven to be an attractive destination for China. Consolidating on the thriving investments, the Federal Government of Nigeria (FGN) has also attracted about USD 25 billion investment deals from the Chinese in the areas of power generation, credit facilities to small and medium scale enterprises (SMEs), and upgrading of terminals at the four major airports in Nigeria (Eze and Ezigbo, 2013). The deals, which also include the biggest on power generation in Nigeria, involve FGN's signing of about five agreements with the Chinese government on investment deals covering diplomatic, political and economic aspects. The Chinese firms in Nigeria have been involved in different scales of capital construction projects (USD 10 million to above USD 500 million) as supported by the Nigerian Bureau of Public Procurement's (BPP) published records of projects awarded in Nigeria. Oyeranti, Babatunde and Ogunkola's (2011) study on Chinese construction and non-construction investments in Nigeria likewise identified project values up to USD 500 million.

5.6 Quality of services by the Chinese firms in Nigeria

In Nigeria, the construction industry is also the sector in which the Chinese firms are being most active, particularly in the construction of infrastructural facilities. Infrastructure refers to all basic inputs into and requirements for the proper functioning of the economy, which encompass the two categories of economic and social infrastructure (UN-HABITAT, 2011: 5-6). This definition typifies the multifaceted activities of the Chinese firms in Nigeria and brings to bear the associated challenges of the multicultural teams as the Chinese engage with the Nigerians in and out of the Chinese firms. Against this background and the fragmented nature of the construction industry, TQM practices aim to systematically, effectively and efficiently provide good quality construction services at the appropriate time and price. Premised on the *Eleventh Annual Survey of*

Owners (FMI and CMAA, 2010), it is possible to assess the quality of construction services through four areas, which include the design documents, construction documents, construction management services and construction execution.

The quality of services by the Chinese firms in Nigeria varies from good to poor construction services. Some of the major challenges that the Chinese firms face include: conspiracy with unscrupulous local practitioners (Ukaoha, 2009; Wang, 2008), hoarding of information on their operations (Aginam, 2010; Ogunkola, Bankole and Adewuyi, 2008: 5), importation of home labor and non-compliance with technology transfer (Alike, 2011), discriminatory or racist management style (Deng, 2011a); and proliferation of Nigeria's market with shoddy products and services (Djeri-wake, 2009; Oyeranti *et al*., 2010; Utomi, 2008). On the overview, the Chinese firms are not the only foreign firms in Nigeria; however, their intense competition and exclusion of the Nigerians have constituted the major concerns on their long-term interests in Nigeria.

Conversely, their strengths include satisfactory service delivery (Chao, 2010), localization strategy (People's Daily Online, 2010), entrepreneurship and partnership (Aminu, 2011), and access to capital and supply chain (Osakwe, 2012). Similarly, their: aptitude to prepare quality work at a faster rate over other market players (Corkin, Burke and Davies, 2008: 4); ability to deliver projects at cheaper rates (Oluwakiyesi, 2011: 31); and advantage of being state-owned enterprises (SOEs) thus having relatively easier access to home government concessional loans (Osakwe, 2012: 9). As such, they are able to operate on profit margin of less than 10% (Corkin, Burke and Davies, 2008: 5; Corkin and Burke, 2008: 44) and occasionally, weaken competitors by up to 25% to 50% of the price of the overall bid (Chen, Goldstein and Orr, 2009: 77; Corkin, 2006b: 75).

5.7 Cross-cultural differences between the Chinese and the Nigerians

Cultural values and beliefs are important for a successful project implementation and delivery in Nigeria (Okolie and Okoye, 2012). Nigerian firms' poor savings culture predisposes them to the inability to fund projects (Odediran *et al*., 2012) to affecting their service quality. Consequently, the Nigerian culture influences business practices in Nigeria (Fajana *et al*., 2011), impacts positively on organizational performance (Aluko, 2003), and defies contemporary management theories (Adegboye, 2013).

Conversely, the Chinese culture of thrift (saving) has been identified as a work attitude (Fan, 2000) that pervades the operations of the Chinese at home (Ahlstrom, Chen and Yen, 2010) and overseas (Leung, 2008). Thrift is a long-term orientation that represents the idea of Confucian dynamism, which emphasizes respect for authority and the unequal relationships between people. Unsurprisingly, Tsui (2001) found that the virtue impacts on budgetary participation and managerial performance among the Chinese.

Major cultural differences exist between the Chinese and their African counterparts on business strategies, conflict management, risk-taking/risk-avoiding, work-group characteristics, and motivation systems (Anedo, 2012). African countries differ from the Chinese on *guanxi*, which makes the Chinese not to lose face in business. Face is individual-based, rational, and self-oriented among the Nigerians, while it is communal-based, emotional and other-related among the Chinese (Anedo, 2011).

Guanxi has been linked to trust and long-term orientation in business relationships with the Chinese (Lee and Dawes, 2005). *Guanxi* among the construction key stakeholders likewise serve as the most important role in determining project success as project owners play significant roles in determining project success (Wang and Huang, 2006).

Thus, the Chinese and the Nigerians need to make effort to understand their cross-cultural differences in order to gain knowledge about each other's culture to improve the chances of project success (Anedo 2012). Cross-cultural management is central to project delivery within time, cost and quality to necessitating prioritizing for national culture, communications, dispute resolution, and negotiations (Low and Leong, 2000).

Adversarial relationships characterize the construction industry (McGeorge and London, 2007). Cultural differences ignite these adversarial attitudes (Phua and Rowlinson, 2003) to the extent that emotional and social intelligence competencies are important (Emmerling and Boyatzis, 2012). Unlike the Chinese, the Nigerians adopt the European style of confronting problems and bringing conflict out in the open (Anedo, 2012).

5.8 Summary

This chapter traced the unofficial and official relationships between China and Nigeria dating back to the 1950s and 1970s respectively. It identified the Chinese firms as having played significant roles in the revamp of the railways, roads and power projects in Nigeria. With over 30 solely owned and JV Chinese firms in Nigeria and their continued influx, there have been mixed reactions on the quality of their construction services.

Major cons of the Chinese firms' quality of services include conspiracy with local practitioners, hoarding of information on operations, importation of home labor and non-compliance with technology transfer, discriminatory management style, and proliferation of Nigeria's market with poor services. The pros identified include satisfactory service delivery, localization strategy, entrepreneurship and partnership, access to capital and supply chain. The cross-cultural differences between the Chinese and the Nigerians and the management thereof potentially impacts on the quality of construction services.

CHAPTER 6: CONCEPTUAL APPROACH

6.1 Culture-quality conflict model

National culture distinguishes different countries through shared values, which represent their software of the minds (Hofstede, Hofstede and Minkov, 2010) and is potentially a source of conflict. The way people react in a conflict situation is a function of their perceptions (Lindsay and Norman, 1977) and culture is a key determinant of perception (Morris *et al.*, 1998). The interaction has been modeled earlier in Chapter 2.

Quality is the ability to satisfy implied or stated needs (ANSI/ASQC, 1987). It is also the degree of congruence between expectation and realization (Lock, 1994). Thus quality is subjective and dynamic (Goetsch and Davis, 2006: 5) and has moved beyond an act to becoming a habit (Fung, 2008: 22). TQM offers a plan to manage and improve the quality system continuously (Abdul-Rahman, 2008: 8). ISO 9000 could certainly be adapted to a TQM organization (Kemp, 2006: 200) since TQM is compatible with and can be viewed as TQM since the two are not in competition (Goetsch and Davis, 2012: 236-239).

Successful TQM implementation takes into account cultural variables (Noronha, 2002; Sousa-Poza, Nystrom and Wiebe, 2001). The national culture as a macro culture influences other forms of culture (Low and Leong, 2000: 309; Mead and Andrews, 2009: 84). Otherwise, conflicts result (McNabb and Sepic, 1995; Mohammed, White and Prabhakar, 2008: 3) affecting the quality of service (Lin, 2012; Low, 1998: 44) and rendering otherwise successful managers and organizations ineffective (Ling, Ang and Lim, 2007: 502; Low and Shi, 2001: 276). Since conflicts are intrinsic in any construction project (Chinyere, 2011: 61), project success is now measured and determined by the ways that conflicts are managed (Mohd Danuri *et al*., 2010: 350).

The fore going impacts on the quality perception of construction services as typified by the case of the Chinese firms in Nigeria in which some firms have been able to manage the cultural differences to being regarded as delivering good quality services. It then follows that when a Chinese firm is familiar with the Nigerian culture, cultural misunderstandings are more likely to be avoided or resolved to cultivating or maintaining good quality performance (refer to Chapter 2). Conceptually, the fore goings can be modeled into a conceptual relationship as presented in Figure 6.1.
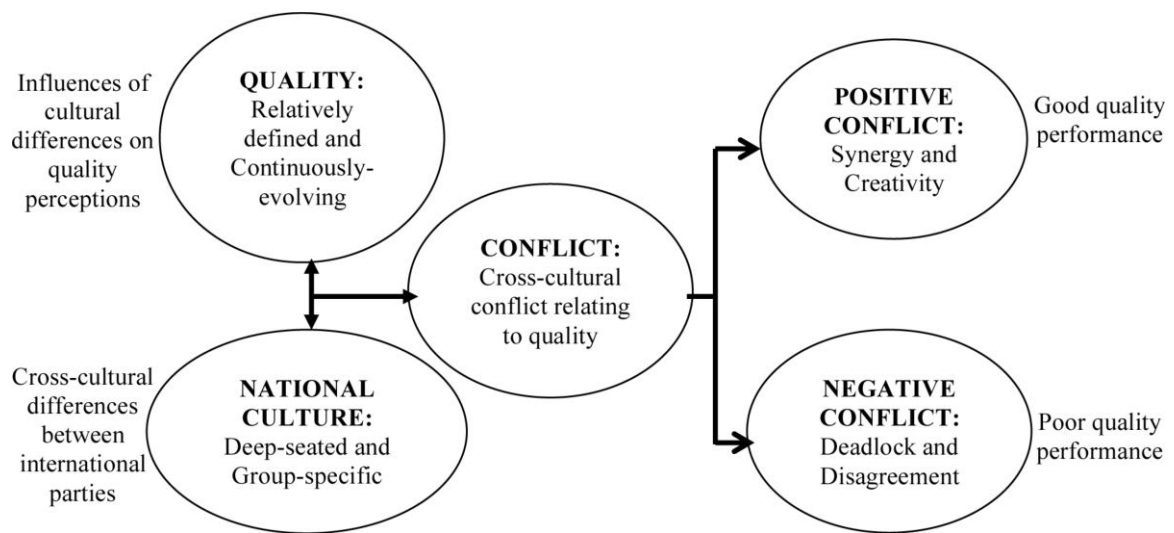
Figure 6.1: Culture-quality Conflict Model (CQCM)

Tjosvold (2006) noted that conflict is often mistakenly perceived as being negative and destructive when evidence exists showing the positive outcomes from well managed conflict. Conflicts bring previously ignored problem into the open to consider new ideas and approaches for improved performance and productivity (Baron, 1991). Managerially, a negative or dysfunctional conflict is destructive while a positive or functional conflict is constructive (Amason, 1996; Low, 1999). Consequently, this study has adopted the terms positive and negative conflicts to underscore these views.

6.2 Quality dynamics

6.2.1 Organizations defining quality

Depending on the level of control and operational needs, an international organization style will tend towards classic bureaucracy, flexible bureaucracy or traditional organization style (Joynt and Warner, 1985: 25). These different styles, manifestations of which are still relevant today, are explained next:

a) Classic bureaucracy: This adopts a high degree of centralization and bureaucratic control. In the earlier context of management style, this can be likened to scientific management campaigned by Frederick Winslow Taylor in 1911. The scientific management approach was met with mixed responses as some companies applied the methods without attention to the underlying principles (Kemp, 2006: 15). The classic bureaucracy can also be likened to Douglas McGregor's (1960) definition of the theory X management style that favored checking (by a third party) more than workers' training for commitment and self-reliance. It should, however, be noted that Taylor advised on the adoption of principled management so that conflict is eliminated, rather than triggered by the change in work processes. For the purpose of subsequent discussions, the classic bureaucracy style of management is denoted as control style 1 (C1).

b) Flexible bureaucracy: This adopts a more decentralized form of authority and bureaucratic control. It allows for checked autonomy and in that sense is subject to some forms of control. It typifies what McGregor (1960) explained as theory Y attitudes of managers (Kemp, 2006: 32). Its empowerment tendencies can at times clash with the Taylor's style (without empowerment) thus generating a form of

conflict. Chee's (2010) study found out that the generation X (in favor of theory X) employees viewed generation Y (in favor of theory Y) managers as arrogant or abrupt. Generation Y employees on the other hand, had fewer difficulties working with older colleagues as they can easily adapt to change. For the purpose of subsequent discussions, the flexible bureaucracy style of management is denoted control style 2 (C2).

c) Traditional organization: This typifies little specialization and formalization, strong centralization and rigid stratification. It defines a situation where personnel enjoys preferential treatment over systems and can be traced back in time to when quality was based on sense of inspiration from beautiful forms. A time that philosophers defined quality based on their assumptions. Thus, Kemp (2006: 11) opined that quality had been created across the world before the invention of quality management. This was possible as societies were more stable, consistent, self-sustaining and less subjected to external influences. As a result, businesses survived and thrived based on cultural standards. For the purpose of subsequent discussions, this management style is denoted control style 3 (C3).

6.2.2 Customers defining quality

With globalization, quality has advanced to the point that business successes are based on people who are the customers so much so that figuring out what they want and value are essential to the delivery of such. Stupak and Leitner (2001: 2) defined quality management (QM) as the process that seeks to identify and administer customers' needs so as to optimize scarce resources. In consequence, quality in today's context must be defined so as to be able to measure it more accurately.

Goetsch and Davis (2006: 3-4) noted that the customer's definition of quality makes the point that quality can be defined and measured owing to the fact that the total quality approach, that is TQM, sees customers as the ones who ultimately define quality. While challenges pertaining to defining quality would appear to have been dispelled, the concept of the customer defining quality ushers in subjectivity making for quality to change over time and encompassing the products, services, people, processes and the environments (Goetsch and Davis, 2006: 5). This brings to the fore the dynamic aspects of quality, the management of which has constituted yet another important consideration and generated much debates. This is now discussed next in this study:

Seymour and Low (1990: 18-20) distinguished the contributors to the "quality debate" into two tendencies:

a) Tendency 1 (T1): This stresses the need for precise criteria, measurement and the application of a strict economic calculus to matters of value and quality. This is the "conformance to specifications" definition of quality.

b) Tendency 2 (T2): This emphasizes the intrinsic limits of quantification and measurement and rejects attempts to define issues as exclusively technical. This is the "fitness for purpose" definition of quality.

T1 and T2 both acknowledged contingency and variability and therefore have recourse to the common sense definition of "fitness for purpose" (Seymour and Low, 1990: 19). While the divides of T1 and T2 raised debates, it should be noted that both purposed to give an assurance that what was agreed would be met, the basis for which quality will be measured. As a result, they typify yet other forms of QM in drives to deal with the subjective and dynamic nature of quality.

6.2.3 Establishing standards for quality – The International Organization for Standardization (ISO) approach

The years after T1 and T2 saw scholars like Taormina and Brewer (2002: 59) identifying eight QM principles that can be used by top management to improve performance. The principles formed the basis for the QM system standards within the ISO 9000 family. These principles are:

a) Customer focus: This upholds that organizations depend on their customers and in that regards, they should meet and strive to exceed customer expectations. As beauty is in the eyes of the beholder, so the customers determine quality.

b) Leadership: This corroborates that leaders should create and maintain an internal environment in which people can be fully involved in achieving the organization's objectives. The enabling environment to foster developments is a crucial step.

c) Involvement of people: The involvement of people at all levels of an organization allows harnessing potentials for the organization's benefit. Sense of responsibility and ownership is to be passed vertically and horizontally within an organization.

d) Process approach: A desired result is achieved more efficiently when activities and related resources are managed as a process. It should be seen as a series of actions that are taken in order to achieve a particular result as against discrete.

e) System approach to management: Properly managing interrelated processes as a system contributes to the organization achieving its objectives. This is premised on an organized set of ideas, methods or ways of working.

f) Continual improvement: Continual improvement of the organization's overall performance should be a permanent objective of the organization. The processes and systems are subject to change based on internal and external influences.

g) Factual approach to decision making: This anchors on the fact that effective decisions are based on the analysis of data and information. As against feelings, scientific methods are used to define and then continuously improve the processes and systems.

h) Mutually beneficial supplier relationships: An interdependent and mutually beneficial relationship enhances the ability of both the team and supplier to create value. Suppliers should be held in high regard and treated as part of the whole that determines the customer's experience.

The journey from classic-flexible-traditional management control style (Joynt and Warner, 1985: 25), through the quality debates (Seymour and Low, 1990) and establishing QM principles (Taormina and Brewer, 2002: 59) serve to suggest that the heterogeneity of the industry has never ceased to present major challenges to defining quality (Seymour and Low, 1990: 13). Thus, standardization became a necessity in order to be able to consistently measure quality and the ISO filled the gap to a greater extent in that the ISO QM principles have become the precursors to implementing TQM in organizations.

6.2.4 Establishing standards for quality – ISO and TQM

The ISO is the world's leading developer of International Standards. ISO enables a consensus to be reached on solutions that meet both the requirements of business and the broader needs of society. The ISO 9000 is among ISO's best-known standards ever (ISO,

2008). The ISO 9000 family addresses quality management. That is, things that an organization does to fulfill customer's quality requirements, without compromising applicable regulatory requirements, customer satisfaction and continual improvement.

The ISO standards, among other things, aim at standardizing the processes by which quality is being delivered. Standardization brings consistency and serves as a benchmarking system. A standard is a rule or guideline that when followed brings consistency (Kemp, 2006: 11). External standards in the forms of customs or laws keep the business environment stable such that if the rule of law is lost, then businesses become very difficult and often shady (Kemp, 2006). It then follows that the ISO 9001 standards can certainly be adapted to a TQM organization.

The MBNQA is one of the three most renowned NQAs serving as proxies to TQM implementation. The MBNQA requirements differ slightly in that they have been established from a customer-oriented, results-focused TQM approach and as a result require a great deal more effort to achieve than the ISO 9000. The MBNQA is a one-time certification and applicants are evaluated in the areas of: *Leadership; Strategic planning; Customer and Market Focus; Measurement, analysis, and knowledge management; Human Resource Management; Process Management; and Business Results.*

As a result, many organizations have refrained from implementing TQM for reasons ranging from survival as being the more pressing needs for the organizations against the perceived relative minimal short-term benefits of TQM (Love and Holt, 2000). TQM implementation is also being limited by organizations' complacency with the ISO 9000 certification despite just being the first step in TQM implementation (Zairi and Baidoun, 2003: 7). On the other hand, organizations do not want to subject employees to the cultural shock of TQM implementation (Low and Teo, 2004: 10).

Notwithstanding, strong linkages exist between the ISO 9000 and TQM so much that the ISO 9000 principles connote the TQM principles and collectively seen as the first step in the journey to the continuous improvements favored by TQM. Goetsch and Davis (2010: 8) noted that the key changes in the revised ISO 9001: 2000 to ISO 9001: 2008 underscore significant move towards TQM. Bikshapati (2011) noted that several researchers have looked at and verified the concept of ISO 9000 certification in relations to the implementation of TQM. Heras-Saizarbitoria, Casadesus and Marimon (2011) also noted that TQM and IS0 9000 have both successfully forged a paradigm of QM in the business world to satisfy both internal and external motivations.

6.2.5 Proposed quality dynamics model

Through reviews of literatures, this study has found that QM has moved through the stages of being ambiguous or haphazard to a more definite and purposeful definition through which a firm's quality performance can be judged more objectively. Hence, the debates on QM from the different control styles C1, C2 and C3 to the tendencies T1 and T2 and finally to the eight TQM principles, has been modeled into another framework as presented in Figure 6.2. The framework, which is proposed in this study as the Quality Dynamics Model (QDM) is to bring together the transition that QM has undergone as garnered from the literatures reviewed.

The QDM presents attempts at ensuring quality had been made through the various control styles as discussed in the preceding section, the aftermath of which saw to the industry's definition of quality prescriptively or performance-based. Standards now exist to measure quality to give assurance to the customer of a more objective way to meet the project objectives. Thus, quality has shifted from being ambiguous to a more definitive position in which it is defined from the customer perspective. The QDM also agrees with

Goetsch and Davis's (2006) position that suggests that while quality is relative and dynamic, it can, nonetheless, be defined and measured.
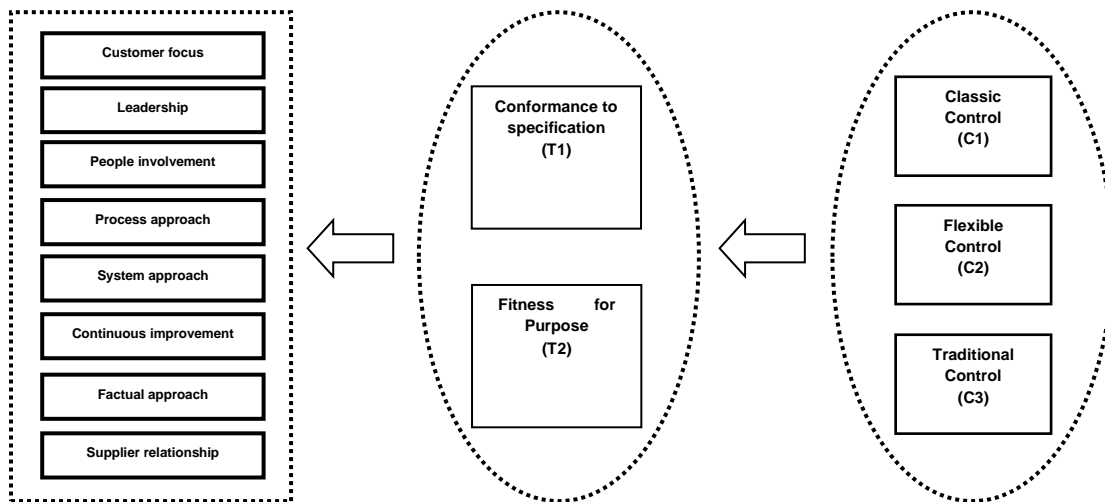
Figure 6.2: Quality Dynamics Model (QDM): the shift from ambiguity to assurance

6.3 Cross cultural influences on quality

6.3.1 Introduction

QM as a concept and as an approach to implementation differs from one place to another. The variance in the implementation of TQM aims at adapting to suit the prevalent value systems so as not to generate dysfunctional conflict. Being inherent in a cross-cultural arrangement, if a conflict is approached constructively from the outset, the people concerned might recognize that they share a common problem and cooperate with each other in confronting and solving it (SDD, 2003: 33). Conflict is generally a struggle over incompatible goals (Kurtzberg and Mueller, 2005; Geisler, 2011).

6.3.2 Conflicts within a TQM organization

Low (1998: 38) observed that conflicts within organizations might be caused by role ambiguities, resource scarcities, task interdependencies, competing objectives, structural differentiation (or incompatible approaches to work) and unresolved prior conflicts. The challenge to continuously define quality coupled with the cross-cultural influences of the diverse players thus demands from a project manager working with a cross-national team, cross-cultural working experience (Low and Shi, 2001: 283).

Culture acts as a catalyst for effectively developing, implementing and maintaining QM within an organization (Low and Winifredo, 2000: 135). The more reason that Zairi and Baidoun (2003: 20) have stressed that culture should be considered when initiating a TQM program. Studies from other scholars (McAdam, 1996; Jäger, 1996; Krüger, 1999; Ngowi, 2000; Brian *et al.*, 2001; Noronha, 2003) have also supported this proposition.

As TQM purposes to improve productivity, which often spins off from quality, it requires adherence to an organization's principles, practices and techniques (Zairi and Baidoun, 2003: 20) while empowering all levels of the company. Low and Winifredo (2000: 135) found that cross-cultural influences could affect the work of Quality Departments in international construction projects. Low and Winifredo (2000) identified the cultural influences as regional, industry, professional, functional and cultural and argued that the national culture resides mostly in values and less in practices and as such is slow to change.

Thus, TQM implementation in an international organization must consider the respective national cultures of the component members. This is because in a TQM setting, the whole organization is responsible for quality improvement and in a cross-functional manner so

as to deal with the inter-department management problems (Psychogios and Priporas, 2007: 45). The foregoing argument on TQM implementation in a TQM organization is presented in Figure 6.3, which draws from the model illustrated by Low and Winifredo (2000: 135). It highlights that within a TQM organization, strategies for quality implementation face challenges from both the technical and the non-technical aspects of the different cultural influences.
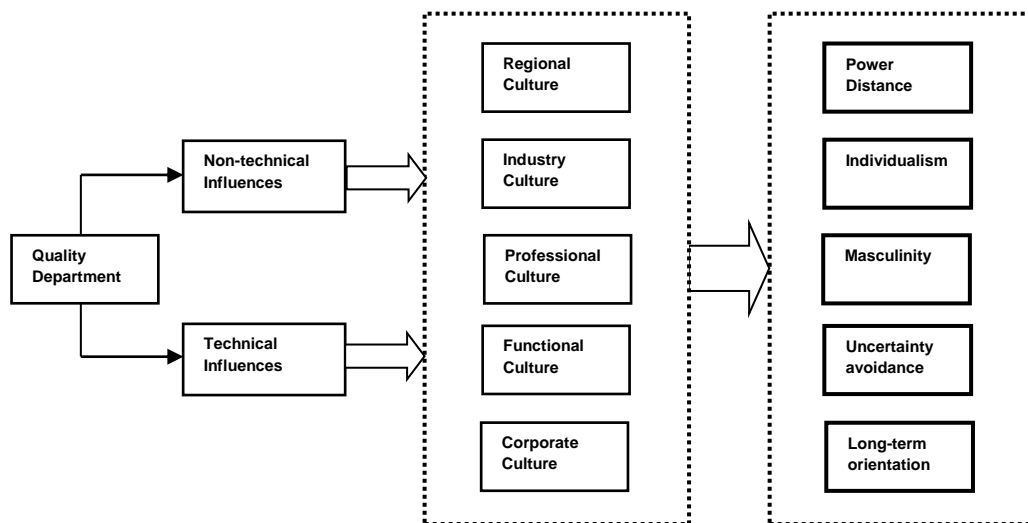
Figure 6.3: Cross-cultural influences on Quality Departments
(Source: Low and Winifredo, 2000)

The cultural influences are rooted in the national cultures and as a result are at best manifestations of the innate, often unconscious, deep-seated values as exemplified by the differences manifested along the NCDs. It would suffice for international organizations, while attempting to address technical and non-technical challenges of quality initiatives, to be mindful that the challenges originate from the influences of national cultures of the different members in the organization.

6.4 Cross cultural quality implementation model

6.4.1 A firm's competitiveness

The SWOT analysis serves as a useful tool in a firm's strategic decision to venture into the overseas markets. In that sense, it serves to measure a firm's externalities. However, prior to a firm venturing overseas, it must possess a form of competitiveness it has developed internally within its domestic market. The competitiveness is then further analyzed for global competitiveness as the firm sets out to compete overseas.

Michael Porter pioneered the use of economic analysis to investigate important issues relating to competitiveness at the firm, industry and national level (Snowdon and Stonehouse, 2006: 163). Porter (1990) introduced a model that allows analyzing why some nations are more competitive than others and why some industries within nations are more competitive than others. As an important contribution to both the economic and management literatures, Porter's Diamond is a framework that enhances understanding of the international competitiveness of firms (Smit, 2010).

6.4.2 Porter's Diamond Theory

For several years, Porter has been involved with the production of the Global Competitiveness Report, which provides an annual ranking of nations according to their competitiveness (Snowdon and Stonehouse, 2006: 169). From Porter (2008), competition is one of society's most powerful forces for making things better. As a result, today's organizations must compete to deliver value, which is defined as an organization's ability to meet or exceed the needs of its customers efficiently (Porter, 2008). Competition is pervasive and every organization needs a strategy to deliver superior value to its customers (Porter, 2008) the first time and subsequent times, characteristic of TQM.

Federico and Topolansky (2011: 18) acknowledged that among the management theories, Porter's (1990) diamond is one of the most influential perspectives to explaining competitive advantage and why some firms succeed where others fail. Porter (1990) opined that nations succeed where the local environment pushes firms to take risks and to invest in new strategies for competing. In the context of TQM, such motivations by the local environments for firms are exemplified by NQAs. The four main determinants embraced by Porter's (1990) diamond include *factor conditions*, *demand conditions*, *related and supporting industries* and *firm strategy, structure and rivalry*.

The model is then expanded with the inclusion of another two determinants, which include the *role of government* and *chance* to address exogenous forces. In summary, the success or failure of a specific industry is a result of the interaction among all the diamond determinants and each determinant can be influenced and influences the conditions of chance and government policy (Porter, 1990). Figure 6.4 presents the complete Porter's diamond.
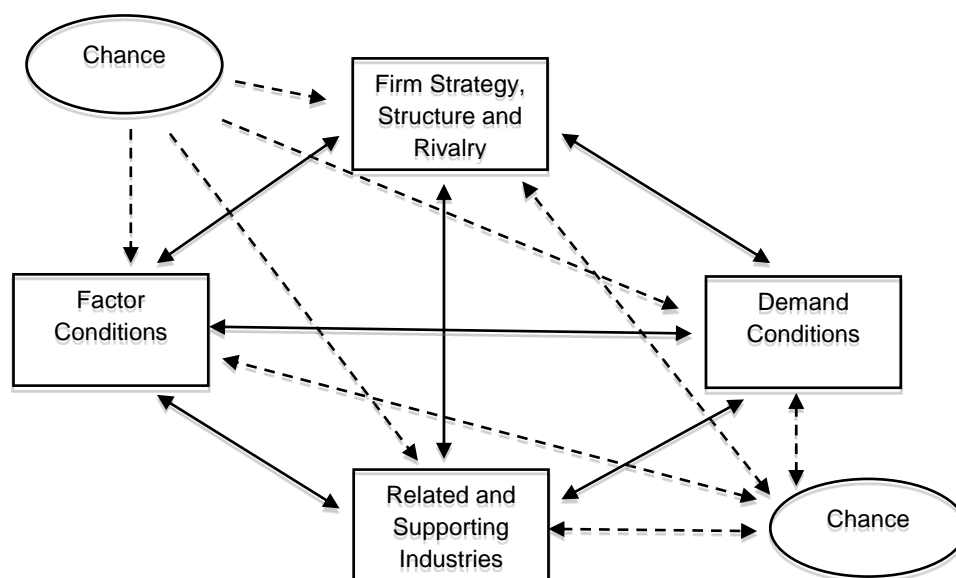
Figure 6.4: Porter's Diamond: The complete system
Source: Adapted from Porter (1990)

6.4.3 Applicability of Porter's theory

Proponents of Porter's diamond have provided further insights into its applicability and usefulness. Grant (1991) suggested that Porter's diamond has the ability to acknowledge the impact of the industry without forgetting the role played by the operational activities at the firm level. Porter's diamond is applicable to any industry and as a result allows identifying the most relevant variables that impact on any industry's competition (Grant, 1991). Porter's diamond is the only model that has successfully addressed the three levels of aggregation: the firm, the industry, and the nation (Grant, 1991).

O'Shaughnessy (1996) likewise submitted that Porter's theory analyzes industries, competitors and activities within the firm. On the national level, governments adopt Porter's theory in their policies to establish national advantages to enable their industries to develop a strong competitive position globally (Smit, 2010). In addition, while the level of focus is national, Porter's diamond also provides a useful framework to analyze the competitiveness of firms in different industries in detail commensurate to the uniqueness of each firm or industry (Federico and Topolansky, 2011: 24).

6.4.4 Global Competitiveness

Schwab (2011: 4), in the Global Competitiveness Report 2011-2012 for the World Economic Forum (WEF), defined competitiveness as the set of institutions, policies and factors that determine the level of productivity of a country. Since 2005, the WEF has based its competitiveness analysis on the Global Competitiveness Index (GCI), a comprehensive tool that measures the microeconomic and macroeconomic foundations of national competitiveness (Schwab, 2011). The GCI measures through its components that are grouped into 12 pillars of competitiveness namely: *Institutions*, *Infrastructure,*

Macroeconomic environment, Health and primary education, Higher education and training, Goods market efficiency, Labor market efficiency, Financial market development, Technological readiness, Market size, Business sophistication, and *Innovation.*

6.4.5 Competitiveness, productivity and quality

The level of productivity is one of the key factors that explain an economy's growth potential (Schwab, 2011: 4). Porter (2002: 55) noted that productivity depends on the value of goods and services produced per unit of the nation's human, capital and natural resources, which is measured by the prices they may command in open markets and the efficiency with which they can be produced. Based on the GCI ranking for 2012-2013, Nigeria and China have been identified as being factor-driven and efficiency-driven, respectively (Schwab, 2012: 10). In terms of the overall GCI, Nigeria and China were also ranked 115 and 29, respectively (Schwab, 2012: 14) for the same period.

Quality and productivity are not to be treated as mutually exclusive because of the strong correlation that exists between the two. In the construction industry, since Egan's (1998) study on the UK construction industry, efforts to improve quality and productivity of the construction industry in different countries through concerted efforts involving major clients are laudable. Berg and Dutmer (1998: 96) acknowledged that construction's productivity could be made more profitable if quality was increased. Haskel's (2004) study on the productivity of the U.S. building construction industry between the years 1966 to 2003 concluded that the value of buildings has increased over the years with the products more qualitatively superior as a result of increased productivity. In Wellington, New Zealand, Hamilton (2011: 1) suggested that a productive and innovative building and housing sector would deliver good quality.

6.4.6 Quality and productivity in the construction and non-construction industries

In addition to Berg and Dutmer (1998), Haskell (2004) and Hamilton (2011), the continued commitments of, for example, the City of Los Angeles Quality and Productivity Commission, QPC (www.quality.lacity.org) as well as Singapore's Building and Construction Authority, BCA (www.bca.gov.sg) are acknowledged. QPC and BCA are parts of the on-going efforts to emphasize the point that quality and productivity should not and cannot be divorced. The QPC is "dedicated to improving the responsiveness, efficiency and quality of services delivered to the public". The BCA and the Real Estate Developers' Association of Singapore (REDAS), in 2010 and 2011, jointly organized the BCA-REDAS Quality and Productivity Seminar, which aims at raising the quality and productivity in Singapore's construction industry.

The correlation between quality and productivity has also been studied in the health sector. Crump and Adil (2009) noted that health services across Europe and around the world would come under increasing pressure due to the financial crisis of 2008. There was a serious risk that the quality and productivity of health care would fall as countries would make inevitable cuts to their health budgets to deal with the imminent financial gap (Crump and Adil, 2009). Likewise, Crump and Adil (2009: 1176) urged managerial and financial communities to build confidence and credibility that quality improvement could also be used to improve productivity.

Le *et al.* (2011: 3) observed that a strong correlation exists between productivity and product quality and concluded that the approach represented an important step towards understanding process characteristics for enhanced process robustness. Curry *et al.* (2010), concerned about the quality of healthcare, expounded on the quality and productivity agenda, which sought for more effective use of existing inputs to produce

more outputs with better outcomes such as increase in the health status, decrease in the complication rates and errors.

6.4.7 Implications for international construction and proposed cross-cultural quality implementation model

Wilkinson (1992) expounded on the unique features of the construction industry, which include the short-term duration, the often downward vertical communication and the transient nature of construction process and firm, and proposed a form of TQM. More importantly, Wilkinson's (1992) proposed TQM placed equal emphasis on productivity improvement and quality improvement and sought to promote participative management.

However, the challenges of QM in a multi-culture environment still persisted. The conflicts identified by Low (1998: 36), among others, continued to pose major challenges to a firm's quality implementation. These potential conflicts would likewise bear on a firm's competitiveness and value creation (Porter, 2008), which would then eventually spiral down to affect national competitiveness (Schwab, 2011).

With national competitiveness, conflicts and its impacts on quality are again brought to focus. Figures 6.5 and 6.6 present this study's proposed Cross-cultural Quality Implementation Model (CCQIM), which serves to contextualize, the interplay between culture and quality as discussed in the earlier sections of this Chapter. The main focus of the CCQIM is on the outcome of the interplay between the TQM principles and national culture dimensions, which is the premise of this study.
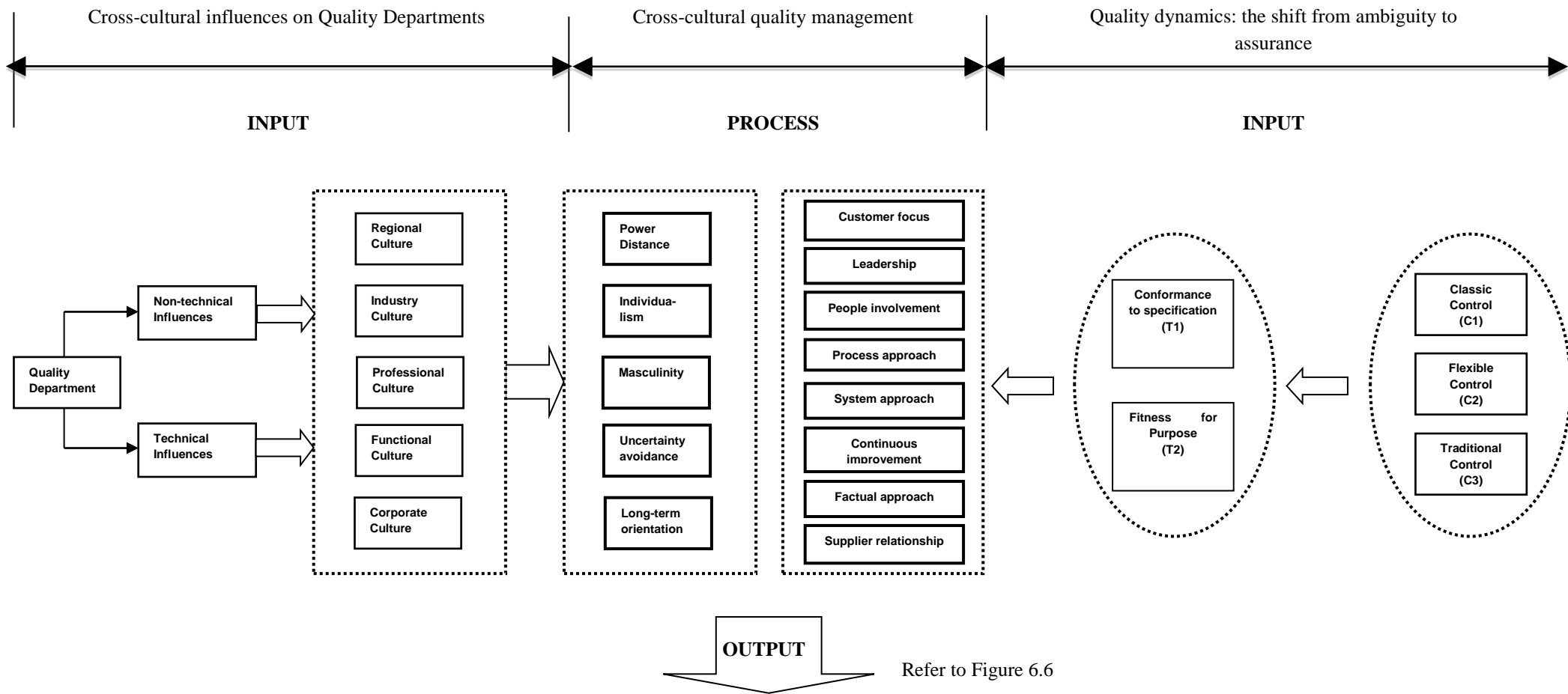
Figure 6.5: Cross-cultural Quality Implementation Model (CCQIM)

Figure 6.6: National culture and TQM implementation: the context

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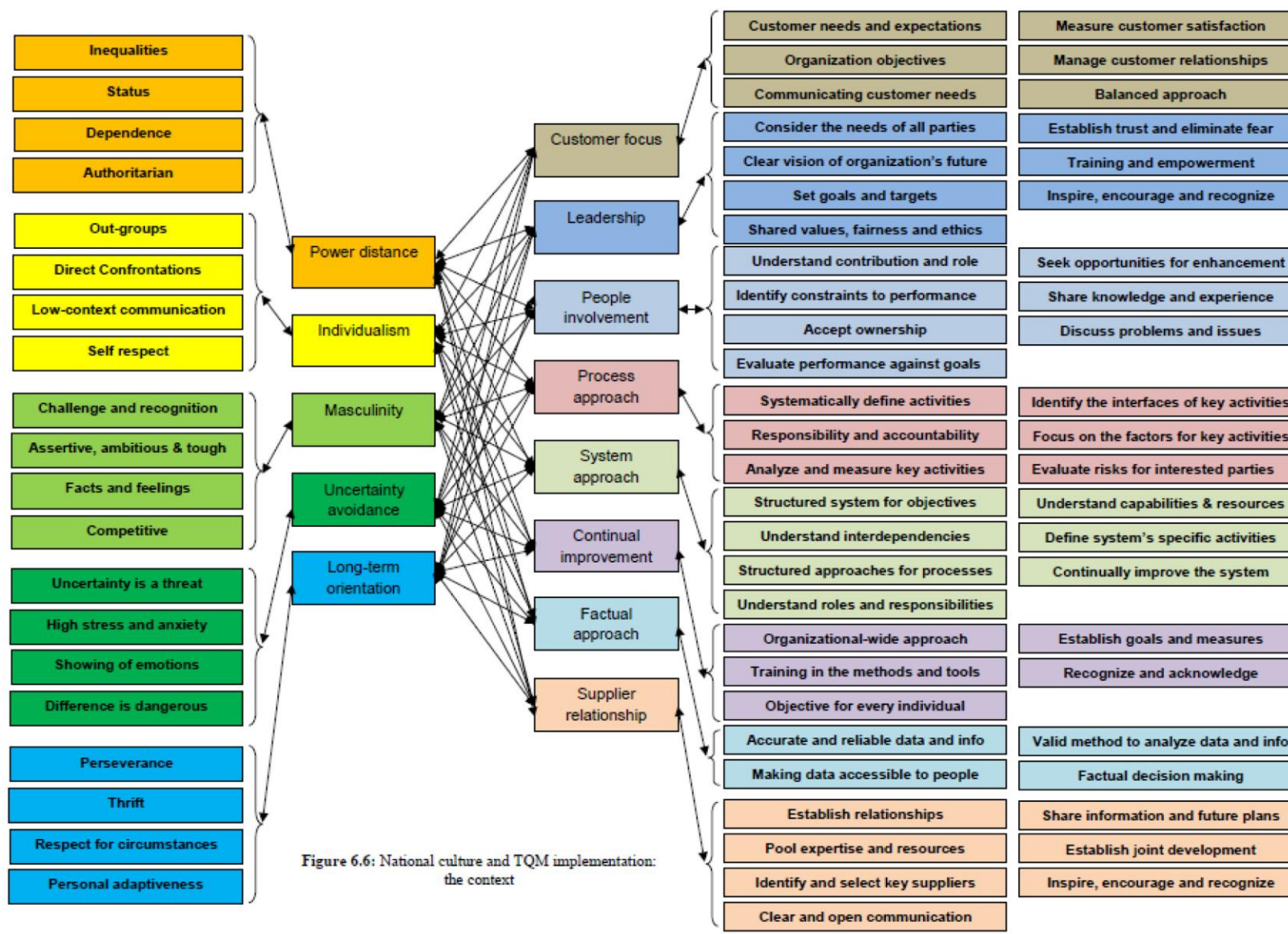
While in the broad sense, contracting parties working on international projects are concerned with TQM principles and NCDs, it should be noted that the eight TQM principles and five NCDs are broader terms of the more observable features or attributes of quality and culture. On this premise, this study expands the TQM principles and NCDs into the observable or perceivable features as identified by the ISO (see ISO, 2012) and Hofstede, Hofstede and Minkov (2010) respectively as presented in Figure 6.6.

From Hofstede, Hofstede and Minkov (2010), the important features of the five NCDs at the level of the society are adopted since the society shapes the nation or country. For the TQM principles, the ISO QM features are adopted due to the relative prevalence of the ISO and on the premise that the ISO is the minimum expected of a TQM firm (Kemp, 2006). Thus, premised on the notion of culture-specific TQM and bi-directionality relationship between culture and TQM, the output of the process involving the observable features or attributes of the TQM principles and NCDs is presented in Figure 6.6.

While Figure 6.5 brings to bear the previous debates and efforts in the construction industry on quality and culture with emphasis on TQM and national culture, Figure 6.6 serves to pin down the significant TQM principles and NCDs by tracing these back to the observable features. It then follows that Figure 6.6 serves to present the TQM principles and the NCDs in the wider context as well as purposes to facilitate investigations toward achieving the research objectives as set out in Chapter 1.

6.5 Proposed quality management assessment matrix

6.5.1 TQM and national culture between two international firms

The first objective of this study is to design a model to investigate the influence of national culture on TQM implementation between two international parties. Part of

Chapter 2 addressed TQM implementation with respect to national culture for China and Nigeria as supported by past scholarly works. This study upholds that national culture is pivotal in the implementation of TQM and that other forms of culture are subsets of the national culture and at best pointers to the deep seated values of the national culture.

In furtherance, identifying the significant cultural influences on quality and, thus differences in the perceptions of TQM demands a more detailed analysis of which the middle or "Process" band of Figure 6.5, which was developed from Figure 6.1, both generated in this study, is relevant. Hence, the middle band presented in Figure 6.5 has been expanded to include observable features as presented in Figure 6.6.

The inclusion of the observable features purposes to achieve the second and third objectives set out in this study. The observable features serve as pointers or compasses through which the differences in the perceptions of the influences of national culture and their attributes on quality as well as the differences in the perceptions of TQM principles and their attributes on quality can be established.

Figure 6.5 has been further translated into a rectangular array of TQM principles and NCDs, in the column and row respectively, that can be treated as a simple entity and evaluated based on feedback from the parties that are under a particular study (for this study, the Chinese and the Nigerians). The arrangement has thus generated a form of quality management assessment system, which is proposed in this study as the "Quality Management Assessment Model" (henceforth, QMAM) as presented in Table 6.1.

Table 6.1: Proposed Quality Management Assessment Model (QMAM)

National cultural dimensions \ TQM principles	Power Distance Index (PDI)	Individualism (IDV)	Masculinity (MAS)	Uncertainty Avoidance Index (UAI)	Long-term Orientation (LTO)
1) Customer focus	TQM1.PDI	TQM1.IDV	TQM1.MAS	TQM1.UAI	TQM1.LTO
2) Leadership	TQM2.PDI	TQM2.IDV	TQM2.MAS	TQM2.UAI	TQM2.LTO
3) People involvement	TQM3.PDI	TQM3.IDV	TQM3.MAS	TQM3.UAI	TQM3.LTO
4) Process approach	TQM4.PDI	TQM4.IDV	TQM4.MAS	TQM4.UAI	TQM4.LTO
5) System approach	TQM5.PDI	TQM5.IDV	TQM5.MAS	TQM5.UAI	TQM5.LTO
6) Continuous improvements	TQM6.PDI	TQM6.IDV	TQM6.MAS	TQM6.UAI	TQM6.LTO
7) Factual approach	TQM7.PDI	TQM7.IDV	TQM7.MAS	TQM7.UAI	TQM7.LTO
8) Supplier relationship	TQM8.PDI	TQM8.IDV	TQM8.MAS	TQM8.UAI	TQM8.LTO

The QMAM in the form of a Matrix Model provides a framework, which presents at a glance the cultural and quality considerations for a construction firm engaging in an international market. It serves as a useful tool that a firm can apply to rank on perception (initially) or experience (subsequently) how the NCDs and TQM principles apply in a country that they want to engage or in the country that they had engaged respectively. In that sense, the QMAM can also be adopted during the application of Porter's diamond since quality, productivity and competitiveness share strong linkages as discussed earlier. The arrows in the QMAM serve to denote that the arrangement of the TQM principles and NCDs is subject to the perceptions of the contracting parties.

The QMAM offers the flexibility to contracting parties to rank the TQM principles and NCDs, as perceived or previously experienced, before the actual matrix assessment. The QMAM can also, in that sense, provide a basis for an organization's further investigation

towards making a strategic business decision. The QMAM was instrumental in fulfilling the other objectives of this study (please refer to Chapter 1).

6.5.2 Identifying significant TQM principles and national cultural dimensions

Taking cues from Figure 6.6, this study expanded the QMAM based on the observable features of the TQM principles and NCDs as identified by ISO (2012) and Hofstede, Hofstede and Minkov (2010) respectively. The observable features for the TQM principles adapted from the ISO and the NCDs are presented in the expanded QMAM in Table 6.2, which provides further insights into the TQM principles and NCDs.

While TQM principles and NCDs might be perceived to be unfamiliar, the observable features under each of the TQM principles and NCDs provide features that would be easier to relate to, thus providing a basis to achieve the fourth and fifth objectives of this study. Like a medical doctor would diagnose based on reported or observed symptoms, the observable features serve to provide characteristic signs or indications of the existence of TQM principles and NCDs among the Chinese and the Nigerians. To assess the perceived relative significance of the eight TQM principles and five NCDs among the Chinese and the Nigerians, the TQM principles and NCDs were assigned TQM1 to TQM8 and NCD1 to NCD5 respectively.

The observable features are indicated after each TQM principle and NCD. Hence, TQM1.1 corresponds to the first observable feature for the first TQM principle, which is "researching and understanding customer needs and expectations" under "Customer focus". NCD1.1 likewise correspond to the first observable feature for the first national culture dimension, which is "Inequalities" under "Power distance".

Table 6.2: Expanded QMAM

National Culture Dimensions / Total Quality Management Principles	Power Distance (PDI) / NCD1	Individualism (IDV) / NCD2	Masculinity (MAS) / NCD3	Uncertainty Avoidance (UAI) / NCD4	Long-term (LTO) / NCD5
	1.1) Inequalities	2.1) Out-groups	3.1) Challenge and recognition	4.1) Uncertainty is a threat	5.1) Perseverance
	1.2) Status	2.2) Direct confrontations	3.2) Assertive, ambitious and tough	4.2) High stress and anxiety	5.2) Thrift
	1.3) Dependence	2.3) Low-context communication	3.3) Facts and feelings	4.3) Showing of emotions	5.3) Respect for circumstances
	1.4) Authoritarian	2.4) Self-respect	3.4) Competitive	4.4) Difference is dangerous	5.4) Personal adaptiveness
Customer focus / TQM1					
1.1) Researching and understanding customer needs and expectations	TQM1.1 (NCD1.1/1.2/1.3/1.4)	TQM1.1 (NCD2.1/2.2/2.3/2.4)	TQM1.1 (NCD3.1/3.2/3.3/3.4)	TQM1.1 (NCD4.1/4.2/4.3/4.4)	TQM1.1 (NCD5.1/5.2/5.3/5.4)
1.2) Ensuring organization's objectives are linked to customer needs and expectations	TQM1.2 (NCD1.1/1.2/1.3/1.4)	TQM1.2 (NCD2.1/2.2/2.3/2.4)	TQM1.2 (NCD3.1/3.2/3.3/3.4)	TQM1.2 (NCD4.1/4.2/4.3/4.4)	TQM1.2 (NCD5.1/5.2/5.3/5.4)
1.3) Communicating customer needs and expectations throughout the organization	TQM1.3 (NCD1.1/1.2/1.3/1.4)	TQM1.3 (NCD2.1/2.2/2.3/2.4)	TQM1.3 (NCD3.1/3.2/3.3/3.4)	TQM1.3 (NCD4.1/4.2/4.3/4.4)	TQM1.3 (NCD5.1/5.2/5.3/5.4)
1.4) Measuring customer satisfaction and act on the results	TQM1.4 (NCD1.1/1.2/1.3/1.4)	TQM1.4 (NCD2.1/2.2/2.3/2.4)	TQM1.4 (NCD3.1/3.2/3.3/3.4)	TQM1.4 (NCD4.1/4.2/4.3/4.4)	TQM1.4 (NCD5.1/5.2/5.3/5.4)

National Culture Dimensions / Total Quality Management Principles	Power Distance (PDI) / NCD1	Individualism (IDV) / NCD2	Masculinity (MAS) / NCD3	Uncertainty Avoidance (UAI) / NCD4	Long-term (LTO) / NCD5
	1.1) Inequalities	2.1) Out-groups	3.1) Challenge and recognition	4.1) Uncertainty is a threat	5.1) Perseverance
	1.2) Status	2.2) Direct confrontations	3.2) Assertive, ambitious and tough	4.2) High stress and anxiety	5.2) Thrift
	1.3) Dependence	2.3) Low-context communication	3.3) Facts and feelings	4.3) Showing of emotions	5.3) Respect for circumstances
	1.4) Authoritarian	2.4) Self-respect	3.4) Competitive	4.4) Difference is dangerous	5.4) Personal adaptiveness
1.5) Systematically managing customer relationships	TQM1.5 (NCD1.1/1.2/1.3/1.4)	TQM1.5 (NCD2.1/2.2/2.3/2.4)	TQM1.5 (NCD3.1/3.2/3.3/3.4)	TQM1.5 (NCD4.1/4.2/4.3/4.4)	TQM1.5 (NCD5.1/5.2/5.3/5.4)
1.6) Ensuring a balanced approach between satisfying customers and other interested parties	TQM1.6 (NCD1.1/1.2/1.3/1.4)	TQM1.6 (NCD2.1/2.2/2.3/2.4)	TQM1.6 (NCD3.1/3.2/3.3/3.4)	TQM1.6 (NCD4.1/4.2/4.3/4.4)	TQM1.6 (NCD5.1/5.2/5.3/5.4)
Leadership / TQM2					
2.1) Considering the needs of all interested parties	TQM2.1 (NCD1.1/1.2/1.3/1.4)	TQM2.1 (NCD2.1/2.2/2.3/2.4)	TQM2.1 (NCD3.1/3.2/3.3/3.4)	TQM2.1 (NCD4.1/4.2/4.3/4.4)	TQM2.1 (NCD5.1/5.2/5.3/5.4)
2.2) Establishing a clear vision of the organization's future	TQM2.2 (NCD1.1/1.2/1.3/1.4)	TQM2.2 (NCD2.1/2.2/2.3/2.4)	TQM2.2 (NCD3.1/3.2/3.3/3.4)	TQM2.2 (NCD4.1/4.2/4.3/4.4)	TQM2.2 (NCD5.1/5.2/5.3/5.4)
2.3) Setting challenging goals and targets	TQM2.3 (NCD1.1/1.2/1.3/1.4)	TQM2.3 (NCD2.1/2.2/2.3/2.4)	TQM2.3 (NCD3.1/3.2/3.3/3.4)	TQM2.3 (NCD4.1/4.2/4.3/4.4)	TQM2.3 (NCD5.1/5.2/5.3/5.4)
2.4) Creating and	TQM2.4	TQM2.4	TQM2.4	TQM2.4	TQM2.4

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National Culture Dimensions	Power Distance (PDI) / NCD1	Individualism (IDV) / NCD2	Masculinity (MAS) / NCD3	Uncertainty Avoidance (UAI) / NCD4	Long-term (LTO) / NCD5
	1.1) Inequalities	2.1) Out-groups	3.1) Challenge and recognition	4.1) Uncertainty is a threat	5.1) Perseverance
	1.2) Status	2.2) Direct confrontations	3.2) Assertive, ambitious and tough	4.2) High stress and anxiety	5.2) Thrift
	1.3) Dependence	2.3) Low-context communication	3.3) Facts and feelings	4.3) Showing of emotions	5.3) Respect for circumstances
Total Quality Management Principles	1.4) Authoritarian	2.4) Self-respect	3.4) Competitive	4.4) Difference is dangerous	5.4) Personal adaptiveness
sustaining shared values, fairness and ethical role models at all levels of the organization	(NCD1.1/1.2/1.3/1.4)	(NCD2.1/2.2/2.3/2.4)	(NCD3.1/3.2/3.3/3.4)	(NCD4.1/4.2/4.3/4.4)	(NCD5.1/5.2/5.3/5.4)
2.5) Establishing trust and eliminating fear	TQM2.5 (NCD1.1/1.2/1.3/1.4)	TQM2.5 (NCD2.1/2.2/2.3/2.4)	TQM2.5 (NCD3.1/3.2/3.3/3.4)	TQM2.5 (NCD4.1/4.2/4.3/4.4)	TQM2.5 (NCD5.1/5.2/5.3/5.4)
2.6) Providing people with the required resources, training and freedom to act with responsibility and accountability	TQM2.6 (NCD1.1/1.2/1.3/1.4)	TQM2.6 (NCD2.1/2.2/2.3/2.4)	TQM2.6 (NCD3.1/3.2/3.3/3.4)	TQM2.6 (NCD4.1/4.2/4.3/4.4)	TQM2.6 (NCD5.1/5.2/5.3/5.4)
2.7) Inspiring, encouraging and recognizing people's contributions	TQM2.7 (NCD1.1/1.2/1.3/1.4)	TQM2.7 (NCD2.1/2.2/2.3/2.4)	TQM2.7 (NCD3.1/3.2/3.3/3.4)	TQM2.7 (NCD4.1/4.2/4.3/4.4)	TQM2.7 (NCD5.1/5.2/5.3/5.4)
People involvement / TQM3					
3.1) People	TQM3.1	TQM3.1	TQM3.1	TQM3.1	TQM3.1

National Culture Dimensions	Power Distance (PDI) / NCD1	Individualism (IDV) / NCD2	Masculinity (MAS) / NCD3	Uncertainty Avoidance (UAI) / NCD4	Long-term (LTO) / NCD5
	1.1) Inequalities	2.1) Out-groups	3.1) Challenge and recognition	4.1) Uncertainty is a threat	5.1) Perseverance
	1.2) Status	2.2) Direct confrontations	3.2) Assertive, ambitious and tough	4.2) High stress and anxiety	5.2) Thrift
	1.3) Dependence	2.3) Low-context communication	3.3) Facts and feelings	4.3) Showing of emotions	5.3) Respect for circumstances
Total Quality Management Principles	1.4) Authoritarian	2.4) Self-respect	3.4) Competitive	4.4) Difference is dangerous	5.4) Personal adaptiveness
understanding the importance of their contribution and role in the organization	(NCD1.1/1.2/1.3/1.4)	(NCD2.1/2.2/2.3/2.4)	(NCD3.1/3.2/3.3/3.4)	(NCD4.1/4.2/4.3/4.4)	(NCD5.1/5.2/5.3/5.4)
3.2) People identifying constraints to their performance	TQM3.2 (NCD1.1/1.2/1.3/1.4)	TQM3.2 (NCD2.1/2.2/2.3/2.4)	TQM3.2 (NCD3.1/3.2/3.3/3.4)	TQM3.2 (NCD4.1/4.2/4.3/4.4)	TQM3.2 (NCD5.1/5.2/5.3/5.4)
3.3) People accepting ownership of problems and their responsibility for solving them	TQM3.3 (NCD1.1/1.2/1.3/1.4)	TQM3.3 (NCD2.1/2.2/2.3/2.4)	TQM3.3 (NCD3.1/3.2/3.3/3.4)	TQM3.3 (NCD4.1/4.2/4.3/4.4)	TQM3.3 (NCD5.1/5.2/5.3/5.4)
3.4) People evaluating their performance against their personal goals and objectives	TQM3.4 (NCD1.1/1.2/1.3/1.4)	TQM3.4 (NCD2.1/2.2/2.3/2.4)	TQM3.4 (NCD3.1/3.2/3.3/3.4)	TQM3.4 (NCD4.1/4.2/4.3/4.4)	TQM3.4 (NCD5.1/5.2/5.3/5.4)
3.5) People actively seeking opportunities to enhance their competence, knowledge and experience	TQM3.5 (NCD1.1/1.2/1.3/1.4)	TQM3.5 (NCD2.1/2.2/2.3/2.4)	TQM3.5 (NCD3.1/3.2/3.3/3.4)	TQM3.5 (NCD4.1/4.2/4.3/4.4)	TQM3.5 (NCD5.1/5.2/5.3/5.4)
3.6) People freely sharing knowledge and	TQM3.6	TQM3.6	TQM3.6	TQM3.6	TQM3.6

National Culture Dimensions	Power Distance (PDI) / NCD1	Individualism (IDV) / NCD2	Masculinity (MAS) / NCD3	Uncertainty Avoidance (UAI) / NCD4	Long-term (LTO) / NCD5
	1.1) Inequalities	2.1) Out-groups	3.1) Challenge and recognition	4.1) Uncertainty is a threat	5.1) Perseverance
	1.2) Status	2.2) Direct confrontations	3.2) Assertive, ambitious and tough	4.2) High stress and anxiety	5.2) Thrift
	1.3) Dependence	2.3) Low-context communication	3.3) Facts and feelings	4.3) Showing of emotions	5.3) Respect for circumstances
Total Quality Management Principles	1.4) Authoritarian	2.4) Self-respect	3.4) Competitive	4.4) Difference is dangerous	5.4) Personal adaptiveness
experience	(NCD1.1/1.2/1.3/1.4)	(NCD2.1/2.2/2.3/2.4)	(NCD3.1/3.2/3.3/3.4)	(NCD4.1/4.2/4.3/4.4)	(NCD5.1/5.2/5.3/5.4)
3.7) People openly discussing problems and issues	TQM3.7 (NCD1.1/1.2/1.3/1.4)	TQM3.7 (NCD2.1/2.2/2.3/2.4)	TQM3.7 (NCD3.1/3.2/3.3/3.4)	TQM3.7 (NCD4.1/4.2/4.3/4.4)	TQM3.7 (NCD5.1/5.2/5.3/5.4)
Process approach / TQM4					
4.1) Systematically defining the activities necessary to obtain a desired result	TQM4.1 (NCD1.1/1.2/1.3/1.4)	TQM4.1 (NCD2.1/2.2/2.3/2.4)	TQM4.1 (NCD3.1/3.2/3.3/3.4)	TQM4.1 (NCD4.1/4.2/4.3/4.4)	TQM4.1 (NCD5.1/5.2/5.3/5.4)
4.2) Establishing clear responsibility and accountability for managing key activities	TQM4.2 (NCD1.1/1.2/1.3/1.4)	TQM4.2 (NCD2.1/2.2/2.3/2.4)	TQM4.2 (NCD3.1/3.2/3.3/3.4)	TQM4.2 (NCD4.1/4.2/4.3/4.4)	TQM4.2 (NCD5.1/5.2/5.3/5.4)
4.3) Analyzing and measuring of the capability of key activities	TQM4.3 (NCD1.1/1.2/1.3/1.4)	TQM4.3 (NCD2.1/2.2/2.3/2.4)	TQM4.3 (NCD3.1/3.2/3.3/3.4)	TQM4.3 (NCD4.1/4.2/4.3/4.4)	TQM4.3 (NCD5.1/5.2/5.3/5.4)

National Culture Dimensions	Power Distance (PDI) / NCD1	Individualism (IDV) / NCD2	Masculinity (MAS) / NCD3	Uncertainty Avoidance (UAI) / NCD4	Long-term (LTO) / NCD5
	1.1) Inequalities	2.1) Out-groups	3.1) Challenge and recognition	4.1) Uncertainty is a threat	5.1) Perseverance
	1.2) Status	2.2) Direct confrontations	3.2) Assertive, ambitious and tough	4.2) High stress and anxiety	5.2) Thrift
	1.3) Dependence	2.3) Low-context communication	3.3) Facts and feelings	4.3) Showing of emotions	5.3) Respect for circumstances
Total Quality Management Principles	1.4) Authoritarian	2.4) Self-respect	3.4) Competitive	4.4) Difference is dangerous	5.4) Personal adaptiveness
4.4) Identifying the interfaces of key activities within and between the functions of the organization	TQM4.4 (NCD1.1/1.2/1.3/1.4)	TQM4.4 (NCD2.1/2.2/2.3/2.4)	TQM4.4 (NCD3.1/3.2/3.3/3.4)	TQM4.4 (NCD4.1/4.2/4.3/4.4)	TQM4.4 (NCD5.1/5.2/5.3/5.4)
4.5) Focusing on the factors such as resources, methods and materials that will improve key activities of the organization	TQM4.5 (NCD1.1/1.2/1.3/1.4)	TQM4.5 (NCD2.1/2.2/2.3/2.4)	TQM4.5 (NCD3.1/3.2/3.3/3.4)	TQM4.5 (NCD4.1/4.2/4.3/4.4)	TQM4.5 (NCD5.1/5.2/5.3/5.4)
4.6) Evaluating risks, consequences and impacts of activities on customers, suppliers and other interested parties	TQM4.6 (NCD1.1/1.2/1.3/1.4)	TQM4.6 (NCD2.1/2.2/2.3/2.4)	TQM4.6 (NCD3.1/3.2/3.3/3.4)	TQM4.6 (NCD4.1/4.2/4.3/4.4)	TQM4.6 (NCD5.1/5.2/5.3/5.4)
System approach / TQM5					
5.1) Structuring a system to achieve the organization's objectives in the most effective and	TQM5.1 (NCD1.1/1.2/1.3/1.4)	TQM5.1 (NCD2.1/2.2/2.3/2.4)	TQM5.1 (NCD3.1/3.2/3.3/3.4)	TQM5.1 (NCD4.1/4.2/4.3/4.4)	TQM5.1 (NCD5.1/5.2/5.3/5.4)

National Culture Dimensions / Total Quality Management Principles	Power Distance (PDI) / NCD1	Individualism (IDV) / NCD2	Masculinity (MAS) / NCD3	Uncertainty Avoidance (UAI) / NCD4	Long-term (LTO) / NCD5
	1.1) Inequalities	2.1) Out-groups	3.1) Challenge and recognition	4.1) Uncertainty is a threat	5.1) Perseverance
	1.2) Status	2.2) Direct confrontations	3.2) Assertive, ambitious and tough	4.2) High stress and anxiety	5.2) Thrift
	1.3) Dependence	2.3) Low-context communication	3.3) Facts and feelings	4.3) Showing of emotions	5.3) Respect for circumstances
	1.4) Authoritarian	2.4) Self-respect	3.4) Competitive	4.4) Difference is dangerous	5.4) Personal adaptiveness
efficient way					
5.2) Understanding the interdependencies between the processes of the system	TQM5.2 (NCD1.1/1.2/1.3/1.4)	TQM5.2 (NCD2.1/2.2/2.3/2.4)	TQM5.2 (NCD3.1/3.2/3.3/3.4)	TQM5.2 (NCD4.1/4.2/4.3/4.4)	TQM5.2 (NCD5.1/5.2/5.3/5.4)
5.3) Structured approaches that harmonize and integrate processes	TQM5.3 (NCD1.1/1.2/1.3/1.4)	TQM5.3 (NCD2.1/2.2/2.3/2.4)	TQM5.3 (NCD3.1/3.2/3.3/3.4)	TQM5.3 (NCD4.1/4.2/4.3/4.4)	TQM5.3 (NCD5.1/5.2/5.3/5.4)
5.4) Providing a better understanding of the roles and responsibilities necessary for achieving common objectives and thereby reducing cross-functional barriers	TQM5.4 (NCD1.1/1.2/1.3/1.4)	TQM5.4 (NCD2.1/2.2/2.3/2.4)	TQM5.4 (NCD3.1/3.2/3.3/3.4)	TQM5.4 (NCD4.1/4.2/4.3/4.4)	TQM5.4 (NCD5.1/5.2/5.3/5.4)
5.5) Understanding organizational capabilities and establishing resource constraints prior to action	TQM5.5 (NCD1.1/1.2/1.3/1.4)	TQM5.5 (NCD2.1/2.2/2.3/2.4)	TQM5.5 (NCD3.1/3.2/3.3/3.4)	TQM5.5 (NCD4.1/4.2/4.3/4.4)	TQM5.5 (NCD5.1/5.2/5.3/5.4)
5.6) Targeting and	TQM5.6	TQM5.6	TQM5.6	TQM5.6	TQM5.6

National Culture Dimensions \ Total Quality Management Principles	Power Distance (PDI) / NCD1	Individualism (IDV) / NCD2	Masculinity (MAS) / NCD3	Uncertainty Avoidance (UAI) / NCD4	Long-term (LTO) / NCD5
	1.1) Inequalities	2.1) Out-groups	3.1) Challenge and recognition	4.1) Uncertainty is a threat	5.1) Perseverance
	1.2) Status	2.2) Direct confrontations	3.2) Assertive, ambitious and tough	4.2) High stress and anxiety	5.2) Thrift
	1.3) Dependence	2.3) Low-context communication	3.3) Facts and feelings	4.3) Showing of emotions	5.3) Respect for circumstances
	1.4) Authoritarian	2.4) Self-respect	3.4) Competitive	4.4) Difference is dangerous	5.4) Personal adaptiveness
defining how specific activities within a system should operate	(NCD1.1/1.2/1.3/1.4)	(NCD2.1/2.2/2.3/2.4)	(NCD3.1/3.2/3.3/3.4)	(NCD4.1/4.2/4.3/4.4)	(NCD5.1/5.2/5.3/5.4)
5.7) Continually improving the system through measurement and evaluation	TQM5.7 (NCD1.1/1.2/1.3/1.4)	TQM5.7 (NCD2.1/2.2/2.3/2.4)	TQM5.7 (NCD3.1/3.2/3.3/3.4)	TQM5.7 (NCD4.1/4.2/4.3/4.4)	TQM5.7 (NCD5.1/5.2/5.3/5.4)
Continual improvement / TQM6					
6.1) Employing a consistent organization-wide approach to continual improvement of the organization's performance	TQM6.1 (NCD1.1/1.2/1.3/1.4)	TQM6.1 (NCD2.1/2.2/2.3/2.4)	TQM6.1 (NCD3.1/3.2/3.3/3.4)	TQM6.1 (NCD4.1/4.2/4.3/4.4)	TQM6.1 (NCD5.1/5.2/5.3/5.4)
6.2) Providing people with training in the methods and tools of continual improvement	TQM6.2 (NCD1.1/1.2/1.3/1.4)	TQM6.2 (NCD2.1/2.2/2.3/2.4)	TQM6.2 (NCD3.1/3.2/3.3/3.4)	TQM6.2 (NCD4.1/4.2/4.3/4.4)	TQM6.2 (NCD5.1/5.2/5.3/5.4)
6.3) Making continual improvement of	TQM6.3	TQM6.3	TQM6.3	TQM6.3	TQM6.3

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National Culture Dimensions / Total Quality Management Principles	Power Distance (PDI) / NCD1	Individualism (IDV) / NCD2	Masculinity (MAS) / NCD3	Uncertainty Avoidance (UAI) / NCD4	Long-term (LTO) / NCD5
	1.1) Inequalities	2.1) Out-groups	3.1) Challenge and recognition	4.1) Uncertainty is a threat	5.1) Perseverance
	1.2) Status	2.2) Direct confrontations	3.2) Assertive, ambitious and tough	4.2) High stress and anxiety	5.2) Thrift
	1.3) Dependence	2.3) Low-context communication	3.3) Facts and feelings	4.3) Showing of emotions	5.3) Respect for circumstances
	1.4) Authoritarian	2.4) Self-respect	3.4) Competitive	4.4) Difference is dangerous	5.4) Personal adaptiveness
products, processes and systems an objective for every individual in the organization	(NCD1.1/1.2/1.3/1.4)	(NCD2.1/2.2/2.3/2.4)	(NCD3.1/3.2/3.3/3.4)	(NCD4.1/4.2/4.3/4.4)	(NCD5.1/5.2/5.3/5.4)
6.4) Establishing goals to guide, and measures to track, continual improvement	TQM6.4 (NCD1.1/1.2/1.3/1.4)	TQM6.4 (NCD2.1/2.2/2.3/2.4)	TQM6.4 (NCD3.1/3.2/3.3/3.4)	TQM6.4 (NCD4.1/4.2/4.3/4.4)	TQM6.4 (NCD5.1/5.2/5.3/5.4)
6.5) Recognizing and acknowledging improvements	TQM6.5 (NCD1.1/1.2/1.3/1.4)	TQM6.5 (NCD2.1/2.2/2.3/2.4)	TQM6.5 (NCD3.1/3.2/3.3/3.4)	TQM6.5 (NCD4.1/4.2/4.3/4.4)	TQM6.5 (NCD5.1/5.2/5.3/5.4)
Factual approach / TQM7					
7.1) Ensuring that data and information are sufficiently accurate and reliable	TQM7.1 (NCD1.1/1.2/1.3/1.4)	TQM7.1 (NCD2.1/2.2/2.3/2.4)	TQM7.1 (NCD3.1/3.2/3.3/3.4)	TQM7.1 (NCD4.1/4.2/4.3/4.4)	TQM7.1 (NCD5.1/5.2/5.3/5.4)
7.2) Making data accessible to those who	TQM7.2	TQM7.2	TQM7.2	TQM7.2	TQM7.2

National Culture Dimensions / Total Quality Management Principles	Power Distance (PDI) / NCD1	Individualism (IDV) / NCD2	Masculinity (MAS) / NCD3	Uncertainty Avoidance (UAI) / NCD4	Long-term (LTO) / NCD5
	1.1) Inequalities	2.1) Out-groups	3.1) Challenge and recognition	4.1) Uncertainty is a threat	5.1) Perseverance
	1.2) Status	2.2) Direct confrontations	3.2) Assertive, ambitious and tough	4.2) High stress and anxiety	5.2) Thrift
	1.3) Dependence	2.3) Low-context communication	3.3) Facts and feelings	4.3) Showing of emotions	5.3) Respect for circumstances
	1.4) Authoritarian	2.4) Self-respect	3.4) Competitive	4.4) Difference is dangerous	5.4) Personal adaptiveness
need it	(NCD1.1/1.2/1.3/1.4)	(NCD2.1/2.2/2.3/2.4)	(NCD3.1/3.2/3.3/3.4)	(NCD4.1/4.2/4.3/4.4)	(NCD5.1/5.2/5.3/5.4)
7.3) Analyzing data and information using valid methods	TQM7.3 (NCD1.1/1.2/1.3/1.4)	TQM7.3 (NCD2.1/2.2/2.3/2.4)	TQM7.3 (NCD3.1/3.2/3.3/3.4)	TQM7.3 (NCD4.1/4.2/4.3/4.4)	TQM7.3 (NCD5.1/5.2/5.3/5.4)
7.4) Making decisions and taking action based on factual analysis, balanced with experience and intuition	TQM7.4 (NCD1.1/1.2/1.3/1.4)	TQM3.4 (NCD2.1/2.2/2.3/2.4)	TQM3.4 (NCD3.1/3.2/3.3/3.4)	TQM3.4 (NCD4.1/4.2/4.3/4.4)	TQM3.4 (NCD5.1/5.2/5.3/5.4)
Supplier relationship / TQM8					
8.1) Establishing relationships that balance short-term gains with long-term considerations	TQM8.1 (NCD1.1/1.2/1.3/1.4)	TQM8.1 (NCD2.1/2.2/2.3/2.4)	TQM8.1 (NCD3.1/3.2/3.3/3.4)	TQM8.1 (NCD4.1/4.2/4.3/4.4)	TQM8.1 (NCD5.1/5.2/5.3/5.4)
8.2) Pooling of expertise and resources with partners	TQM8.2 (NCD1.1/1.2/1.3/1.4)	TQM8.2 (NCD2.1/2.2/2.3/2.4)	TQM8.2 (NCD3.1/3.2/3.3/3.4)	TQM8.2 (NCD4.1/4.2/4.3/4.4)	TQM8.2 (NCD5.1/5.2/5.3/5.4)
8.3) Identifying and	TQM8.3	TQM8.3	TQM8.3	TQM8.3	TQM8.3

National Culture Dimensions	Power Distance (PDI) / NCD1	Individualism (IDV) / NCD2	Masculinity (MAS) / NCD3	Uncertainty Avoidance (UAI) / NCD4	Long-term (LTO) / NCD5
	1.1) Inequalities	2.1) Out-groups	3.1) Challenge and recognition	4.1) Uncertainty is a threat	5.1) Perseverance
	1.2) Status	2.2) Direct confrontations	3.2) Assertive, ambitious and tough	4.2) High stress and anxiety	5.2) Thrift
	1.3) Dependence	2.3) Low-context communication	3.3) Facts and feelings	4.3) Showing of emotions	5.3) Respect for circumstances
Total Quality Management Principles	1.4) Authoritarian	2.4) Self-respect	3.4) Competitive	4.4) Difference is dangerous	5.4) Personal adaptiveness
selecting key suppliers	(NCD1.1/1.2/1.3/1.4)	(NCD2.1/2.2/2.3/2.4)	(NCD3.1/3.2/3.3/3.4)	(NCD4.1/4.2/4.3/4.4)	(NCD5.1/5.2/5.3/5.4)
8.4) Clear and open communication	TQM8.4 (NCD1.1/1.2/1.3/1.4)	TQM8.4 (NCD2.1/2.2/2.3/2.4)	TQM8.4 (NCD3.1/3.2/3.3/3.4)	TQM8.4 (NCD4.1/4.2/4.3/4.4)	TQM8.4 (NCD5.1/5.2/5.3/5.4)
8.5) Sharing information and future plans	TQM8.5 (NCD1.1/1.2/1.3/1.4)	TQM8.5 (NCD2.1/2.2/2.3/2.4)	TQM8.5 (NCD3.1/3.2/3.3/3.4)	TQM8.5 (NCD4.1/4.2/4.3/4.4)	TQM8.5 (NCD5.1/5.2/5.3/5.4)
8.6) Establishing joint development and improvement activities	TQM8.6 (NCD1.1/1.2/1.3/1.4)	TQM8.6 (NCD2.1/2.2/2.3/2.4)	TQM8.6 (NCD3.1/3.2/3.3/3.4)	TQM8.6 (NCD4.1/4.2/4.3/4.4)	TQM8.6 (NCD5.1/5.2/5.3/5.4)
8.7) Inspiring, encouraging and recognizing improvements and achievements by suppliers	TQM8.7 (NCD1.1/1.2/1.3/1.4)	TQM8.7 (NCD2.1/2.2/2.3/2.4)	TQM8.7 (NCD3.1/3.2/3.3/3.4)	TQM8.7 (NCD4.1/4.2/4.3/4.4)	TQM8.7 (NCD5.1/5.2/5.3/5.4)

6.5.3 Discussions on the expanded QMAM

The expanded QMAM proposed in this study serves as a tool to:

1) Arrange or rank the eight TQM principles and the five NCDs as perceived to be important or significant in a country's construction industry;

2) Assess the perceived significance of each of the five national culture dimensions on the eight TQM principles (that is, culture-specific TQM);

3) Identify the difference(s) that may exist in the perceptions among international contracting parties, thus providing a basis to identify area(s) of potential conflict(s).

The expanded QMAM serves as a framework to surface the observable features that are to be managed to minimize conflicts between international contracting parties. As a result, the expanded QMAM was transcribed into questionnaires that were subsequently adopted during the fieldwork (refer to Appendix 2 and Appendix 3).

For future applications, the expanded QMAM allows for flexibility to add more observable features based on findings from future similar studies or reviews by the governing bodies or authorities on quality management. Future studies can consider incorporating the sixth NCD (Indulgence versus Restraint), which was added only in 2010 based on Michael Minkov's analysis and pending further validations as discussed in Chapter 2. Similarly, future studies can consider incorporating any other major frameworks for analyzing national culture and quality management (QM).

The expanded QMAM can also complement existing frameworks such as Souza-Poza, Nystrom and Wiebe's (2001) bi-directional causative model between culture and TQM,

Noronha's (2002 and 2003) culture-specific TQM for quality management in Chinese regions, and Ling, Ang and Lim's (2007) framework for managing cross-cultural encounters between foreigners and Chinese AEC firms. The expanded QMAM will serve to identify the significant differences to which the afore-mentioned existing frameworks can then be applied. Likewise, the expanded QMAM can be applied during the application of the Porter's diamond as a decision model on cross-cultural differences and implications on QM.

In a competitive global construction industry, construction firms should adopt strategies that give cognizance to the national culture of the countries they intend to work in. Organizations need strategies to deliver superior value to their customers, which necessitate understanding the complexity of the underlying fundamental issues (Porter, 2008) such as cultural differences and their impacts on quality performance. Quality has transcended from just an act to a habit (Fung, 2008) and the concept of competitiveness has expanded to involve static and dynamic components (Schwab, 2011), plausibly, of quality as this study has also conceptualized in this Chapter.

6.6 Summary

This chapter conceptualized theories on TQM, national culture and conflict into models towards achieving objectives of this study. It proposed the Culture-quality Conflict Model (CQCM) for the potential conflict on TQM implementation due to cross-cultural differences; it investigated the phases of quality management and proposed the Quality Dynamic Model (QDM). It examined and found that the QDM may be relevant in gauging productivity, quality and hence competitiveness. It extended the QDM to Low and Winifredo's (2000) theory on cross-cultural influences on quality department and derived the Cross-cultural Quality Implementation Model (CCQIM), which formed basis

for the proposed Quality Management Assessment Model (QMAM). It expanded the QMAM to including observable attributes of TQM and national culture in view of the study objectives. The attributes as identified for the expanded QMAM (or ExQMAM to simplify) translate into the study's survey questionnaires. The ExQMAM fulfills the first objective of this study, which is to design a model to investigate the influence of national culture on TQM implementation between two international firms.

CHAPTER 7: RESEARCH DESIGN AND METHODOLOGY

7.1 Introduction

This chapter presents the research strategies, data collection techniques, and methods of data analyses. Considering the different objectives of this research (see Chapter 1), quantitative and qualitative approaches were adopted. Survey was adopted, being the most appropriate design to gather information from a wide sample; Delphi technique was adopted, being the most appropriate design to elicit expert knowledge; and case studies were adopted, being the most appropriate design for in depth probe. Questionnaires were used during the three strategies to collect data, with observations during the case studies and face-to-face interviews.

7.2 Research design

Human knowledge is based on the particular patterns of social activity, especially the ways of inquiry. Research, defined as a careful or diligent search, a studious inquiry or examination, as well as the collecting of information about a particular subject, involves the methodical search for knowledge (Friedman, 2003: 509, 512). Thus, research is a scientific method used to collect information about phenomena and build a reliable base of knowledge about them (Bordens and Abbott, 2008: 2). Figure 7.1 presents this study's research process, which was followed to collect all the necessary research information. As shown in Figure 7.1, the different research designs adopted in the three phases of the research process are discussed in detail in the subsequent sections of this chapter.

Chinese
(For self and others)

Nigerians
(For self and others)

Chinese
(A 60-pair matrix as shown in Matrix 1)

Nigerians
(A 60-pair matrix as shown in Matrix 2)

Chinese
(A 30-pair matrix as shown in Matrix 1A)

Nigerians
(A 30-pair matrix as shown in Matrix 2A)

(Common 18-pair matrix as shown in Matrix 3)

SURVEY ROUND ONE:
1. To rank the TQM principles and the NCDs, and
2. To rate the attributes of the TQM principles and NCDs.

Please refer to **Appendices 2** and **3**

SURVEY ROUND TWO:
To select the more important pairs from the 60 pairs derived from the:
1. Top-3 ranked TQM principles and their top-2 ranked attributes (based on ratings), and
2. Five NCDs as ranked and their top-2 ranked attributes (based on ratings).
Superimpose Matrix 1A and Matrix 2A (by Researcher).

Please refer to **Appendices 4** and **5**

Matrix 3 (Using the Nigerians' results as the base).

Completion of Survey (Phase 1)

Chinese
(For self and others)

Nigerians
(For self and others)

To rate the important 30 pairs in Matrix 1A on a scale 1 (not important) to 5 (very important)

To rate the important 30 pairs in Matrix 2A on a scale 1 (not important) to 5 (very important)

(To rate the common 18 pairs in matrix 3 on a scale 1 (not important) to 5 (very important).

DELPHI ROUND ONE:
Experts to comment on the rank completed above for the TQM principles and NCD and rate their attributes.

Please refer to **Appendix 6**

DELPHI ROUND TWO:
Experts to rate Matrices 1A and 2A completed above.

Please refer to **Appendices 7** and **8**

DELPHI ROUND THREE:
Experts to rate Matrix 3 completed above.
Revise Matrix 3 (if applicable).

Please refer to **Appendix 9**

Completion of Delphi (Phase 2)

To select the more important pairs of the 60 pairs based on Matrix 1.

Four 30-pair matrices:
2 good quality matrices: $1B_1$, $1B_2$
2 poor quality matrices: $1B_3$, $1B_4$

Compare between good and poor quality Chinese firms based on Matrix 1A and Matrix 3

To rate the 18 pairs in Matrix 3 on a scale 1 (strongly disagreed) to 10 (strongly agreed)

Matrix 3A

CASE STUDIES OF 4 CHINESE FIRMS (2 good quality, being HC1 and 2 poor quality firms, being HC2)

Please refer to **Appendix 10**

Interviews with the four Chinese firms for in-depth insights into their companies, their projects investigated and observations made during the site visits with respect to their respective 30-pair matrices.

Examine the four matrices for patterns (by Researcher).

TEST CASE STUDIES OF 2 CHINESE FIRMS (neither HC1 nor HC2)

Please refer to **Appendix 11**

Finalize Matrix 3 and recommend Model (QMAM).

Completion of Case studies (Phase 3)

Figure 7.1: Research process

Research design organizes study so that relevant data are collected and hypotheses are tested. The common types of research design include *case studies*, *surveys*, *experiments*, *correlation* or *regression*, *comparisons* and *historical designs* (Tan, 2008: 25-6). Lee (1980) provided a concise discourse on social research to postulate four major types of design, arranged in terms of degree of sophistication as discussed in the next section.

7.2.1 Common research designs

a) Case or field study: The intensive study of diverse components of a research problem from a single case due to insufficient existing theoretical or empirical knowledge.

b) Descriptive, explanatory, trend and panel survey: May follow from case or field study as a researcher engages in a sample survey design.

   A *descriptive survey* is undertaken to measure one or more dependent variables precisely for proper conceptualization of phenomena; and then an *explanatory survey* initiated to explain the phenomenon with one or more independent variables.

   A *trend study* is undertaken through repeated interviews with different samples at different times or *panel design* with repeated interviews of the same respondents on more than one occasion.

c) Experimental design: Maximizes the control of variance through a field or laboratory *experimental design.* Experimental ideal exists that researchers should be familiar with the different experimental design; and

d) Simulation study: Undertaken in order to discover the dynamics or complexity of the interaction process among units and variables over time, by building and manipulating an operating model.

7.2.2 Adopted research designs

Expounding on Chapter 1, research designs adopted for this study include the following:

a) Literature review of TQM implementation in cross-cultural settings was adopted to achieve objective 1. The more commonly observable attributes of TQM and national culture from the critical literatures were adopted to design the Quality Management Assessment Model (QMAM). Literature review was adopted since the first objective did not require in-depth probe, general consensus or evaluation of variables through experiments. In addition, the first objective also aimed to fill an identified theoretical gap in the existing literatures, thereby contributing to knowledge and framing the research conceptually (Alston and Bowles, 2003: 64; Scandura and Williams, 2000).

b) A two-pronged research design was adopted to achieve objectives 2, 3 and 4, which involved two separate phases as presented in Figure 7.1. Firstly, a two-round separate survey each was conducted for the Chinese and the Nigerians. Survey was adopted since it is the most appropriate design to collect the same information from a sample in a strategic (Aldridge and Levine, 2001: 5) and systematic (Tan, 2008: 29) manner. Two separate surveys were conducted to seek independent feedback from the Chinese and the Nigerians of their perceptions of the significant influences of NCDs on TQM implementation. The two rounds sought feedback on perceived significance of the NCD and TQM attributes, during round 1; and significant relationships between NCD and TQM attributes, during round 2. Secondly, a three-round Delphi technique was

undertaken for detailed examinations of the outcome of the surveys. Delphi method was most appropriate since experts' knowledge was required for distilling information before proceeding to the next phase of the research (Okoli and Pawloski, 2004: 16; Rowe and Wright, 1999). Specifically, conventional Delphi, as against the Delphi conference or real-time conference (Linstone and Turoff, 2000: 5), was adopted due to familiarity, cost reasons and logistical challenges of the location.

c) Four case studies of Chinese firms were adopted to accomplish objective 5. Case studies were adopted because it is the most appropriate design for in-depth, intensive investigation of a research problem. This study selected case studies that best typify how Chinese firms manage challenges on the quality of construction projects in Nigeria. Two case studies each of perceived good quality services (henceforth, hypothetical case 1 or HC1) and perceived poor quality services (henceforth, hypothetical case 2 or HC2) based on the literatures reviewed. Collectively, HC1 and HC2 constituted a single unit for intensive study for the purpose of understanding a larger class of units (Gerring, 2004: 342). Since the influence of national culture on quality management as pertains to Chinese firms in Nigeria is an identified knowledge gap (see Chapter 1), HC1 and HC2 were complementary to incremental theory building (Eisenhardt, 1989: 548) for this study. This is also premised on Atkinsons' (1984) concept of triangulation, operationalized in this study through informed inferences from complementary information (Erzberger and Kelle, 2003: 461; Hammersley, 2008; Rowley, 2002: 23) from HC1 and HC2.

d) Lastly, two case studies of Chinese firms, neither HC1 nor HC2, were conducted to validate the results from the HC1 and HC2. Case studies were adopted since a smaller sample was required to test the QMAM developed from triangulated information from

the first part of objective 5. These two case studies (henceforth, test case studies or TC1), as well as HC1 and HC2 typify Gerring's (2004: 343-4) type I and type II case studies, respectively. This sought to prevent generalizing or making assumptions from previous case studies by, conversely, integrating to create formalisms that benefit from each of their components (Prentzas and Hatzilygeroudis, 2011: 2). This reasoning is one of the components of case-based reasoning (CBR), which is now being extended to extract the most relevant case to predict business performances in spite of CBR's foundation in problem-solving paradigm (Leeland, 2011: vii).

7.3 Data type, source, location and accessibility

Critical to a research design is the data type, source, location and accessibility. Preliminary data are gathered as a way of refining thoughts. Data types include *secondary data*, which are contained in existing reports and documents and may help to sharpen the focus of the research problem identified. Secondary data precede the stage of gathering the *primary data,* which are not pre-existing. Iteratively, primary data are collected toward solving the specific research problem at hand by using the best research design and, by so doing, adding to existing pool of data (Hox and Boije, 2005: 593-4).

7.3.1 Primary data and secondary data

Brief comparisons between the secondary and primary data are presented in Table 7.1.

Table 7.1: Comparison between primary and secondary data.

No	Criteria	Primary data	Secondary data
1	Collection purpose	For the problem at hand	For other problems
2	Collection process	Very involved	Rapid and easy
3	Collection cost	High	Relatively low
4	Collection time	Long	Short

Data might be in any form, opinions, descriptions, and figures such that once the data required are identified; determination of their sources (origins or points of prescription) and locations (actual points of investigation) ensues (Ssegawa and Rwelamila, 2009: 303). For social scientists, the two types of data that are of interest include individual attribute data, which are the unique attributes of individuals and cultural data, which are shared attributes among the different indifferent individuals (Bernard, 2011: 113). As a result, data sources and locations determine data accessibility and the viability of a study. The data types, sources, locations and accessibility adopted for respective objective in this study are presented in Table 7.2 and discussed subsequently.

7.3.2 Adopted data type, source, location and accessibility

a) Secondary data was sought from published textbooks, academic journal papers, and industry reports to develop the model to fulfill objective 1. These materials were accessed through physical library and the Internet (digital formats). Appropriate keywords (Hox and Boije, 2005: 596) were used to locate digital documents.

b) Primary data was sought from the Chinese and Nigerians, identified through official documents and archives (secondary data), and accessed off- and on field through their respective contact addresses (physical and email) for objectives 2, 3 and 4. Social searching (Lampe, Ellison and Steinfield, 2006) was adopted for inactive contact addresses.

c) Primary data was sought from senior and middle level Chinese managers of predetermined Chinese firms (HC1 and HC2), identified through formal documents and archives (including national newspaper reports), and accessed on field through their respective contact addresses; for the first part of objective 5.

Table 7.2: Data type, source, location and accessibility

No	Objectives	Data type	Source	Location	Accessibility	Unit of analysis	Probability type	Sampling frame	Data collection method
1	To design a model to investigate the influence of national culture on TQM implementation between two international firms.	Secondary	Internet and books (journals, reports, textbooks).	Library (online and physical).	Readily accessible	Literatures on TQM and national culture.	Non-probabilistic.	Articles on the relationships between national culture and TQM.	Analysis of documents (past and current).
2	To investigate important TQM principles and their attributes that affect project quality in Nigeria as perceived by the Chinese and the Nigerians.	Primary	Field	1. Bureau of Public Procurement (BPP) website, state tender board's website and national newspapers. 2. Contact addresses of professional bodies for Architects, Engineers, Builders, Quantity Surveyors and general Contractors.	Readily accessible	1. Top, senior and middle management level Chinese construction practitioners in Nigeria. 2. Top, senior and middle management Nigerian Architects, Engineers, Builders, Quantity Surveyors and general Contractors.	Probabilistic	1. List of Chinese firms awarded projects in the ten years before 2013. 2. Registered Nigerian members possessing working experience with the Chinese in the ten years before 2013.	1. Survey questionnaires (Phase I). 2. Delphi survey questionnaires (Phase II).

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2 (cont'd)	To investigate important NCDs and their attributes that affect project quality in Nigeria as perceived by the Chinese and the Nigerians.	Primary	Field	3. Respective contact addresses.	Readily accessible.	3. Scholars and construction industry practitioners.	Non-probabilistic	3. Chinese and Nigerian scholars and construction industry practitioners with expert knowledge on the operations of the Chinese in Nigeria.	
	To develop a model that integrates TQM principles and NCDs of the Chinese and the Nigerians to boost the Chinese firms' project quality in Nigeria.								
3 (Part I)	To test the model for good quality performance among the Chinese firms in Nigeria.	Primary	Field	Respective contact addresses (offices and project sites).	Sourced on the field.	Senior and middle management Chinese of HC1 and HC2 firms in Nigeria.	Probabilistic	HC1 and HC2 firms.	Case studies, Observations and Interviews.
3 (Part II)	To recommend effective quality management strategies by the Chinese firms in Nigeria for good quality performance.	Primary	Field	Respective contact addresses (offices).	Sourced on the field.	Top, senior and middle management of TC1 firms	Non-probabilistic.	TC1 firms.	Case studies, Observations and Interviews.

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d) For the last and second part objective 5, primary data was sought from senior Chinese managers of Chinese firms (test case studies or TC1), identified through opinions and descriptions (Ssegawa and Rwelamila, 2009) during open interview with Chinese and Nigerians. These were accessed on field through their contact addresses.

7.4 Unit of analysis and selection of study elements

The units of analysis are the elements to be studied in the research process. Once the unit of analysis is identified, selection of the elements or sampling commences. The population or the grouping of units of study, however, must be operationally defined before a sample or a subset is drawn. Sampling is the technique of selecting samples from a population, while the sampling frame is the list of elements from which sampling takes place (Tan, 2008: 29).

For this study, the units of analysis include the Chinese and the Nigerians while the population of Chinese firms in Nigeria comprised all Chinese firms undertaking construction and/or construction related services in Nigeria. Since there exists no list for such firms, the new number of 200 Chinese firms in Nigeria according to People's Daily Online (2012a) as discussed earlier in Chapter 5 was adopted as the population. As prescribed under the scope of this study (see Chapter 1), 34 Chinese firms with track records of construction and/or construction-related services under the Nigerian federal or state government in the ten years prior to 2013 were identified, which served as the sampling frame for the Chinese.

Similarly, there existed no official list of all registered firms undertaking construction and/or construction related services in Nigeria. This is attributable to the fragmented activities of Nigeria's construction industry due to the absence of a national coordinating

body for both the public and the private construction activities (refer to Chapter 4). The adopted population was Nigerian firms (SMEs and large organizations) registered under the contractor and consultants regulatory bodies in Nigeria. As also prescribed under the scope, 135 Nigerian firms with prior working experience with Chinese firms in the ten years prior to 2013 were identified (explained in the ensuing two sections). The list of the 135 firms identified served as the sampling frame for the Nigerians. Central to this study, the list of Chinese firms identified is presented in Appendix 1.

7.4.1 Sampling

Depending on the research problem, approaches to sampling can be probabilistic or non-probabilistic. Probabilistic sampling is one for which every unit in a finite population has a positive probability of selection, not necessarily equal to that of other units (Schreuder, Gregoire and Weyer, 2001). Probability sampling strengthens the validity of the evaluation results in contrast to the more flexible, less costly and less time-consuming non-probability sampling (Adamchak et al., 2000: 92).

From Adamchak *et al.* (2000), probabilistic sampling methods include:

a) Simple random sampling: Elements are chosen at random so that each element has an equal chance of selection.

b) Systematic sampling: First element *is chosen at* random with subsequent elements at a fixed interval (for example, every tenth element) until desired sample size is reached.

c) Stratified sampling: Population to be sampled is divided into homogeneous groups based on predetermined characteristics.

d) Cluster sampling: A two-stage simple random sampling of clusters chosen, first from a sampling frame, then sample of individuals within each cluster (second).

e) Multi-stage sampling: Similar to cluster sampling, but with several stages of sampling and sub-sampling. This method is usually used in large-scale population surveys.

From Tan (2008: 33), non-probability sampling methods include:

a) Convenience sampling: Drawing a sample on the basis of opportunity or out of convenience and mainly for exploratory work.

b) Judgmental or purposive sampling: Deliberate selection of a sample when judgment is preferred to random sampling.

c) Quota sampling: Defines a sampling frame in advance of data collection and chooses a sample from the list, but not at random.

d) Snowball sampling: Collects data from a small group of people with special characteristics, who then identifies or refers to similar people like them.

The adopted sampling methods for this study with respect to the objectives are also indicated in Table 7.2 (presented earlier) and discussed below:

7.4.2 Adopted unit of analysis and selection of study elements

a) For objective 1, purposive sampling of relevant literatures on TQM and national culture was adopted. Through the use of appropriate keywords, relevant literatures were selected; hence there was no need for underlying theories or a set of informants as supported by Tongco (2007). The focus was to survey scholarly articles, books and other sources relevant to the research for summaries of the critical evaluations as supported by Hart (1998: 13-14), Labaree (2013) and Shepherd (2011).

b) For objectives 2, 3 and 4, stratified sampling of Chinese firms, based on predetermined criteria of track records of construction and/or construction related services under the Nigerian federal or state government in the ten years prior to 2013 (refer to Chapter 1), was adopted to identify the Chinese. Random sampling of registered Nigerian firms (SMEs or large corporations) under the relevant consultants' (architects, engineers, builders and quantity surveyors) and contractors' regulating bodies was adopted. Here, contractors are firms undertaking general contracting or specialist services of roads, bridges, rails or other similar major construction as against or in addition to building works. From Idoro (2011), construction contractors in Nigeria are categorized based on the scope of their operations (that is, local, regional, national, and multinational) and, as a result, their financial/managerial structures, technical capabilities, and level of patronage. In Nigeria's context, while builders are charged with the responsibility of managing the production process and supervision of artisans and craftsmen as upheld by Jimoh (2012: 336), this study argues that builders' scope of operations is, nonetheless, local or, at best, regional. Prior working experience with the Chinese firms in the ten years prior to 2013 was a critical factor that influenced stratified sampling (Alston and Bowles, 2003: 85) of the Nigerians to avoid biased feedback. The participants identified also provided referrals to other potential participants that matched the stratification (snowball). For the second part of objectives 2, 3 and 4 involving the Delphi technique, purposive sampling and snowball sampling (non-probabilistic) were adopted. Purposive sampling was adopted for pre-identified experts based on their knowledge or experience as well as deep understanding of the research problem (Okoli and Pawloski, 2004: 20). These experts provided referrals to other known experts, hence

the snowball sampling, regarded as the best approach to increasing the initial sample when no sampling frame exists (Heckathorn, 1997: 174).

c) For the first part of objective 5, stratified sampling of HC1 and HC2 Chinese firms, being the good and the poor quality Chinese firms respectively, was adopted to allow these Chinese firms, as subgroups to be studied in greater detail (Marshall, 1996: 522). Since these Chinese firms were theoretically stratified (Tan, 2008: 30) into HC1 and HC2 to elicit information about the Chinese management of perceived significant differences and Nigerians' perceptions of their quality, it also tended towards purposive or judgmental sampling. Thus, there was an overlap in the sampling, which Marshall (1996: 524) has noted as a possibility while undertaking a research exercise.

d) For the second part of objective 5, convenience sampling was adopted to select the TCI Chinese firms (neither HC1 nor HC2), based on their accessibility and willingness to participate as supported by Teddlie and Yu (2007: 78). This was also premised on the relatively small sampling frame (please refer to Appendix 1) as well as the characteristic nature of these TC1 Chinese firms sought (comparatively newer entrants into Nigeria) to test the QMAM. As a result, for this second part of the last objective, data collections in terms of "selection" (Hultsch *et al.*, 2002: 356) and "convenience" (Skowronek and Duerr, 2009: 412) sufficed.

A summary of the selected study elements with justifications, as discussed earlier in this section, is presented in Table 7.3. As a sampling frame, it serves as a list defining the study's population of interest. Operationally, it defined a set of elements from which samples of the target population for this study were selected.

Table 7.3: Descriptions of the sampling frame for the study

No.	Groups	Description	Rationale
1	Chinese firms	Chinese firms with track records of infrastructure projects with Nigeria's federal or state governments as identified through the Bureau of Public Procurement or other national newspaper reports in the ten years prior to 2013.	To identify the Chinese in Nigeria through more reliable sources of registered and active Chinese firms in Nigeria. These firms were considered experienced enough to provide feedback for this study since they possessed prior experience in government procurement processes in Nigeria.
2	Nigerian firms	Registered Nigerian architectural, building, engineering, quantity surveying and contracting firms identified through company or professional registrations with the different professional regulatory bodies.	To identify qualified Nigerians, through more reliable sources, for the practitioners with prior working experience with Chinese firms in the years prescribed in this study. Feedback from these Nigerians was compared against the Chinese to identify differences in perceptions of the influences of culture on quality.
3	Delphi experts	Chinese and Nigerian scholars and/or construction industry practitioners with expert knowledge and experience on culture and quality in the Nigerian construction industry.	To further deliberate and eliminate nuances from the initial survey results for more reliable conclusions to validate the outcome of the surveys as well as elicit useful information for further analysis during the case studies.
4	HC1 Chinese firms	Chinese firms that are reputed for good quality services in Nigeria based on the extensive review of the literature this study undertook.	Served to validate the survey and Delphi outcome as well as establish any trend among the Chinese firms
5	HC2 Chinese firms	Chinese firms that provide poor quality services in Nigeria based on the extensive review of the literature this study undertook.	Served to validate the survey and Delphi outcome as well as establish any trend among the Chinese firms.
6	TC1 Chinese firms	Neutral Chinese firms (neither HC1 nor HC2) selected to test the outcome of the HC1 and HC2 Chinese firms.	Served to validate and then recommend the Quality Management Assessment Model (QMAM) proposed in this study.

7.5 Data collection method

Unless the problem is well defined, the cost of gathering information may well exceed the value of the findings (Kotler and Kotler, 1998: 163-4). Research, being the systematic observation and collection of information (Alston and Bowless, 2003: 6), is focused on the research variables. The variables can take on differing or varying values at various times (Sekaram, 1992: 64) and as a result can affect or change the results of a study.

With due considerations for research ethics, data collection methods chosen must be the best ways of obtaining the data required and to test the hypothesis (Alston and Bowles, 2003: 21, 67, 73). It then follows that detailed attention must be accorded the types of variables and their relationships as well as their measurement scales, defined as the categorization, ranking, and assessing magnitudes (Tan, 2008: 52).

7.5.1 Variables and measurements

The *dependent variable* is the variable of primary interest to the researcher; while the *independent variable* influences the changes that can be seen in the dependent variable. Operationally, a measure of the outcome and of the factor is dependent variable and independent variable, respectively (Tan, 2008: 17). An independent variable is logically prior to, and therefore independent of, the dependent variable (Bernard, 2011: 27).

From the literature reviewed, national culture has been identified as impacting TQM implementation (refer to Chapter 2). Thus national culture is the independent variable, while TQM implementation is the dependent variable. The sub-variables for national culture are the five NCDs (power distance, individualism, masculinity, uncertainty avoidance and long-term orientation). The sub-variables for TQM are the eight TQM

principles (customer focus, leadership, involvement of people, process approach, system approach, continual improvements, factual approach, and supplier relationship).

Variables are assigned levels of measurement or scales of measure for accurate numerical representation. Based on Steven's (1946) pioneering study, the four common scales include nominal, ordinal, interval and ratio. *Nominal scales* applies to categorical data such as in male or female; *ordinal scales* for rank-ordered data such as in first, second, third, and so on; *interval scales* are used where the values are both rank-ordered and equidistant from adjacent attributes such as in temperature scales; and *ratio scales* for values with all the qualities of the other scales in addition to a "true zero" such as in weight and age (Bhattacherjee, 2012: 45-7). Collectively, nominal and ordinal scales and interval and ratio scales measure nonmetric and metric variables (MacCallum, Cornelius and Champney, 1979: 463) or discrete and continuous variables (Tan, 2011: 50) respectively.

This study adopted ordinal scales for both the sub-variables of national culture and TQM. This is premised on the objective to measure perceptions of the significant influences of national culture on TQM implementation. Past studies have found that a ubiquitous demonstration in person perception is that people's evaluations, impressions, and memories are shaped and guided by their knowledge and pre-existing beliefs about the social world (Macrae and Bodenhausen, 2001: 240). Similarly, most measurements in sociological research are on either the nominal or ordinal levels (Lazarsfeld and Barton, 1951; MacCallum, Cornelius and Champney, 1979: 463), with the ordinal scales being used most widely and effectively (Stevens, 1946: 679).

7.5.2 Methods of data collection

Research designs are different from research methods, which are the methods of data collection using data collection instruments (Tan, 2011: 25). Research methods include questionnaires, interviews, observation techniques, analysis of past documents and simulations (Tan, 2008: 50-9; 2011: 50-60). The methods, explained in brief, include:

a) Questionnaires and interviews: These involve communicating with respondents. It depends on speed, cost, requirements for visual aids, nature of the questions, time required to answer questions, and geographical coverage.

b) Observation techniques: This refers to the collective action (as against espionage) of closely observing or monitoring an event. It notes and records phenomenon with instruments; or simply based on inference or judgment.

c) Analysis of past documents: Surveys and observations are useful in collecting primary data for the project at hand. Analysis of past documents collects and uses secondary data from other scholars and organizations as long as they are adequate for a task.

d) Simulation: This method analyses uncertainty (for example, Monte Carlo simulation), generates forecasts and models processes (for example, wind effects on a proposed building) and is thus used to model probabilities for a variety of outcomes.

7.5.3 Adopted methods of data collection

The adopted research methods for this study, also included in Table 7.2 presented earlier, for the respective objectives include:

a) For objective 1, review of the relevant past documents was adopted to fill the identified theoretical gap, contribute knowledge and frame the research conceptually

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(see Chapter 2). Afolabi (1992), Bourner (1996), Bruce (1994) and Cooper (1988) supported this approach for its role, in a research as: a major element, a critical prerequisite, a background and justification, and an integrated report of existing primary scholarship, respectively.

b) For objectives 2, 3 and 4, questionnaires were used. The strategic and systematic collection of data presupposed standardized format through a questionnaire and/or interview (Kelley *et el.*, 2003: 261), which is a useful tool to collect measurable data from a specific group of people (Fanning, 2005: 1). Semi-structured questionnaires with cover letters were e-mailed to sample Chinese and Nigerian firms after prior requests were made to improve the response rate (Burgess, 2001: 5; Kelley *et al*., 2003: 262). (Please refer to Appendices 2 & 3 and Appendices 4 & 5 for the questionnaire packages used for the two-round surveys for the Chinese and Nigerians respectively). Similarly, for the Delphi technique, semi-structured questionnaires corresponding to the summary of the outcome of the preceding rounds were e-mailed to the experts who remained anonymous by name and feedback throughout the three-round Delphi process. Controlled feedback, anonymity and iteration of the Delphi participants are also supported by other previous studies (Hsu and Sandford, 2007a; Okoli and Pawloski, 2004; Skulmoski, Hartman and Krahn, 2007). (Please refer to Appendix 6 for a copy of the correspondence with the experts at the commencement of the Delphi process. Appendices 7 & 8 are the questionnaires adopted for round 2 and round 3 of the Delphi).

c) For the first part of objective 5, questionnaires, interviews, observations and review of documents were used in mixed methods to generate complementary data (Harris and Brown, 2010: 12) critical for this objective. The exploratory nature of objective 5,

subjects' available time and researcher's limited time per case study influenced the use of semi-structured questionnaires and interviews, as was also supported by Devers and Frankel (2000: 268). Anonymity of subjects and confidentiality of information precluded the use of audio and videotapes in favor of field notes through hand-written shorthand texts, which were transcribed after each interview. Active data collection through informed consent from the respondents who voluntarily answered questions and even withdrew their responses at certain instances (ESOMAR, 2009: 2) was adopted. Passive observation was adopted on project sites, being the natural settings, to infer causal relationships (Cook and Campbell, 1979: 296) through observable results in the course of events (Boumans, 2010: 75). Published organizational charts of subjects' firms were also reviewed for important insights into the rational, conscious and institutionalized arrangements relating to the division of labor (Molina, 2001: 79), as well as inner workings, competencies and areas of competitive advantage (Besanko, 2009). In addition, it is difficult to apply the direct observation method because relationships in an organization and problems are always encountered in seeking to obtain data sensitive to power relationships (Molina, 2001: 82-3). (Please refer to Appendix 9 for interview questionnaire packages for HC1 and HC2 Chinese firms).

d) For the second part of objective 5, only questionnaires and interviews were adopted. While the processes were similar to that undertaken under the first part of objective 5, observations and review of documents were not adopted since TC1 Chinese firms were not investigated in their natural settings. They were required, primarily, to test the effectiveness of the developed model. (Please refer to Appendix 11 for the interview questionnaire package for TC1 firms Chinese firms).

7.6 Data collection instrument

7.6.1 Data collection instrument and Pilot Testing

Based on the aim of this study and the objective of investigating the influence of national culture (independent variable) on TQM implementation (dependent variable) as highlighted earlier in this Chapter, questionnaires were purpose-designed. The different questionnaires incorporate these variables and their corresponding important sub-variables for use at the different phases as explained in the preceding section.

Prior to the questionnaire adopted for objectives 2 and 3, which determined the subsequent phases, pilot testing was undertaken. The pilot testing was conducted on small samples of the target respondents in Nigeria (Kelley *et al*., 2003: 263) as well as with similar respondents outside Nigeria (Alston and Bowles, 2003: 73; Burgess, 2001: 15; Tan, 2008: 52) to ascertain the viability and robustness of the research design and instruments (van Teijlingen and Hundley, 2001). Pilot testing outside Nigeria aimed to assess if there was any technological, cognitive and response capabilities arising from the different environments as supported by some earlier studies (Grant, 1996; Tripsas and Gavetti, 2000). Pilot testing in Nigeria aimed to correct any assumption derivable from standardizing data collection instruments and designs (Collins, 2003) for the Chinese and Nigerians as supported by findings from earlier studies on researches among the Chinese (Roy, Walters and Luk, 2001) and the Nigerians (Marshall and Rotimi, 2001).

In general, the randomly selected respondents expressed that the questionnaire was comprehensive. Nevertheless, they were concerned that the questionnaire was rather long and that it would be easier to respond if editable format was provided. A Chinese respondent suggested giving examples to corroborate each sub-attribute of the NCDs for

easier understanding. A Nigerian respondent suggested including "Developer" as a separate specialty and "Company size" as it could determine the adoption of TQM practices. One of the respondents outside Nigeria suggested obtaining reasons for firms' non-ISO 9001 certification. The respondents in Nigeria did not participate in the actual survey and neither was their data collated as part of the final data (Alston and Bowles, 2003: 111; Taylor-Powell and Hermann, 2000: 8). The pilot testing also revealed that the response time was about two weeks for each respondent. The different questionnaires are now explained in the following section:

7.6.2 Survey questionnaires

As explained earlier in this chapter with respect to objectives 2, 3 and 4, a two-pronged design was adopted. Surveys among the Chinese and the Nigerians were conducted in two rounds and in three rounds with the experts for the Delphi technique (please also refer to Figure 7.1). Questionnaires for the two-round survey are discussed next.

7.6.2.1 Round 1 survey questionnaire

The questionnaires adopted for the Chinese and the Nigerians are presented in Appendix 2 and Appendix 3 respectively. Each questionnaire was divided into five sections (Sections A, B1 & B2, C1 & C2, D and E) each having specific instructions. The sections are explained next:

Section A: This sought general information of the respondents including age group; academic qualification; overseas education; sex; company specialty; company size; profession; designation; years of experience; professional affiliation; and quality management system certification. The information was both metric (such as age group

and years of experience) and non-metric. For anonymity, names of the respondents and their firms were not required. For privacy, age was also only requested in terms of range.

Section B1: This sought non-metric information on the perceived significance of the TQM principles on quality. To help the respondents in providing information under this section, brief descriptions of the TQM principles were provided as references.

Section B2: This sought more detailed non-metric information on the perceived significance of the TQM principles using identifiable or perceivable attributes of each of the TQM principles. Respondents were asked to rate the perceived significance of the attributes of each of the TQM principles on a 5-point Likert scale, following Likert's (1932) pioneering scale and results from a recent study that indicated preference for a 5-point scale (Gwinner, 2011).

Section C1: Similar to Section B1, this sought non-metric information on the perceived significance of NCDs on quality management. To also help the respondents in providing information under this section, brief descriptions of the NCDs were provided.

Section C2: Similar to Section B2, this sought more detailed non-metric information on the perceived significance of the NCDs using identifiable or perceivable attributes of each of the NCDs. Respondents were asked to rate the perceived significance of the attributes of each of the NCDs on a 5-point Likert scale.

Sections D and E: Section D and Section E sought information from both the Chinese and the Nigerians on their perceived significance of the TQM principles and NCDs on the other. The identifiable or perceivable attributes were not included in these two sections due to time constraint and to avoid redundancy, since the preceding sections from each group sufficed. The outcome of Sections B1 and B2, Sections C1 and C2, and Sections D

and E served as the questionnaires for round 1 of the Delphi survey (to be discussed later under the Delphi survey questionnaires).

7.6.2.2 Round 2 survey questionnaire

The questionnaires adopted for the Chinese and the Nigerians are presented in Appendix 4 and Appendix 5 respectively. Each questionnaire was divided into two sections, with the preceding section serving as instructions. The sections are explained below:

First Section: This primarily provided detailed instructions on the aim and approaches to filling out the information sought in the second section. Particularly, it summarized the outcome of round 1 to the respondents as a motivation to sustain the response rate for round 2 (Thomsen *et al*., 2006: 8). Likewise, Hill (2004) has identified tracking as a way to significantly reduce attrition in panel studies in developing countries.

Second Section: This sought information from the respondents on their perceptions on significant pairs of the five NCDs as ranked and the top-3 ranked TQM principles, both with their top-2 ranked attributes (based on the overall ratings). As ranked, all the five NCDs, were retained as the independent variables, hence of primary interests to investigate the top-3 ranked TQM principles selected. The selections of the five NCDs as ranked with their corresponding top-2 ranked attributes as well as the top-3 ranked TQM principles with their corresponding top-2 ranked attributes alike were based on mean item scores (MIS) following round 1 of the survey. Distefano, Zhu and Mîndrilă (2009: 2) construed such an approach as a non-refined method of factor score computation, which is used to reduce a large number of items from a questionnaire to a smaller number of components for subsequent analyses. The MIS computed allowed for variable selection to be guided by an informed knowledge of the subjects' opinion, which sufficed for

responses within the limited time offered by the subjects (Gunter, Zhu and Murphy, 2011: 44) for the completion of round 2 of the survey.

It then follows that 60 significant pairs were derived out of which each respondent from the Chinese and the Nigerian groups selected 30 pairs in total, being one from each pair of the 60 pairs. The 30 pairs that resulted were computed to obtain the result for each group and then compared with the other to identify the significant differences in the perceptions of the influence of national culture on TQM implementation. The resultant matrix served as the questionnaire for the round 3 of the Delphi (to be discussed below).

7.6.2.3 Interview questionnaire

During round 1 and round 2, face-to-face interviews were conducted to facilitate completion of the questionnaires from four Chinese respondents who did not want to write directly on the questionnaires. Qualitative content analysis was used during the interview to elicit information to complete the questionnaire, which was confirmed with the respondents during and after the interview to ensure accurate representation.

Content analysis is a technique used to develop objective inferences about a subject of interest in any type of communication (Kondracki, Wellman and Amundson, 2002: 224). It is a flexible research method, which can be applied to many problems in information studies (White and Marsh, 2006: 23). Since attributes of the NCDs and TQM principles were predetermined, it was possible to infer through empathic listening (Alston and Bowles, 2003: 118) to distil words into content-related categories (Elo and Kyngäs, 2008: 108) and format for analysis (GAO, 1989: 1).

7.6.3 Delphi survey questionnaires

A three-round Delphi technique was conducted after collating and summarizing outcome of the separate surveys among the Chinese and the Nigerians. This sought to achieve convergence of opinions among the panel of experts, with the objective of minimizing variability in their responses (Gad and Shane, 2012: 4). Questionnaires for the three-round Delphi survey are discussed next.

7.6.3.1 Round 1 Delphi survey questionnaire

The outcome of survey round 1 served as the basis for Delphi round 1 using the summaries of the outcome (please refer to Appendix 6), which were e-mailed blind copied to all the experts as previously agreed with them. The questionnaires adopted the formats of two tables presenting and comparing the outcome of the previous surveys. MIS (that is, mean item score) of the respective NCDs and TQM principles, which determined the rank as well as the top-three percentage ranking by respondents were also provided to the experts to give proper contexts to aid in their feedback.

Round 1 sought from the experts' their opinions, with support and disagreement based on their experiences (Yousuf, 2007: 2) on the outcome of the preceding surveys among the Chinese and the Nigerians. Unlike another form of the Delphi technique that allows the experts to open discussions in the form of brainstorming during the round 1, this study adopted a structured questionnaire for the round 1 outcome premised on prior extensive review of the literature (Day and Bobeva, 2005: 106). As an alternative to pilot testing, telephone calls were made to the experts to discuss the format of the questionnaire for improved comprehension and to work out other procedural problems (Skulmoski, Hartman and Krahn, 2007: 4). Most critically, the experts were assured of detailed and

anonymous summary of previous rounds for their input and re-evaluation of previous responses, where applicable, to achieve group consensus (Gad and Shane, 2012: 4).

7.6.3.2 Round 2 Delphi survey questionnaire

Experts were presented with anonymous detailed feedback of the different responses from round 1 together with the new rankings for the NCDs and TQM principles for the Chinese and the Nigerians, based on the experts' judgments. Experts were required to verify that the round 1 summary did reflect their opinions and given the opportunity to change or expand on their round 1 response considering other experts' opinions. The verification was, likewise, undertaken throughout the process to improve reliability of the result (Skulmoski, Hartman and Krahn, 2007: 4). Experts were also presented with the matrices containing 30 important pairs of NCD and TQM attributes derived from round 2 of the survey among the Chinese (Matrix IA) and the Nigerians (Matrix 2A) for their critical reviews (please refer to Appendices 8 and 9). Experts were asked to rate each of the 30 important pairs of NCD and TQM attributes on a scale of 1 (not important) to 5 (very important) (to be discussed in detail in Chapter 8).

7.6.3.3 Round 3 Delphi survey questionnaire

In the round 3 of the Delphi, the experts were presented with combined result of the Chinese and the Nigerians' surveys in the form of a common matrix (Matrix 3) as presented in Appendix 9. Similar to the second round of the Delphi, this was a Delphi variant technique for theory testing and extension (Day and Bobeva, 2005: 106), which was necessary as the study was advancing into the next phase of data collection through the case studies. Since opinion change among the experts was low across rounds (Bolger *et al*., 2011: 1678), an acceptable degree of consensus was reached at round 3

(Balasubramanian and Agarwal, 2012: 20). Similar to round 2 of the Delphi, experts were asked to rate each of the common eighteen pairs of NCD and TQM attributes on a scale of 1 (not important) to 5 (very important) (to be discussed in detail in Chapter 8).

7.6.4 Case study interview questionnaires

There are two rounds of case studies in this study (please refer to Figure 7.1). The first round and second round involved four Chinese firms (two HC1s and two HC2s) and two Chinese firms (TC1), respectively. The questionnaire for HC1 and HC2 is discussed next:

7.6.4.1 Hypothetical case study questionnaire

Semi-structured questionnaire was adopted. Questionnaire that sought brief information about the firm and the project under investigation, combined with the matrix containing the 30 significant pairs of NCDs and TQM principles, for the Chinese, derived from survey round 2 was adopted for the HC1 and HC2 firms (please refer to Appendix 10). Both questionnaires were sent to the respective firms earlier to assist in their preparations and ease of administrative works involved (Alston and Bowles, 2003: 67-8).

Each case study was conducted over three days. Day 1 (off site) adopted the semi-structured questionnaire to seek information on the company (its operations, year since operating in Nigeria and organizational structure) and project information (background: type, procurement method, estimated contract value and period; and construction quality: design and construction document, construction management and execution). Passive observation was, primarily, adopted during Day 2, which was site visits guided by the project or construction managers/engineers from the respective firm.

Day 3 adopted semi-structured interviews in the forms of summaries of the site visits and informal questions on some observations viz-a-viz feedback on the structured matrix. The

mixed method allowed investigating evidence of patterns against more in-depth insights on attitudes, thoughts and actions (Harris and Brown, 2010: 1). Hence, delineating between passively observed factual influences and actual potential influences through causal relationships (Boumans, 2010: 78). In general, the interviews adopted allowed the interviewees to share their perspectives of the research (Wahyuni, 2012: 73).

7.6.4.2 Test case study questionnaire

For the two TC1 Chinese firms, the questionnaire derived from the outcome of the HC1 and HC2 Chinese firms was adopted (please refer to Appendix 11). The interview was conducted in a day, since site visits and detailed company's information was not required for this objective. A cover letter on the aim and background of the study was provided to respondents in addition to the proposed matrix, which was the primary basis of the questionnaire.

As a final test for the model to be recommended, the interviews with the two TC1 Chinese firms focused on the prediction and predictive use of the QMAM. Taking cues from Hodges and Dewar (1992), the prediction of the QMAM was derived from its serious observations and intuitive contents, as supported by the earlier four case studies, while its predictive use, as sought from the two TC1 Chinese firms, was to establish the QMAM's inferential and forecasting abilities. In essence, the two TC1 Chinese firms served to verify and validate the QMAM being an important part of the study's model development process to support the QMAM's pairs of information and their subsequent adoption to support decision-making (Macal, 2005).

7.7 Summary

This chapter discussed the research process covering the research designs, data types and collection methods adopted; the study elements; and sampling techniques adopted;as well as the data collection instruments and pilot testing. It discussed the different data types, sources, locations, and accessibilities with respect to the sampling frame adopted in the study. It categorized the research process into three phases including a two-round survey, a three-round Delphi, and a two-round case study. Phase 1 involved a separate survey of the Chinese and the Nigerians in Nigeria adopting a sampling frame of Chinese firms with track records of infrastructure projects with Nigeria's federal or state governments in the ten years prior to 2013 and registered Nigerian firms with prior working relationships with the Chinese firms in the afore-mentioned years. Phase 2 involved Delphi survey with experts drawn from the Chinese and the Nigerians alike and having knowledge and experience on culture and quality in the Nigerian construction industry. Phase 3 involved case study of Chinese firms in Nigeria for in-depth study and validation. This chapter also discussed the different purpose-designed questionnaires adopted in the three phases and the objectives of the different sections of the purpose-designed questionnaires.

CHAPTER 8: RESULTS AND DISCUSSIONS

8.1 Introduction

This chapter presents the results of the fieldwork, data analysis and statistical tests for the study's hypotheses. It describes the exploratory data analysis and the confirmatory data analysis, which includes the Friedman, Wilcoxon rank sum, Spearman rank correlation, and Cohen's and Fleiss' kappa inter-reliability tests. In essence, it discusses the qualitative and quantitative results of the fieldwork, the triangulation of the results for inferences and the proposed model for the Chinese firms in Nigeria. Being a multi-level and multi-method study, it makes references to the different phases by adopting graphical representations. This chapter discusses the design and development of the model, the application of the model as well as its optimization and validation.

8.2 Characteristics of the Chinese respondents

Anonymous detailed profiles of the Chinese and the Nigerian respondents are presented in Appendices 12 and 13 respectively. For the Chinese, excluding the two HC1 and two HC2 Chinese firms, the remaining 30 Chinese firms in the sampling frame (please refer to Appendix 1) were e-mailed three questionnaires each (one each for feedback from the senior, middle and junior managers as requested in the letters to the firms). Out of the 90 questionnaires sent, a total of 48 completed questionnaires were returned to derive a response rate of 53%, with 25 firms returning at least one questionnaire.

The response rate among the Chinese was higher than the average 33% response rate for online surveys according to Nulty (2008: 303). As additional efforts made to achieve the response rate (Cummings, Savitz and Konrad, 2001: 1347) among the Chinese, four questionnaires out of the 48 questionnaires received were derived from face-to-face

interviews as earlier discussed in Chapter 7. From Roy, Walters and Luk (2001: 205), it can be deduced that due to government controls, a clear definition of what is restricted information and guidance as to which type of surveys are not permissible is often lacking among the Chinese.

The frequency distributions of the characteristics of the Chinese respondents are presented in Table 8.1 excluding those of their sex, professional affiliation and overseas education, which had no variability (Bernard, 2011: 464) being binary variables.

Analyzing at the level of the firms, based on the questionnaires returned, the 25 Chinese firms include 16 main contractors, 6 developers and 3 others, that is, specialists. Based on the feedback, there was no Chinese firm undertaking pure consultancy, which could be attributed to the prevalence of D&B and EPC procurement for major infrastructure projects among the firms. Chen (1998) also revealed that the Chinese construction practitioners were not called consultants albeit just by undertaking consulting works. Following McAdam and Reid's (2001) categorization, all the 25 Chinese firms were large organizations having employee size greater than 250 and out of which 21 Chinese firms (84%) were ISO 9001 certified based on the feedback from the Chinese respondents.

Analyzing at the level of the respondents with respect to Table 8.1, the mean and median of the age of the Chinese respondents were 41 years and 40 years respectively. The mean and median of their years of working experience were 15 years and 14 years respectively. With the mean age of 41 years, the standard deviation (SD) and coefficient of variation (CV) were 9.20 and 0.22 respectively to suggest that the age group among the Chinese respondents was uniform. Conversely, with mean years of working experience of 15 years, the SD and CV were 7.83 and 0.53 respectively to suggest that the years of working experience varied, comparatively, since this was closer to 1 than the age group.

Table 8.1: Characteristics of the Chinese respondents

Age (years)	Frequency	Cumulative frequency	Percentage composition	Cumulative percentage
15-24	0	0	0.00	0.00
25-34	11	11	22.92	22.92
35-44	24	35	50.00	72.92
45-54	7	42	14.58	87.50
55-64	6	48	12.50	100.00
Years of working experience				
1-5	6	6	12.50	12.50
6-10	11	17	22.92	35.42
11-15	9	26	18.75	54.17
16-20	9	35	18.75	72.92
21-25	8	43	16.67	89.58
26-30	5	48	10.42	100.00
Highest academic qualification				
Diploma	6	6	12.50	12.50
Bachelors	25	31	52.08	64.58
Masters	17	48	35.42	100.00
Doctorate	0	48	0.00	100.00
Others	0	48	0.00	100.00
Profession				
Architects/ Planners/ Builders	12	12	25.00	25.00
Engineers	32	44	66.67	91.67
Quantity Surveyors	4	48	8.33	100.00
Management level				
Senior	19	19	39.58	39.58
Middle	16	35	33.33	72.92
Junior	13	48	27.08	100.00

Slightly more than half (52%) of the Chinese respondents have Bachelors degree as their highest academic qualifications, more than half were also Engineers (67%) by profession and more than a quarter (40%) were at the level of the senior management. 38 Chinese respondents (79%) were affiliated professionally and all the respondents indicated that they possessed overseas education or experience, which could be attributed to their presence in Nigeria as at the time of this research. With 41 males and 7 females, there were about 6 males for every female among the Chinese respondents.

8.3 Characteristics of the Nigerian respondents

A total of 135 firms were e-mailed three questionnaires each. Out of the 405 questionnaires that were sent, a total of 80 completed questionnaires were returned to derive a response rate of 20%, with 58 firms returning at least one questionnaire.

The response rate among the Nigerians was lower than the average 33% response rate for online surveys. Yet, the 20% response rate compares favorably with the response rates of other international mail survey studies as reported by Harzing (1997). Other authors (Bailey, 1994: 169; Perkins, 2011) have also noted that many more studies have achieved a response rate of 20% or less. Within ethical constraints (Marshall and Rotimi, 2001), additional efforts were made to increase the response rate soon after the cut-off date (Tan, 2011: 55). Random telephone interviews with 35 non-responding firms suggested reasons attributable to a lack of interest on the part of the firms (46%), an inadequate knowledge on TQM practices and NCDs (34%), and the length of the survey questionnaire and/or the 2-round nature of the survey interview (20%).

The reasons cited are in congruence with findings and/or justifications from some earlier studies as follow. A joint survey involving three government agencies in Nigeria conducted in 2005 and 2006 recorded 21% and 23% response rates respectively due, in

part, to the problem of apathy among the Nigerian survey respondents (United Nations Statistics Division, 2007). On the inadequate knowledge on NCDs, national culture resides in values and, thus, often unconscious (Hofstede, 2011: 3) to lending itself to debates on links between discursive psychology and psychoanalytic theory (Biling, 1997; 2006). The inadequate knowledge on TQM practices among the sampled firms can be attributed to the level of actual implementation within the firms due to external factors as expounded in Chapter 2. The 8-page survey questionnaire adopted was within the recommendation of less than twelve pages (Bernard, 2011: 212) and at least two interviews per respondent in a qualitative research to increase the likelihood of capturing the context (Burkard, Knox and Hill, 2012: 90).

Regardless, the number of returned questionnaires for the Nigerians and the Chinese was within the recommended minimum of fifteen respondents for a cross-cultural research (Hofstede and Bond, 1988: 9) or in a consensual qualitative research (Hill and Williams, 2012: 74). The frequency distributions of the characteristics of the Nigerian respondents are presented in Table 8.2.

At the level of the firms, based on the questionnaires returned, the 58 Nigerian firms include the main contractors (36%), consultants (50%), developers (9%) and specialists (5%). More than three-quarter (84%) of the firms were SMEs having employees of less than or equal to 250 (McAdam and Reid, 2001) with the firms having employees of just up to 50 further constituting almost three-quarter (73%) of those in the SMEs. Out of the 58 Nigerian firms that responded, only 19 firms (33%) were ISO-9001 certified as at time of the survey based on the feedback from the Nigerian respondents.

Table 8.2: Characteristics of the Nigerian respondents

Age (years)	Frequency	Cumulative frequency	Percentage composition	Cumulative percentage
15-24	5	5	6.25	6.25
25-34	27	32	33.75	40.00
35-44	33	65	41.25	81.25
45-54	10	75	12.50	93.75
55-64	5	80	6.25	100.00
Years of working experience				
1-5	18	18	22.50	22.50
6-10	23	41	28.75	51.25
11-15	22	63	27.50	78.75
16-20	8	71	10.00	88.75
21-25	5	76	6.25	95.00
26-30	4	80	5.00	100.00
Highest academic qualification				
Diploma	11	11	13.75	13.75
Bachelors	34	45	42.50	56.25
Masters	35	80	43.75	100.00
Doctorate	0	80	0.00	100.00
Others	0	80	0.00	100.00
Profession				
Architects/ Planners/ Builders	35	35	43.75	43.75
Engineers	38	73	47.50	91.25
Quantity Surveyors	7	80	8.75	100.00
Management level				
Senior	32	32	40.00	40.00
Middle	30	62	37.50	77.50
Junior	18	80	22.50	100.00

Analyzing at the level of the respondents with respect to Table 8.2, the mean and median of the age of the 80 Nigerian respondents were both 37 years. The mean and median of their years of working experience were 11 years and 10 years respectively. With the mean age of 37 years, SD and CV were 10.57 and 0.29 respectively to suggest that the age group of the Nigerian respondents was uniform. Similarly, with the mean years of working experience of 11 years, SD and CV were 6.95 and 0.63 respectively to suggest that the years of working experience varied among the Nigerian respondents.

The Nigerian respondents tended toward bimodal distributions in their years of working experience, highest academic qualifications, profession, and management level as reflected in Table 8.2. By frequency count as adopted in the fore going, bimodal distributions are quite common (Bernard, 2011: 467), but in the strictest sense, bimodal distributions transcend the frequency count to encompassing the difference between the means (Schilling, Watkins and Watkins, 2002). Out of the 80 Nigerian respondents, 69 respondents (86%) were affiliated professionally, 25 respondents (31%) have overseas education or experience, and there were exactly 9 males for every female in the survey. The unaffiliated respondents constituted the key informants possessing some requisite knowledge due to their prior working experience with the Chinese in Nigeria.

8.4 Comparison of the Chinese and the Nigerian respondents

Once data have been collected, it is important to process and analyze the data using exploratory data analysis (EDA) to determine basic data patterns prior to applying more robust statistical techniques (Tan, 2008: 6). Behrens (1997: 131-2) argued that the definition of EDA dates back to the traditions established in Tukey's (1962) study to posit that the goal of EDA, likened to a detective work, is to discover patterns in data. EDA tools and attitudes complement the use of significance and hypothesis tests used in

confirmatory data analysis (Behrens, 1997: 131). In comparison with model diagnostic, Buja *et al*. (2010: 4362) construed that EDA is associated with what is done to raw data before they are fitted into a complex model, while model diagnostic is that done to transform data after they are fitted into a model.

The American Statistical Association and the American Society for Quality (ASQ) submitted that Tukey's (1962) study has been enormously influential (Mallows, 2006: 319). While it appeared hard to find a precise definition of EDA in Tukey's writings (Benoit, 2011: 530), NIST/SEMATECH (2012) defined EDA as an approach or philosophy for data analysis that employs a variety of techniques (mostly graphical) to: maximize insight into a data set, uncover underlying structure, extract important variables, detect outliers and anomalies, test underlying assumptions, develop parsimonious models, and determine optimal factor settings. As a form of descriptive statistics, EDA is employed to discover important but perhaps hidden patterns in the data that may shed additional light on the research problem (Bordens and Abbott, 2008: 379).

From Tables 8.1 and 8.2 presented earlier, marked similarity was exhibited in the gender of both the Chinese and the Nigerian respondents. Females were under-represented from both categories of respondents, which confirmed the findings from other past studies such as in the United States (Arditi and Balci, 2009), United Kingdom (Amaratunga *et al*., 2006), China (Yang, 2010a; Zuo and Jiang, 2012), South Africa (Madikizela and Haupt, 2010) and Nigeria (Adeyemi *et al.*, 2006; Kehinde and Okoli, 2004). Female respondents constituted 12.5% and 10% of the Chinese and Nigerians respectively.

By firm's specialties, Chinese respondents and Nigerian respondents were predominantly main contractors (64%) and consultants (50%) respectively. In consequence, a majority of the Chinese respondents were also engineers (64%) as earlier discussed. The Chinese

firms were all large-scale firms while the Nigerian firms varied and were predominantly SMEs (84%) of less than 251 employees, which could be attributed to the country's historically small-scale industry orientation (Adams, 1997: 97; Ayozie, 2011: 23).

Marked difference was also exhibited in the ISO 9001 certification; where about 85% of the Chinese firms reported that their companies' quality management systems (QMSs) were certified. In contrast, only about 33% of the Nigerians indicated that their companies' QMSs were certified to ISO 9001. This also confirmed the low rate of quality certification among construction businesses in Nigeria as typified by the ISO 2011 survey, where only seven construction firms were reported certified (ISO, 2011) as well as the, generally, low rate of certification among SMEs in Nigeria (Osagie, 2012). Conversely, China ranked first in the top ten countries for ISO 9001 certificates with 27,174 construction firms reported certified in 2011 (ISO, 2011). Figure 8.1 presents the summary of the reasons cited by the Nigerian respondents for non ISO 9001 certification in their respective firms.
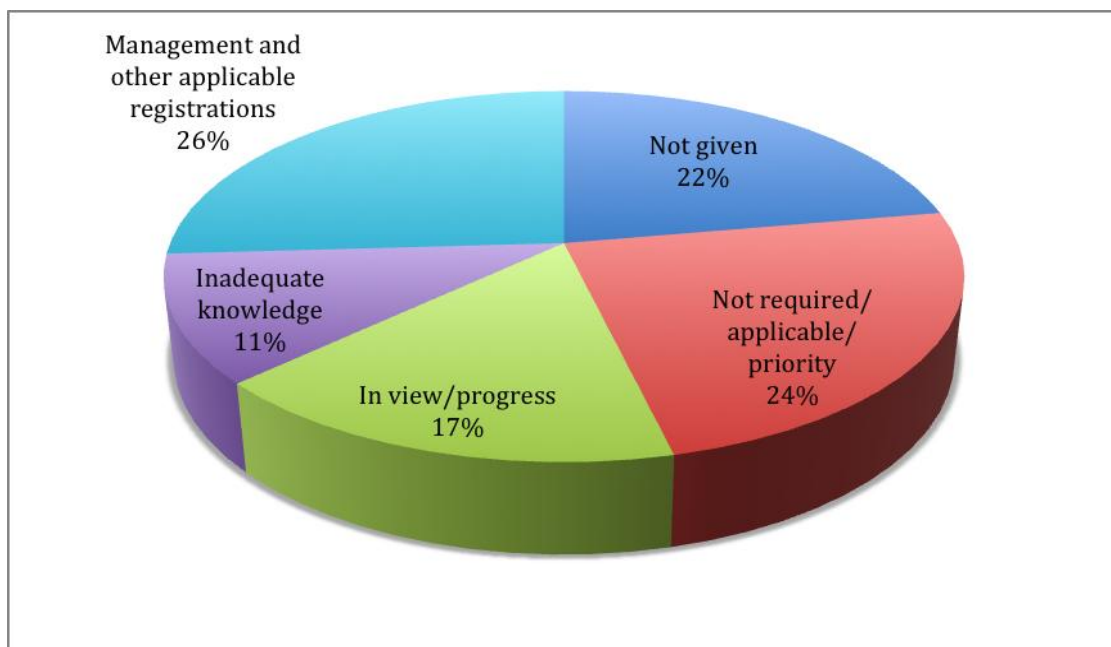
Figure 8.1: Reasons for non-ISO9001 certification among the Nigerians surveyed

8.5 Important TQM principles and attributes

The first phase of this study involved a separate two-round survey with the Chinese and the Nigerians as presented in Figure 8.2 extracted from Figure 7.1.
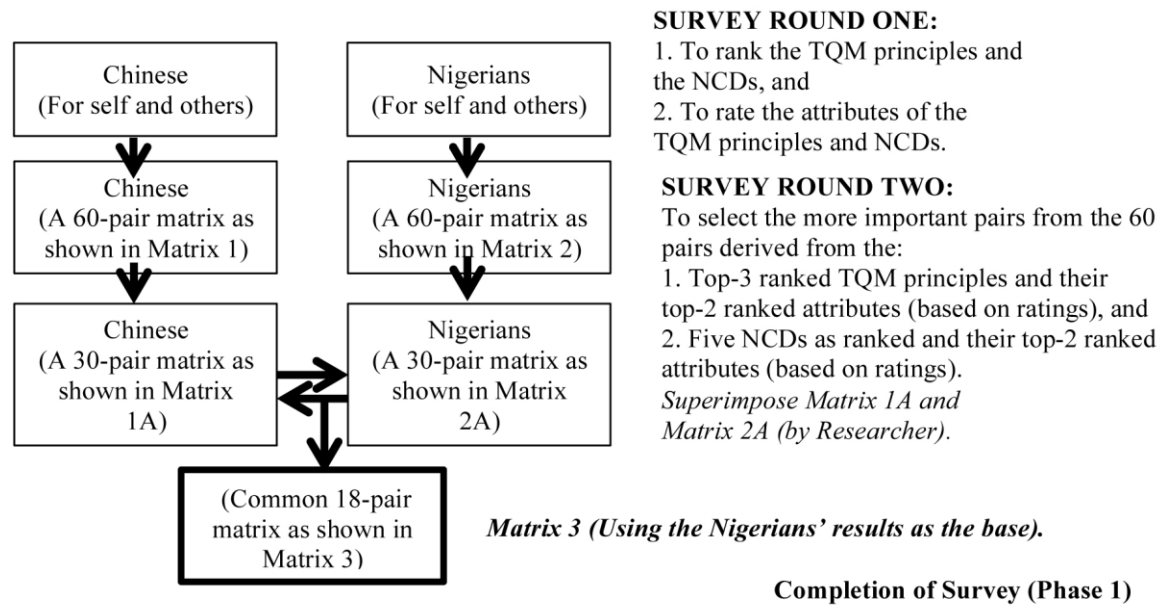
Figure 8.2: Study's survey process (Phase 1)

Table 8.3 presents the results of the first part of the round 1 of the survey among the Chinese and the Nigerian respondents. Table 8.3 presents their respective rankings for the TQM principles as perceived to be significant to achieving good quality among their firms and among the others (that is, the Chinese for the Nigerians and vice-versa). This is with respect to the feedback sought at Sections B1 and D of the Chinese and the Nigerians' survey questionnaires (please refer to Appendices 2 and 3 respectively). The *relative ranks* were determined through the *total ranks*, derived from the summation of the respective *significance rankings* (1 being most significant and 8 least significant), and the *frequency* based on the collated data for survey round 1. Appendices 14 and 15 present the breakdown of the *relative ranks* and the *total ranks* for each of the TQM

principles among the Chinese and the Nigerian respondents respectively (to be explained in the next section).

Table 8.3: Ranking of TQM principles

TQM principles	Chinese (n = 48)				Nigerians (n =80)			
	For self		For the Nigerians		For self		For the Chinese	
	Total rank	Relative rank	Total rank	Relative rank	Total rank	Relative rank	Total rank	Relative rank
Customer focus	200	3	204	3	302	1	335	2
Leadership	182	1	178	1	310	2	328	1
Involvement of people	195	2	194	2	327	3	354	5
Process approach	237	7	221	5	344	4	343	3
System approach	232	6	237	7	353	5	343	3
Continual improvement	211	4	231	6	387	6	391	7
Factual approach	226	5	217	4	419	7	381	6
Supplier relationship	245	8	246	8	438	8	405	8

The total ranks represent the composite scores, which provide single scores summarizing the sets of component scores (Webb, Shavelson and Haertel, 2006) or performance data (Jacobs *et al*., 2007) for each of the TQM principles and the NCDs (to be discussed later). Composite scores are being widely used in social and behavioral researches (Jacobs, Goddard and Smith, 2007; Webb, Shavelson and Haertel, 2006: 90) with their seeming drawbacks (Alterman *et al*., 1994; Rowe, 2006) best construed as confusion between a composite indicator and a latent variable (Yang, 2010b). A composite score is derived from the observed variables (in this case, TQM principles and NCDs) and does not exist independently of the observed variables, and as a result not to be confused with the latent variables (Yang, 2010b: 154). As rightly construed by Webb, Shavelson and Haertel,

(2006: 91), a composite score is derived from a weighted linear combination of a set of tests (that is, components) measuring distinct constructs to derive weights, which are statistically determined or defined by expert judges from a theory.

8.5.1 Ranking of TQM principles among the Chinese and the Nigerian respondents

With respect to Appendix 14, half of the Chinese (exactly 50%) ranked *leadership* 1 to 3 to be significant to achieving good quality in their firms. About 46% and 44% of the respondents ranked *involvement of people* and *customer focus* 1 to 3 to be significant to quality in their firms respectively. Employees' involvement creates a sense of ownership and unique corporate culture among the Chinese (Wen, 2005: 4-5). Similarly, *continual improvement* and *factual approach* were ranked 1 to 3 by 42% and 35% of the respondents respectively. Perceptions of *system approach* and *process approach* varied significantly, with exactly three-quarters (75%) of the respondents ranking both 1 to 6 to be significant to quality, despite the marginal difference of the 2% more ranking *process approach* 1 to 3 as significant to quality. Most of the Chinese respondents (27%) ranked *supplier relationship* to be least significant to quality in their firms. This confirmed *supplier relationship* as being a barrier to Just-in-Time implementation among the Chinese firms as noted by Low and Gao (2011).

Based on the result of the survey (please also refer to Appendix 14 for the detailed breakdown), the Chinese also ranked *leadership*, *customer focus* and *involvement of people* to be first, second and third to be significant to quality among the Nigerians, in the same order as ranked among their firms (please refer to Table 8.3). Conversely, 50% of the Chinese ranked *leadership* 1 to 2 to be significant to quality among the Nigerians, compared to 50% that ranked the same principle 1 to 3 among the Chinese in their own firms. About 40% of the Chinese ranked *involvement of people* 1 to 3 among the

Nigerians compared to 46% among their own firms. 40% of the Chinese ranked *customer focus* 1 to 2 to be significant to quality among the Nigerians compared with 33% that ranked *customer focus* 1 to 2 among their own firms. Buttressing the roles of social and empirical facts in the Chinese 21st century's engagement (Lam, 2011), the Chinese ranked *factual approach* more favorably among the Nigerians than *process approach*, *continual improvement*, *system approach* and *supplier relationship*.

As also summarized in Table 8.3 (please refer to Appendix 15 for the detailed breakdown), the results of the round 1 survey among the Nigerian respondents revealed that about 35%, which represented the overall highest single rank consensus, of the Nigerian respondents ranked *customer focus* as most significant to achieving good quality in their firms. More than half of the respondents (about 53%) ranked *customer focus* 1 to 3 as significant to quality. This is in congruence with findings from other studies of declining clients' satisfaction in construction services (Idrus and Sodangi, 2010: 34), thus prompting the need for clients to engage qualified construction professionals (Ayodele *et al.*, 2011: 158), who in turn need to nurture professional client relationship as an effective marketing strategy (Ojo, 2011: 310). *Leadership* and *people involvement* were perceived as second and third significant to quality among the Nigerians, with about 45% and 43% of the respondents ranking them 1 to 3 respectively.

Project management is still in its infancy in Nigeria (Aibinu and Odeyinka, 2006; Olateju Abdul-Azeez and Alamutu, 2011) and it has been realized that Nigerian banks (major private clients) were engaging incompetent in-house teams to lead projects, which could impact on the performance of other project team members (Idoro, 2009). Most Nigerian construction firms exclude their workforce in the firms' decision making for reasons due to management decision (Ajayi and Owoeye, 2005). At the macro level, foreign

companies are dominant in the Nigerian construction industry (Oluwakiyesi, 2011: 12) with most of the construction works being undertaken by expatriates (Odediran *et al*, 2012: 256). This is possibly a reason that perception of *people involvement* among the Chinese firms was not ranked very significantly. *Leadership* was ranked most significant, followed by *customer focus*, and then *process approach* and *system approach* as a tie. The Nigerians ranked these three TQM principles 1 to 3 by 25%, 18% and 10% respectively. Similarly, the Nigerians ranked *supplier relationship* as least significant to quality both in their firms and among the Chinese firms, confirming the prevalent adversarial relationships between suppliers and the rest of the project team (Jiang, Henneberg and Naudé, 2012).

8.5.2 Important TQM attributes among the Chinese and the Nigerian respondents

Table 8.4 presents the results of the second part of round 1 of the survey, being the Chinese and the Nigerians' rankings based on the ratings for the TQM attributes as perceived to be significant to achieving good quality among their firms (and not of the others like in the first part). This is with respect to the feedback sought at Sections B2 of the Chinese and the Nigerians' survey questionnaires (please refer to Appendices 2 and 3 respectively). The *importance rankings*, in the case of the attributes, were determined through the *mean ratings*, derived from the summation of the respective *significance ratings* (5 and 1 being strongly agree and strongly disagree as significant to achieving good quality respectively), and the *frequency* divided by the number of respondents. Appendices 16 and 17 present the detailed breakdown of the *significance ratings* (significance in this context referring to importance) and the *mean ratings* for each of the TQM attributes among the Chinese and the Nigerian respondents respectively.

Table 8.4: Important TQM attributes (for self)

TQM principles & attributes	Chinese (n = 48)		TQM principles & attributes	Nigerians (n = 80)	
	Mean rating	Importance ranking		Mean rating	Importance ranking
Leadership (ranked 1st)			**Customer focus** (ranked 1st)		
Establishing trust and eliminating fear.	4.5625	1	Researching and understanding customer's needs and expectations.	4.7500	1
Creating and sustaining shared values, fairness and ethical role models at all levels of the organization.	4.5417	2	Measuring customer's satisfaction and acting on the results.	4.6750	2
Inspiring, encouraging and recognizing people's contributions	4.4583	3	Ensuring organization's objectives are linked to customer's needs and expectations.	4.3000	3
Considering the needs of all interested parties.	4.3542	4	Communicating customer's needs and expectations throughout the organization.	4.2250	4
Setting challenging goals and targets.	4.2708	5	Systematically managing customer relationships.	4.0500	5
Providing people with the required resources, training and freedom to act with responsibility and accountability.	4.2500	6	Ensuring a balanced approach between satisfying the customers and other interested parties.	3.9750	6
Establishing a clear vision of the organization's future.	4.1458	7			
Involvement of people (ranked 2nd)			**Leadership** (ranked 2nd)		
People understanding the importance of their contribution and role in the organization.	4.5625	1	Establishing a clear vision of the organization's future.	4.6250	1
People actively seeking opportunities to enhance their competence, knowledge and experience.	4.4375	2	Providing people with the required resources, training and freedom to act with responsibility and accountability.	4.4125	2
People accepting ownership of problems and their responsibility for solving them.	4.3958	3	Setting challenging goals and targets.	4.2750	3

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TQM principles & attributes	Chinese (n = 48)		TQM principles & attributes	Nigerians (n = 80)	
	Mean rating	Importance ranking		Mean rating	Importance ranking
People identifying constraints to their performance.	4.2708	4	Inspiring, encouraging and recognizing people's contributions	4.1750	4
People freely sharing knowledge and experience.	4.2083	5	Establishing trust and eliminating fear.	4.1625	5
People evaluating their performance against their personal goals and objectives.	4.0000	6	Creating and sustaining shared values, fairness and ethical role models at all levels of the organization.	4.1250	6
			Considering the needs of all interested	3.9000	7
Customer focus (ranked 3rd)			**Involvement of people** (ranked 3rd)		
Researching and understanding customer's needs and expectations.	4.5625	1	People actively seeking opportunities to enhance their competence, knowledge and experience.	4.4000	1
Ensuring a balanced approach between satisfying the customers and other interested parties.	4.4167	2	People understanding the importance of their contribution and role in the organization.	4.2875	2
Ensuring organization's objectives are linked to customer's needs and expectations.	4.2917	3	People freely sharing knowledge and experience.	4.2750	3
Systematically managing customer relationships.	4.2500	4	People accepting ownership of problems and their responsibility for solving them.	4.0875	4
Measuring customer's satisfaction and acting on the results.	4.0417	5	People identifying constraints to their performance.	3.9500	5
Communicating customer's needs and expectations throughout the organization.	3.9375	6	People evaluating their performance against their personal goals and objectives.	3.8750	6
Continual improvement (ranked 4th)			**Process approach** (ranked 4th)		
Employing a consistent organization-wide approach to continual improvement of the organization's performance.	4.6042	1	Focusing on the factors such as resources, methods and materials that will improve key activities of the organization.	4.5375	1

TQM principles & attributes	Chinese (n = 48)		TQM principles & attributes	Nigerians (n = 80)	
	Mean rating	Importance ranking		Mean rating	Importance ranking
Recognizing and acknowledging improvements.	4.5625	2	Establishing clear responsibility and accountability for managing key activities.	4.4500	2
Making continual improvement of products, processes and systems an objective for every individual in the organization.	4.3750	3	Systematically defining the activities necessary to obtain a desired result.	4.4000	3
Establishing goals to guide, and measures to track, continual improvement.	4.2708	4	Evaluating risks, consequences and impacts of activities on customers, suppliers and other interested parties.	4.2875	4
Providing people with training in the methods and tools of continual improvement.	4.1667	5	Analyzing and measuring of the capability of key activities.	4.2375	5
			Identifying the interfaces of key activities within and between the functions of the organization.	4.1375	6
Factual approach (ranked 5th)			**System approach** (ranked 5th)		
Making decisions and taking action based on factual analysis, balanced with experience and intuition.	4.6667	1	Structuring a system to achieve the organization's objectives in the most effective and efficient way.	4.5750	1
Ensuring that data and information are sufficiently accurate and reliable.	4.2708	2	Continually improving the system through measurement and evaluation.	4.4625	2
Analyzing data and information using valid methods.	4.2500	3	Providing a better understanding of the roles and responsibilities necessary for achieving common objectives and thereby reducing cross-functional barriers.	4.3500	3
Making data accessible to those who need it.	4.0625	4	Targeting and defining how specific activities within a system should operate.	4.1250	4
			Understanding the interdependencies between the processes of the system.	3.9875	5

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TQM principles & attributes	Chinese (n = 48)		TQM principles & attributes	Nigerians (n = 80)	
	Mean rating	Importance ranking		Mean rating	Importance ranking
			Structured approaches that harmonize and integrate processes.	3.9875	5
			Understanding organizational capabilities and establishing resource constraints prior to action.	3.9875	5
System approach (ranked 6th)			**Continual improvement** (ranked 6th)		
Understanding organizational capabilities and establishing resource constraints prior to action.	4.7083	1	Making continual improvement of products, processes and systems an objective for every individual in the organization.	4.4500	1
Structuring a system to achieve the organization's objectives in the most effective and efficient way.	4.5208	2	Providing people with training in the methods and tools of continual improvement.	4.4125	2
Structured approaches that harmonize and integrate processes.	4.5000	2	Employing a consistent organization-wide approach to continual improvement of the organization's performance.	4.3500	3
Targeting and defining how specific activities within a system should operate.	4.4792	4	Establishing goals to guide, and measures to track, continual improvement.	4.2625	4
Continually improving the system through measurement and evaluation.	4.4375	5	Recognizing and acknowledging improvements.	4.1625	5
Understanding the interdependencies between the processes of the system.	4.3333	6.5			
Providing a better understanding of the roles and responsibilities necessary for achieving common objectives and thereby reducing cross-functional barriers.	4.3333	6.5			
Process approach (ranked 7th)			**Factual approach** (ranked 7th)		
Focusing on the factors such as resources, methods and materials that will improve key activities of the organization.	4.6458	1	Ensuring that data and information are sufficiently accurate and reliable.	4.5000	1

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TQM principles & attributes	Chinese (n = 48)		TQM principles & attributes	Nigerians (n = 80)	
	Mean rating	Importance ranking		Mean rating	Importance ranking
Systematically defining the activities necessary to obtain a desired result.	4.5208	2	Making data accessible to those who need it.	4.2000	2
Identifying the interfaces of key activities within and between the functions of the organization.	4.3333	3	Making decisions and taking action based on factual analysis, balanced with experience and intuition.	4.1750	3
Analyzing and measuring of the capability of key activities.	4.2708	4	Analyzing data and information using valid methods.	4.1250	4
Evaluating risks, consequences and impacts of activities on customers, suppliers and other interested parties.	4.2292	5			
Establishing clear responsibility and accountability for managing key activities.	4.1667	6			
Supplier relationship (ranked 8th)			**Supplier relationship** (ranked 8th)		
Pooling of expertise and resources with partners.	4.3750	1	Establishing relationships that balance short-term gains with long-term considerations.	4.1125	1
Clear and open communication.	4.3333	2	Clear and open communication.	4.0750	2
Establishing joint development and improvement activities.	4.2500	3	Inspiring, encouraging and recognizing improvements and achievements by suppliers.	3.9875	3
Inspiring, encouraging and recognizing improvements and achievements by suppliers.	4.2083	4	Sharing information and future plans.	3.9500	4
Identifying and selecting key suppliers.	4.0625	5	Pooling of expertise and resources with partners.	3.9375	5
Establishing relationships that balance short-term gains with long-term considerations.	3.9167	6	Identifying and selecting key suppliers.	3.8375	6
Sharing information and future plans.	3.7708	7	Establishing joint development and improvement activities.	3.7750	7

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The order of the TQM principles in Table 8.4 follows their *relative rankings* among the Chinese and the Nigerian respondents for self as discussed earlier with respect to Table 8.3. On the other hand, the order for the TQM attributes in Table 8.4 follows the *mean ratings* for the Chinese and Nigerians as derived from Appendices 16 and 17. Ratings, in addition to ordering the relative importance of values, have the advantage of also ordering the relative latent structure, unlike the rankings (Alwin and Krosnick, 1985: 548). Ratings have also been found to be providing greater validity than rankings within moderate- and low-differentiating participants (Maio *et al*., 1996). Nonetheless, an optimal system is complementary, thus premised on the full ranking of the values under consideration and the rating of the components (Ovadia, 2004: 412). The complementary approach has been adopted in this study through ranking of the TQM principles and rating of their attributes to determine the importance ranks of the attributes alike as presented in Table 8.4.

It should, nonetheless, be noted that the summation of the *mean ratings* under each TQM principle (and NCDs, as will be discussed later) might derive composite scores higher than the *total ranks*, thereby, suggesting that an otherwise relatively low ranked TQM principle need to be higher. Conversely, the rankings, as presented in Table 8.3, have already predetermined the order of the TQM principles with the rating, as later presented in Table 8.4, expounding on the latent structure of the different attributes. In addition, the composite scores, from the summation of the mean ratings, cannot affect the order since differentiation exists (Maio *et al*., 1996) among the TQM attributes, which vary from four to seven for the different TQM principles. This latter reason on differentiation among the attributes does not affect NCDs, which all have four attributes. Nonetheless, predetermination of the order of the NCDs based on the rankings, in a like manner as the TQM principles, played an important role as discussed in the next section.

8.6 Important national cultural dimensions and attributes

Table 8.5 presents the results of the first part of the round 1 of the survey among the Chinese and the Nigerian respondents. Table 8.5 presents their respective rankings for the NCDs as perceived to be significant to achieving good quality among their firms and among the others (that is, the Chinese for the Nigerians and vice-versa). This is with respect to the feedback sought at Sections C1 and E of the Chinese and the Nigerians' survey questionnaires (please refer to Appendices 2 and 3 respectively). Appendices 18 and 19 present the breakdown of the *relative ranks* and the *total ranks* for each of the NCDs among the Chinese and the Nigerian respondents respectively (to be explained in the next section).

Table 8.5: Ranking of NCDs

National cultural dimensions	Chinese (n = 48)				Nigerians (n =80)			
	For self		For the Nigerians		For self		For the Chinese	
	Total rank	Relative rank	Total rank	Relative rank	Total rank	Relative rank	Total rank	Relative rank
Individualism versus collectivism	136	2	130	1	221	1	229	2
Power distance	130	1	139	2	232	2	217	1
Long-term versus short-term orientation	150	4	150	4	240	3	239	3
Masculinity versus femininity	143	3	144	3	249	4	264	5
Uncertainty avoidance	161	5	157	5	258	5	251	4

8.6.1 Ranking of NCDs among the Chinese and the Nigerian respondents

Deriving from Appendix 18, about 29% and 25% of the Chinese respondents ranked PDI and IDV as most significant (that is, 1) to quality. About 19% of them ranked both MAS

and LTO as most significant to quality; however about 29% of them ranked LTO as least significant (that is, 5) to quality as compared to 17% of them who ranked MAS as least significant to quality. It was surprising that LTO garnered one of the highest single consensus rankings as least significant to quality considering that LTO has been found to be a distinctive feature of the Chinese (Chinese Culture Connection, 1987). Likewise, other authors (Lee and Dawes, 2005; Ryu and Moon, 2009) have also found strong influence of LTO on supplier relationship among the Chinese.

Nevertheless, this study's results accord well with Buck, Liu and Ott's (2010) study that cautioned that the strong influence of LTO among overseas Chinese firms is not general and is limited to the subset of human resource strategies adopted. Unsurprisingly, only four (about 8%) of the Chinese respondents, the lowest consensus, ranked UAI as most significant to quality despite China being considered to be uncertainty tolerant (Hofstede, Jonker and Verwaart, 2008).

About 69%, 67% and 58% of the Chinese respondents ranked IDV, PDI and MAS, respectively, from 1 to 3 as significant to quality among the Nigerians, with IDV ranked most significant to quality among the Nigerians. IDV also had the second highest overall single rank Chinese consensus (about 33%), which had a positive overall impact on its final rank. LTO ranked highest at both extremes as most significant to quality (about 31%) and least significant to quality (about 35%) among the Nigerians by the Chinese, the third highest and highest single rank consensus among the Chinese respectively. The Chinese also ranked UAI as least significant to quality among the Nigerians, with just a Chinese respondent more ranking UAI as least significant to quality among the Nigerians.

With respect to the relative rankings of the NCDs among the Nigerians (please refer to Appendix 19 for the breakdown), about 66%, 61% and 58% of the Nigerian respondents

ranked IDV, PDI and LTO 1 to 3 as significant to quality in their firms. About 29% and 26% ranked LTO as most significant and least significant to quality respectively. Overall, UAI and MAS were perceived least significant to quality among the Nigerian respondents, with about 15% and 8% ranking them most significant to quality respectively. The highest single rank consensus among the Nigerians was MAS (29%), which reflected the male dominance and overzealous behavior generating work stress, in the country's construction industry (Ibem *et al*., 2011).

On Nigerians' perceptions of the NCDs among the Chinese, about 46%, 45%, 40%, 35% and 34% of the Nigerians ranked PDI, IDV, LTO, UAI and MAS, respectively, 1 to 2 as significant to quality among the Chinese. Based on the survey responses, the highest and lowest single rank consensuses were 31% and 5% for PDI and MAS respectively as most significant to quality among the Chinese. About 23% of the Nigerians ranked LTO as most significant to quality among the Chinese as compared to the 28% that ranked LTO as most significant to quality among the Nigerians. Ranking for MAS was the same both as perceived among the Nigerians and as perceived among the Chinese (about 29%).

The closeness of the rankings for NCDs for self among the Chinese and the Nigerians suggested the existence of strong similarities, which confirmed Westropp's (2012) cross-cultural comparative study between China and sub-Saharan African countries such as Nigeria. These similarities explain why China, and in consequence the Chinese firms, has been able to operate successfully in the African countries they are operating in unlike the other foreign firms (Westropp, 2012: 85). Premised on these similarities and the strategic operationalizing of the Chinese concept of relationship building called *Guanxi* in Africa (Anedo, 2012), Chinese firms have been able to make inroads in infrastructure, and which has been found to be linked to comparative advantage (Yeaple and Golub, 2007).

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8.6.2 Important NCD attributes among the Chinese and the Nigerian respondents

Table 8.6 presents the rankings for the NCD attributes among the Chinese and the Nigerian respondents as sought at Sections C2 of the Chinese and the Nigerians' survey questionnaires (please refer to Appendices 2 and 3 respectively). Appendices 20 and 21 present the breakdown of the *significance ratings* and the *mean ratings* for each of the NCD attributes among the Chinese and the Nigerian respondents respectively.

The order of the NCDs in Table 8.6 follows their *relative rankings* among the Chinese and the Nigerian respondents for self with respect to Table 8.5 as earlier discussed. On the other hand, the order for the NCD attributes follows the *mean ratings* for the Chinese and Nigerians as derived from Appendices 20 and 21 respectively.

The attributes of the NCDs being the independent variables as discussed earlier in Chapter 7 are worthy of further discussions. Hence, the highest rated NCD attributes among the Chinese and the Nigerians are explained in the next section. Under PDI that the Chinese ranked 1st, they rated *handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained (social status)* as most important to achieving good quality. This confirmed *social status* as an important negotiation element among the Chinese determining the win or the loss of a business deal (Graham and Lam, 2003) and, hence, its quality.

Under IDV that the Chinese ranked 2nd, they rated *upholding self-respect by avoiding shame and loss of face for self and group (face)* as most important to achieving good quality. This confirmed the influence of *face* on the operations of the Chinese with the Africans (Anedo, 2012) and the Westerners alike (Dong and Lee, 2007). *Face* also had the highest overall mean rating and one of the highest single consensus ratings.

Table 8.6: Important NCD attributes (for self)

NCDs & attributes	Chinese (n = 48)		NCDs & attributes	Nigerians (n = 80)	
	Mean rating	Importance ranking		Mean rating	Importance ranking
Individualism versus collectivism (ranked 2nd)			**Individualism versus collectivism** (ranked 1st)		
Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	4.8750	1	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	3.7625	1
Adopting low-context communication i.e. explicit expressions against having to infer from circumstances around an idea.	4.2083	2	Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share.	3.6250	2
Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share.	4.1667	3	Tolerance for direct confrontations in speaking one's mind, even if it means creating a temporary disharmony.	3.5750	3
Tolerance for direct confrontations in speaking one's mind, even if it means creating a temporary dis-harmony.	3.7083	4	Adopting low-context communication i.e. explicit expressions against having to infer from circumstances around an idea.	3.5000	4
Power distance (ranked 1st)			**Power distance** (ranked 2nd)		
Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	4.5000	1	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	3.9625	1
Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	4.2917	2	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	3.8250	2
Minimize inequalities among people such that subordinates take own initiatives and challenge the superiors' opinions.	3.5208	3	Minimize inequalities among people such that subordinates take own initiatives and challenge the superiors' opinions.	3.5750	3
Strict obedience to authority, superiors hold infallible truths and are excellent such that others' opinions do not necessarily count.	3.3751	4	Strict obedience to authority, superiors hold infallible truths and are excellent such that others' opinions do not necessarily count.	3.2000	4

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NCDs & attributes	Chinese (n = 48)		**NCDs** & attributes	Nigerians (n = 80)	
	Mean rating	Importance ranking		Mean rating	Importance ranking
Long-term versus short-term orientation (ranked 4th)			**Long-term versus short-term orientation** (ranked 3rd)		
Being sparing with resources and practicing thrift such that money and other resources are carefully deployed.	4.8333	1	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	4.1250	1
Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	4.7292	2	Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses.	4.0250	2
Respect for circumstances such that a fact or condition connected with or relevant to an event or action is preserved or referred.	4.5208	3	Respect for circumstances such that a fact or condition connected with or relevant to an event or action is preserved or referred.	3.9750	3
Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses.	3.9375	4	Being sparing with resources and practicing thrift such that money and other resources are carefully deployed.	3.9625	4
Masculinity versus femininity (ranked 3rd)			**Masculinity versus femininity** (ranked 4th)		
Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status	4.8542	1	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	4.1375	1
Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	4.5417	2	Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority.	4.0125	2
Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority.	4.2500	3	Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status	3.9500	3
Assertive, ambitious, and tough. Forceful personality and strong determination to explicitly express, believe, and succeed.	4.0000	4	Assertive, ambitious, and tough. Forceful personality and strong determination to explicitly express, believe, and succeed.	3.7625	4
Uncertainty avoidance (ranked 5th)			**Uncertainty avoidance** (ranked 5th)		

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NCDs & attributes	Chinese (n = 48)		NCDs & attributes	Nigerians (n = 80)	
	Mean rating	Importance ranking		Mean rating	Importance ranking
Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	4.6250	1	Not being stressed/anxious in uncertain situations such that there is no uncomfortable feeling of worry.	3.9375	1
Tolerance for uncertainty and poise/confidence under such condition.	4.5625	2	Tolerance for uncertainty and poise/confidence under such condition.	3.7500	2
Not being stressed/anxious in uncertain situations such that there is no uncomfortable feeling of worry.	4.4376	3	Not showing emotion (positive or negative) in spite of one's circumstances, mood or relationships with others.	3.7125	3
Not showing emotion (positive or negative) in spite of one's circumstances, mood or relationships with others.	4.1042	4	Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	3.4500	4

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Under MAS that the Chinese ranked 3rd, they rated *facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo (facts)* as most important to achieving good quality. This confirmed the rising interests on the development of *facts* among the Chinese (Huang, 2013; Lam, 2011). *Facts* also had the second highest overall mean rating and one of the highest single consensus ratings.

Under LTO that the Chinese ranked 4th, they rated *being sparing with resources and practicing thrift such that money and other resources are carefully deployed (thrift)* as most important to achieving good quality. Being mostly respondents from SOEs, this confirmed *thrift* as a government's strategy on FDIs (The Economist, 2000) and an ingrained societal value (Jackson and Howe, 2004) to sustain economic developments.

Under UAI ranked 5th, the Chinese rated *not being too curious and cautious about what is different, and ignore perceived danger in favor of latent opportunities* as most important to achieving good quality. This accorded well with the Chinese as easy travelers engaging in novel activities without needing much time to adjust (Hofstede, Jonker and Verwaart, 2008).

For the Nigerians, under IDV that they ranked 1st, *upholding self-respect by avoiding shame and loss of face for self and group (face)* was also rated as most important to achieving good quality. Simply, face relates to a person's image and status within a social structure (Dong and Lee, 2007: 402), which defines attributes that have been flagged as important considerations among the Nigerians (Anugwom, 2007; Barchiesi, 1996). Anedo's (2011) study expounds on face between the Chinese and the Nigerians.

Under PDI that the Nigerians ranked 2nd, they rated *encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation*

(interdependence) as most significant to achieving good quality. This confirmed the need for a standard code of practice for knowledge management among the construction firms in Nigeria for improved competitive advantage (Kasimu, Roslan and Fadhlin, 2012).

Under LTO that the Nigerians ranked 3rd, they rated *persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming (persistence)* as most significant to achieving good quality. Nigeria's unique challenges affecting its infrastructure against lurking benefits (Foster and Pushak, 2011: 2) accords well with *persistence* being rated as most important by the Nigerians.

Under MAS, ranked 4th by the Nigerians, they rated *allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature (competition)* as most significant to achieving good quality. This confirmed the notion of *competition* as a viable survival strategy in view of the continued preference of the Nigerian clients to engage expatriates (Idoro, 2012: 50). Lastly, under UAI, ranked 5th by the Nigerians, *not being stressed/anxious in uncertain situations such that there is no uncomfortable feeling of worry (stress)* was rated as most important to achieving good quality. This confirmed the realization of the management of *stress* on work performance in Nigeria's construction industry as well (Ibem *et al*., 2011; Wahab, 2010).

8.7 Discussions on the important TQM principles and NCDs and their attributes

While EDA recognizes the picture-examining eye as the best finder of the wholly unanticipated, confirmatory data or factor analysis (CDA/CFA) complements and confirms the EDA (Tukey, 1980: 24, 25). Purposive-driven, it follows that CDA is used in data analysis to examine the expected causal connections between variables; hence, it

is best defined as a decision rule to accept or reject one or more hypotheses about a population factor structure based on sample data (Hurley *et al*., 1997: 667-8).

CDA allows the researcher to test the hypothesis that a relationship between observed variables and their underlying latent constructs exist (Suhr, 2006). CDA is driven by theory or hypothesis and produces many goodness-of-fit measures for evaluation (Albright and Park, 2009). From Mast and Kemper (2009: 368), CDA is carried out on an identified hypothesis that is to be confirmed or refuted, and is aimed at testing and modeling conjectured relationships between dependent and independent variables, as well as objectivity and conclusion through methodical and rigorous approaches.

With respect to the different hypotheses of this study (refer to Chapter 1), different statistical tests were adopted for the CDA using Tan's (2011) framework for selecting statistical tests, presented in Table 8.7, as a guide.

Table 8.7: Different statistical tests.

Scale	One sample			Two independent samples	K independent samples
	Independent Sample	Single treatment; repeat measures	Multiple treatments; repeat measures		
Nominal	Binomial test; Contingency table (1-way)	McNemar test	Cochrane Q test	Contingency table (2-way)	Contingency table (r x c)
Ordinal	Runs test	Wilcoxon signed rank test	Friedman test	Wilcoxon rank sum test	Kruskal-Wallis test
Interval or ratio	Z or t test; test of variance	Paired t test	Repeat measures ANOVA	Unpaired t test; test of variance	ANOVA

Source: Tan (2011: 101)

The statistical tests adopted for the different hypotheses are linked to the different objectives as also discussed in Chapter 1. This approach provides a relationship for better

understanding and an assessment of the exploratory and confirmatory components of the study (Anderson *et al*., 2001: 376). The approach also complements the logic of inquiry for mixed methods research, which involves the use of induction (discovery of patterns), deduction (testing of theories and hypotheses), and abduction (uncovering and relying on the best set of explanations for understanding results) according to Onwuegbuzie and Leech (2006: 474).

8.7.1 Statistical testing for Hypothesis 1

From the results of round 1 of the survey discussed so far with respect to Figure 8.2, for $H_{1.1}$ and $H_{1.2}$ corresponding to Objectives 2 and 3 of this study, Friedman tests were performed on the data obtained. The Friedman test is a nonparametric equivalent of the repeated-measures ANOVA and it compares the average ranks of algorithms (Demšar, 2006: 11). Nonparametric is used to describe the situation in which the number and the nature of parameters are flexible and not fixed in advance so much so that non-parametric tests are also called distribution free (Nachar, 2008: 13). Hence, the Friedman test is used for comparing different values of a population mean or median evaluated under different conditions with the goal of proving that they are different (Gwet, 2011a). From Tan (2011: 110), Friedman (F_r) test statistic is calculated by the formula:

$$F_r = 12/nk \, (k+1) \sum R_j^2 - 3n \, (k+1) \tag{1}$$

Where: n is the number of respondents, k is the number of categories or treatments, and R_j is the column sum of ranks.

Table 8.8 presents the different characteristics of $H_{1.1}$ and $H_{1.2}$ and the decisions on them. For brevity the Chinese and the Nigerians are denoted with "C" and "N", respectively in Table 8.8. Appendices 22 and 23 present the computations of the Friedman tests for TQM

principles and NCDs respectively. For the TQM principles, looking up the significance of F_r in the chi-square (X^2) distribution table (two-tailed), the critical value of F_r with k -1 degrees of freedom at the 0.05 confidence or significance level ($\alpha = 5\%$) is 14.05.

Table 8.8: Results of testing sub-hypotheses 1.1 and 1.2.

Sub-hypotheses	Null hypotheses (H₀)	Alternative hypotheses (Hₐ)	Decisions
H₁.₁	*There is no significant difference among "C" on their perceived influences of **NCDs on QM in their firms**.*	*There is a significant difference among "C" on their perceived influences of NCDs on QM in their firms.*	**Accept H₀** (F_r= 4.88, p > 0.05 using a two-tailed test).
	*There is no significant difference among "C" on their perceived influences of **NCDs on QM among "N"**.*	*There is a significant difference among "C" on their perceived influences of NCDs on QM among "N".*	**Accept H₀** (F_r= 3.55, p > 0.05 using a two-tailed test).
	*There is no significant difference among "C" on their perceived influences of **TQM principles on QM in their firms**.*	*There is a significant difference among "C" on their perceived influences of TQM principles on QM in their firms.*	**Accept H₀** (F_r= 12.21, p > 0.05 using a two-tailed test).
	*There is no significant difference among "C" on their perceived influences of **TQM principles on QM among "N"**.*	*There is a significant difference among "C" on their perceived influences of TQM principles on QM among "N".*	**Accept H₀** (F_r= 12.72, p > 0.05 using a two-tailed test).
H₁.₂	*There is no significant difference among "N" on their perceived influences of **NCDs on QM in their firms**.*	*There is a significant difference among "N" on their perceived influences of NCDs on QM in their firms.*	**Accept H₀** (F_r= 4.15, p > 0.05 using a two-tailed test).
	*There is no significant difference among "N" on their perceived influences of **NCDs on QM among "C"**.*	*There is a significant difference among "N" on their perceived influences of NCDs on QM among "C".*	**Accept H₀** (F_r= 6.74, p > 0.05 using a two-tailed test).
	*There is no significant difference among "N" on their perceived influences of **TQM principles on QM in their firms**.*	*There is a significant difference among "N" on their perceived influences of TQM principles on QM in their firms.*	**Reject H₀** (F_r= 36.57, p < 0.05 using a two-tailed test).
	*There is no significant difference among "N" on their perceived influences of **TQM principles on QM among "C"**.*	*There is a significant difference among "N" on their perceived influences of TQM principles on QM among "C".*	**Accept H₀** (F_r= 11.85, p > 0.05 using a two-tailed test).

Notes: "C" = The Chinese and "N" = The Nigerians

In all the tests, F_r is only higher than 14.07 among the Nigerians on their perceived influences of TQM principles to quality management in their firms (please refer to Appendix 22). Hence H_0 was rejected to accept the alternative hypothesis and conclude that there is a significant difference among the Nigerians on their perceived influences of TQM principles on QM in their firms as indicated in Table 8.8.

For the NCDs, looking up the significance of F_r in the chi-square (X^2) distribution table (two tailed), the critical value of F_r with $k -1$ degrees of freedom at α = 5% is 9.49. F_r is lower than 9.49 in all the tests, which revealed that there were no significant differences both among the Chinese and the Nigerians on their perceived influences of NCDs on quality management among themselves and the others' as also indicated in Table 8.8.

Based on the fore goings, $H_{1.1}$ was completely supported since H_0 was not rejected in all the tests for the Chinese. Hence, the study concluded that was there were no significant differences among the Chinese on their perceived influences of national culture and TQM principles on quality management.

Based on the tests, $H_{1.2}$ was partially supported since H_0 was only rejected on the perceived influences of TQM principles on quality management among the Nigerians, which revealed that there was a significant difference among the Nigerians on their perceived influences of TQM principles on quality management in their firms.

For $H_{1.3}$ also corresponding to Objectives 2 and 3 of this study, Wilcoxon rank sum tests were performed on the data obtained through round 1 of the survey. The Wilcoxon rank sum test or Wilcoxon rank test is used if two independent groups are measured on the ordinal scale (Tan, 2011: 110). It is also referred to as the U-test, the Mann-Whitney test, as well as the test of homogeneity (Kummer, 1981) on the premise that they are all

equivalent versions of the two-sample rank sum test in spite of being methodologically distinct (Berry, Mielke and Johnston, 2012). It is the nonparametric alternative to the *t* test for two independent samples (Tan, 2011: 110) that is used to ascertain whether two independent samples come from the same distribution (Nachar, 2008). Accordingly, the test is to determine if the median of a variable for participants in one group is significantly different from the median of that variable for participants in a different group (DeCoster, 2006: 13). From Tan (2011: 111), the Wilcoxon rank sum statistic (*W*) is defined as the total rank of the smaller sample and under the null hypothesis that the medians of two independent groups are equal, $W \sim (n_A (n_A + n_B + 1) / 2, s^2)$ where

$$s = \sqrt{n_A n_B (n_A + n_B + 1) / 12} \qquad (2)$$

Table 8.9 presents the decisions on the different characteristics of $H_{1.3}$. Similarly, the Chinese and the Nigerians are denoted with "C" and "N" respectively. (Please refer to Appendices 24 and 25 for computations of the Wilcoxon rank sum test for the TQM principles and NCDs, respectively.)

Table 8.9: Results of testing sub-hypothesis 1.3

Sub-hypotheses	Null hypotheses (H_0)	Alternative hypotheses (H_a)	Decisions
$H_{1.3}$	*There is no significant difference between "C" and "N" on their perceived influences of **NCDs on QM in their firms.***	*There is a significant difference between "C" and "N" on their perceived influences of NCDs on QM in their firms.*	**Reject H_0** (z = -2.61, p < 0.05 using a two-tailed test).
	*There is no significant difference between "C" and "N" on their perceived influences of **TQM principles in their firms.***	*There is a significant difference between "C" and "N" on their perceived influences of TQM principles in their firms.*	**Reject H_0** (z = -2.63, p < 0.05 using a two-tailed test).

Notes: "C" = The Chinese and "N" = The Nigerians

Since the Wilcoxon rank sum test is based on the comparison of each observation from the first group with each observation from the second group (Nachar, 2008: 14), the total frequencies of the ranks 1 to 3 of the TQM principles and NCDs (as perceived among own firms) were adopted. (Please refer to Appendices 14 and 15 and Appendices 18 and 19 for the frequencies). The frequency was also adopted so as to derive actual numerical meaning (continuous variable) as against groupings (categorical variable) (DeCoster, 2006: 1), which would have automatically tended towards zero.

For the TQM principles and NCDs (please refer to Appendices 24 and 25 respectively), since z is lower than -1.96 at $\alpha = 5\%$, both of the afore-mentioned H_0 were rejected to accept the alternative hypotheses. The rejection of H_0 at $\alpha = 5\%$ if z is smaller than -1.96 is also supported by Demšar (2006: 7). The study concluded that there was a significant difference in the perceptions of the influences of national culture and TQM principles on quality management between the Chinese and the Nigerians ($z = -2.60$, $p = .01$ using a two-tailed test). It then follows from the tests on the characteristics, which agrees exactly with the research hypothesis in question that $H_{1.3}$ was completely supported.

The statistical results of sub-hypotheses 1.1 to 1.3 partially support the first hypothesis of this study to confirm that differences exist in the perceived influences of national culture and TQM principles on the management of quality between the Chinese and the Nigerians. The results have revealed that while there is no significant difference among the Chinese on the perception of TQM principles and national culture on quality management both in their own firms and among the Nigerians' (sub-hypothesis 1.1), there is, nonetheless, a significant difference among the Nigerians on their perception of TQM principles to quality management in their own firms (sub-hypothesis 1.2). Lastly, the results have also revealed that there are significant differences among the Chinese and

the Nigerians on their perceptions of the influences of national culture and TQM principles on quality management (sub-hypothesis 1.3).

The support for hypothesis 1 of this study concurs with the model presented in Chapter 2 on culture, perceptions and conflicts. As supported by the statistical results, national culture shapes the Chinese and the Nigerians' perceptions, which in turn influences their experience and expectation so much so that the inability by the other party to meet the expectation leads to conflicts. The conflicts in this study are the service quality performance of the Chinese firms in Nigeria. The afore-mentioned model presented in Chapter 2 is underpinned by the findings from some other authors (Ahlstrom and Bruton, 2010: 36; Avruch, 1998; Chan and Tse, 2003: 380; Hofstede, 1980; Hofstede, 2009: 18; Moran, Harris and Moran, 2011: 45; Morris, Leung and Iyengar, 2004: 128).

8.7.2. Statistical testing for Hypothesis 2

For $H_{2.1}$ to $H_{2.3}$ corresponding to Objective 4 of this study, Spearman correlation tests were performed on the data obtained through round 1 of the survey. The Spearman's rho (ρ), or Spearman's r (r_s) as also referred, measures association to determine the correlation between ordinal pairs (Singh, 2007: 148) or to determine whether the relationship between variables is monotonic (Bordens and Abbot, 2008: 408). Without delineating between a predictor and an outcome like in regression, correlation provides a "unitless" measure of association between variables, ranging from −1 (indicating perfect negative association) to 0 (no association) to +1 (perfect positive association) (Crawford, 2006). Further, the Spearman correlation is also distinct from the Pearson correlation, which is used when the data is parametric (interval or ratio). From Bernard (2011: 513) and Singh (2007: 148), the formula for Spearman's rho is:

$$\rho = 1 - 6\sum d^2 / n (n^2 - 1) \tag{3}$$

Where *d*, the only factor that needs to be computed, is defined as the difference in ranks and *n* is the number of characteristics or pairs.

From Comrey and Lee (2007: 169), Equation 3 is adopted if there are no tied ranks, in which case it produces the same results as the Pearson correlation when there are no tied ranks alike and when ranks are used instead of scores. Comrey and Lee (2007: 169) expounded further that Equation 3 can also be used if there are a few tied ranks (defined as less than 25%), but ceases to be valid if the data set contains more than 25% tied ranks in favor of the formula indicated below.

$$\rho = N\sum rXrY - (\sum rX)(\sum rY) / \sqrt{[(N\sum (rX)^2 - (\sum rX)^2)(N\sum (rY)^2 - (\sum rY)^2]} \tag{4}$$

Where *rY* and *rX* are the ranks of the data for the respective *Y* and *X* pairs, and *N* is the tied score.

Table 8.10 presents the decisions on the different characteristics of $H_{2.1}$ to $H_{2.3}$. The Chinese and the Nigerians are likewise denoted with "C" and "N", respectively in Table 8.10. (Please refer to Appendices 26 & 27, 28 & 29, and 30 & 31 for the computations of the Spearman's rho for $H_{2.1}$, $H_{2.2}$ and $H_{2.2}$, respectively.)

NCD scores for China and Nigeria as discussed in Chapter 2 were adopted for national culture, with their respective total frequencies of the ranks 1 to 3 of NCDs (as perceived among own firms) adopted for the perceptions on quality management. (Please refer to Appendices 18 and 19 for the frequencies for the Chinese and the Nigerians, respectively). The total frequencies of the ranks 1 to 3 were adopted so as to derive a bi-functional prediction of association between the NCD scores (X) and the perception on quality management (Y) in which each value of X has a unique corresponding value of Y.

The bi-functional prediction of association is the strongest type of prediction as compared to the order-based and the categorical correlations (White and Korotayev, 2004: 11).

Table 8.10: Results of testing sub-hypotheses 2.1, 2.2 and 2.3

Sub-hypotheses	Null hypotheses (H_0)	Alternative hypotheses (H_a)	Decisions
$H_{2.1}$	*There is an association between "C's" NCD scores and their perceived influences of NCDs on QM in their own firms.*	*There is no association between "C's" NCD scores and their perceived influences of NCD on QM in their own firms.*	**Accept H_0** ((ρ (0) = .175, p > 0.05 using a two-tailed test).
	There is an association between "C's" NCD scores and their perceived influences of NCDs on QM among "N".	*There is no association between "C's" NCD scores and their perceived influences of NCDs on QM among "N".*	**Accept H_0** ((ρ (0) = -.600 p > 0.05 using a two-tailed test).
$H_{2.2}$	*There is an association between "N's" NCD scores and their perceived influences of NCDs on QM in their own firms.*	*There is no association between "N's" NCD scores and their perceived influences of NCD on QM in their own firms.*	**Accept H_0** ((ρ (0) = .100, p > 0.05 using a two-tailed test).
	There is an association between "N's" NCD scores and their perceived influences of NCDs on QM among "C".	*There is no association between "N's" NCD scores and their perceived influences of NCDs on QM among "C".*	**Accept H_0** ((ρ (0) = -.425 p > 0.05 using a two-tailed test).
$H_{2.3}$	*There is an association between "C" and "N's" rankings of the perceived influences of the NCDs on QM in their own firms.*	*There is no association between "C" and "N's" rankings of the perceived influences of the NCDs on QM in their own firms.*	**Accept H_0** ((ρ (0) = .800, p > 0.05 using a two-tailed test).
	There is an association between "C" and "N's" rankings of the perceived influences of the NCDs on QM for each other.	*There is no association between "C" and "N's" rankings of the perceived influences of the NCDs on QM for each other.*	**Accept H_0** ((ρ (0) = .600, p > 0.05 using a two-tailed test).

Notes: "C" = The Chinese and "N" = The Nigerians

Since there was only a pair of tie, which was less than 25% of the number of observations, in Appendices 26 and 29, Formula 3 was adopted for all the Spearman correlation tests. At no degrees of freedom since the number of pairs or sample size was less than 60 (MEI, 2007: 7) and likewise neglecting the direction of correlation (Gautier, 2001: 360), the null hypotheses were all accepted at α = 5%. The table of critical values

for significance testing of the Spearman rank correlation coefficient for sample size as large as 100 with no correction for continuity required, which was advanced by Zar (1972) was adopted.

The statistical results of sub-hypotheses 2.1 to 2.3 completely support the second hypothesis of this study to confirm that the quality perceptions of the Chinese and the Nigerians are influenced by their national cultures. The results have revealed that there is a significant association between China and Nigeria's NCD scores and their perceived influences of national culture on quality management both in their own firms and for the others (sub-hypotheses 2.1 and 2.2, respectively). Similarly, the results have revealed that there is also a significant association in the Chinese and the Nigerians' rankings of the perceived influences of national culture quality management among themselves and for each other (sub-hypothesis 2.3).

The support for hypothesis 2 of this study agrees with the perceptions of quality with respect to the model presented in Chapter 2 on culture, perceptions and conflicts. As supported by the statistical results, national culture shapes the Chinese and the Nigerians' perceptions, which in turn influences their experience and expectation so much so that the inability by the other party to meet the expectation leads to conflicts. The conflicts in this study are the service quality performance of the Chinese firms in Nigeria. Similar to hypothesis 1 discussed in the preceding section, the afore-mentioned model presented in Chapter 2 is underpinned by the findings from some other authors (Ahlstrom and Bruton, 2010: 36; Avruch, 1998; Chan and Tse, 2003: 380; Hofstede, 1980; Hofstede, 2009: 18; Moran, Harris and Moran, 2011: 45; Morris, Leung and Iyengar, 2004: 128).

8.7.3 Comparison of findings: round 1 of the survey and round 1 of the Delphi

Corresponding to round 1 of the survey, the findings of which were discussed in the preceding two sections, is round 1 of the Delphi in the Phase 2 of this study. For ease of the comparison, Figure 8.3, extracted from Figure 7.1, presents the Delphi process as undertaken in the Phase 2 of this study. As discussed earlier in Chapter 7, the Delphi was to undertake detailed examinations of the outcome of the surveys.
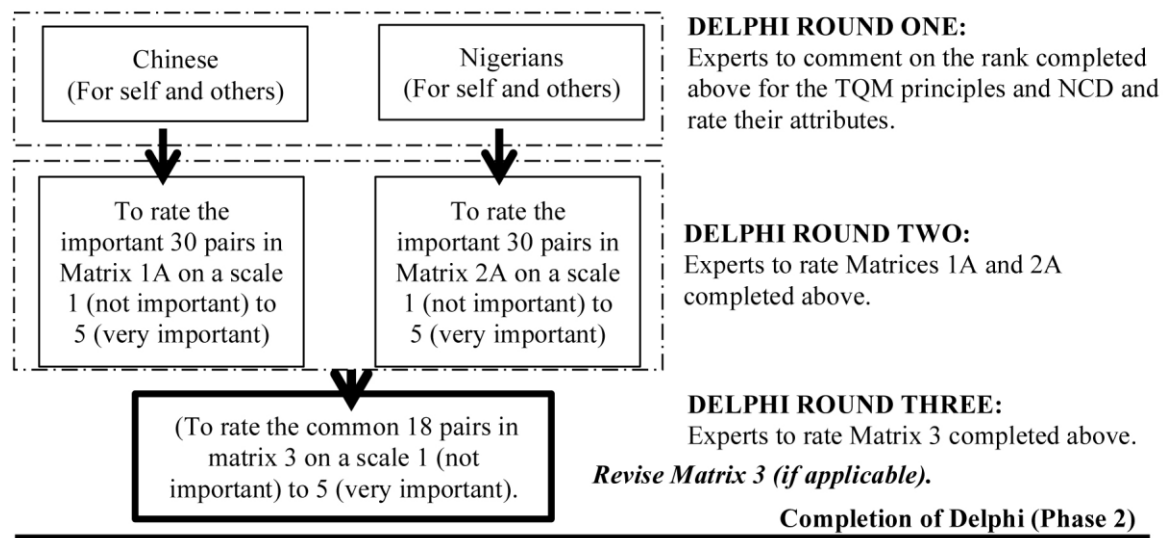
Figure 8.3: Study's Delphi process (Phase 2)

Appendix 32 presents anonymous profiles of the twelve experts (seven Nigerians, three Chinese, and two neutral experts: neither Chinese nor Nigerian), who participated in the Delphi. Taking a cue from Vivino, Thompson and Hill (2012: 55-6), the selection of multicultural experts purposed to eliminate *groupthink* arising from an unexpressed reservation in favor of *cognitive diversity*. The fore going holds valid in qualitative research (QR), which entail training judges [or raters] to code data into [the derived] categories [so as] to calculate the inter-rater reliability (Spangler, Liu and Hill, 2012: 270). QR use words as data, which are collected and analyzed in all sorts of ways (Braun

and Clarke, 2013: 3). Hence, the processes involved in QR are rich and challenging in many ways so as to, characteristically, capture the real world's complexities and contradictions and to make sense of patterns of meanings (Braun and Clarke, 2013: 10).

In the strictest sense, QR can be categorized into "Big Q" and "small q"; the former and the latter involving qualitative techniques within a qualitative paradigm and as parts of a mixed-method design, respectively (Braun and Clarke, 2013: 4). The latter, construed as methodological triangulation (Spangler, Liu and Hill, 2012: 271), is more applicable in this study since results of the Delphi phase complement the other two phases (please refer to Figure 7.1). Hence, while consensus is important in a Delphi process, multiple perspectives from the experts reduce individual biases for a better understanding of the data (Spangler, Liu and Hill, 2012: 270). Thus, if reliability is about the trustworthiness or dependability of the methods of data collection and analysis, a meaningful reliability measurement is applicable (Braun and Clarke, 2013: 279).

Reliability refers to the consistency of a measure of a concept and is premised on three important factors including stability, internal reliability, and inter-observer consistency (Bryman, 2012: 169). Thus, as discussed subsequently in this chapter, inter-rater agreement and inter-rater reliability are measured through the percentage agreement (limited to inter-rater agreement), kappa coefficient (notably, Cohen's Kappa, which is limited to two raters), kappa-like coefficients (notably, Fleiss' Kappa, which is limited to more than two raters) and their variants. Construction-related studies (Dennerlein, Ronk and Perry, 2009; Samardžić-Petrović, Bajat and Kovačević, 2013; Seixas *et al.*, 2001) and cross-cultural studies (Ekman *et al.*, 1987; Tottenham *et al*, 2009) support the fore going. The findings from round 1 of the survey in relation to the findings from round 1 of the Delphi, to gauge the agreement and statistical significance, are now discussed.

8.7.3.1 Assessing the level of agreement between round 1 of the survey and round 1 of the Delphi

Based on the questionnaires that were given to the experts during round 1 of the Delphi (please refer to Appendix 6), Table 8.11 presents the experts' results on the rankings for TQM principles and NCDs in comparison with the survey results. (Please refer to Appendices 33 & 34 and Appendices 35 & 36 for the computations of the experts' agreements for TQM principles and NCDs, respectively.)

Table 8.11 summarizes the Delphi ranks (herewith henceforth, DHr) and survey ranks (herewith henceforth, SVr) for comparison. The percentage agreement, being the total observed agreement (Bernard, 2011: 448), between DHr and SVr for selves among the Chinese and the Nigerians are also indicated in Table 8.11. The normal bold numbers (as different from the texts) represent the ranks at which DHr and SVr agree; followed by the percentage agreement in the italicized bold numbers.

From Okoli and Pawloski (2004: 26), a conclusion is reached in a Delphi on reaching one of the following three stopping criteria namely: (1) a satisfactory level of agreement (LOA) (0.7 or greater), (2) reaching the third iteration of a round, and (3) the mean rankings of two successive iterations is not significantly different. Adopting Fleiss' (1971) kappa in the statistics presented below in Formula 5 (from Randolph *et al.*, 2005), moderate and good LOA were reached on TQM principles and NCDs respectively following three iterations for round 1 as summarized in Table 8.12.

$$K = P_0 - P_e / 1 - P_e \tag{5}$$

Where K is the kappa statistic, P_0 is the proportion of overall observed agreement and P_e is the proportion expected by chance.

Table 8.11: Percentage agreement between Delphi and survey rankings for TQM principles and NCDs

Total quality management principles	Influences of TQM principles to quality among the Chinese					Influences of TQM principles to quality among the Nigerians				
	Delphi ranks (A1)	Survey ranks		Percentage agreement with A1		Delphi ranks (A2)	Survey ranks		Percentage agreement with A2	
		Chinese (for self) (B1)	Nigerians for Chinese (C1)	B1	C1		Nigerians (for self) (B2)	Chinese for Nigerians (C2)	B2	C2
Leadership	1	**1**	**1**			2	**2**	1		
Customer focus	2	3	**2**			1	**1**	3		
System approach	3	6	3			5	**5**	7		
Process approach	4	7	3	*25.00*	*87.50*	4	**4**	5	*62.50*	*0.00*
Involvement of people	5	2	**5**			3	**3**	2		
Factual approach	6	5	**6**			8	7	4		
Continual improvement	7	4	**7**			7	6	6		
Supplier relationship	8	**8**	**8**			6	8	8		
National cultural dimensions										
Power distance	1	**1**	**1**			2	**2**	**2**		
Individualism versus collectivism	2	**2**	**2**			1	**1**	**1**		
Long-term versus short-term orientation	3	4	**3**	*60.00*	*60.00*	3	**3**	4	*100.00*	*60.00*
Masculinity versus femininity	4	3	5			4	**4**	3		
Uncertainty avoidance	5	**5**	4			5	**5**	**5**		

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Table 8.12: Fleiss' kappa statistics for Delphi rankings

No.	Among Delphi experts	Fleiss' kappa (K)	Interpretation	Decision with statistical significance ($\alpha = 5\%$)
1	Delphi ranks of the perceived influences on TQM principles on QM among "C".	0.523	Moderate agreement	***Reject H_0** (z = 3.914, p < 0.05 using a one-tailed test)
2	Delphi ranks of the perceived influences on TQM principles on QM among "N".	0.567	Moderate agreement	***Reject H_0** (z = 4.243, p < 0.05 using a one-tailed test)
3	Delphi ranks of the perceived influences on NCDs on QM among "C".	0.603	Good agreement	***Reject H_0** (z = 2.697, p < 0.05 using a one-tailed test)
4	Delphi ranks of the perceived influences on NCDs on QM among "N".	0.603	Good agreement	***Reject H_0** (z = 2.697, p < 0.05 using a one-tailed test)

*Note: $H_0 = K$ is not different from zero; $H_a = K$ is different from zero

Similar to correlation coefficients, K can range from -1 to +1 (McHugh, 2012: 279); when K is zero, agreement is what might be expected by chance; when K is negative, the observed LOA is less than as expected by chance, and when K is positive, the observed LOA is greater than as expected by chance (Bernard, 2011: 449). The most commonly referenced Landis and Koch's (1977) guide for interpreting kappa statistics describes < 0.2 as poor strength of agreement, > 0.2 to 4 as fair, > 0.4 to 0.6 as moderate, > 0.6 to 0.8 as good, and > 0.8 to 1 as very good.

From Crewson (2005: 1392), Formula 6 was adopted to calculate the statistical significance for testing the four null hypotheses that the respective kappa coefficient in Table 8.12 is not different from zero, that is no better than chance.

$$z = K / SE_{k0} \tag{6}$$

Where SE_{k0} (standard error for a one-sample test) = $\sqrt{P_e / k (1 - P_e)}$, k is the number of categories and P_e is the proportion expected by chance as also in Formula 5.

Fleiss, Levin and Paik (2003: 605) supports Formula 6 to further expound that a one-sided test is more appropriate than a two-sided test for z in its instance, which validates a similar approach by Crewson's (2005: 1392). More critically, Sim and Wright (2005: 265) delineated that one-tailed tests should be reserved for occasions when testing a null hypothesis that kappa is zero because a negative value of kappa does not have a meaningful interpretation.

The main conclusion from Table 8.12 was that there was a good degree of agreement beyond chance among the experts on the perceived influences of TQM principles and NCDs on quality management among the Chinese and the Nigerians in support of the alternative hypotheses. The observed agreements were all statistically significant at $\alpha = 5\%$ to conclude that the results were beyond what could be expected by chance.

Cohen (1960) proposed an agreement coefficient (kappa) that is restricted to two raters, hence led to Fleiss (1971) advancing a kappa-like agreement coefficient to quantify the extent of agreement among three or more raters (Gwet, 2011b). The fore going has culminated into the notion that Fleiss' generalized kappa is not kappa, but a generalized version of Scott's (1955) Pi (Gwen, 2011b; Warrens, 2010: 271). Still, Fleiss' multi-rater kappa still takes the general form like all other versions of the kappa statistic (Randolph *et al*., 2005) as presented earlier in Formula 5. On the other hand, the various forms of kappa can be distinguished by how P_o and P_e are defined, with Fleiss defining P_o and P_e as presented in Formula 7 and Formula 8 respectively (Randolph *et al*., 2005), which were also adopted in the computations presented in Appendices 33 to 36.

$$P_0 = 1 \ / \ Nn \ (n - 1) \ \left(\sum_{i=1}^{N} \sum_{j=1}^{k} nij^2 - Nn \right)$$

(7)

$$P_e = \sum_{j=1}^{k} \left(\frac{1}{Nn} \sum_{i=1}^{N} nij \right)^2 \tag{8}$$

Where N in Formulas 7 and 8 is the number of cases, n is the number of raters, and k is the number of rating categories.

While the percent agreement (please refer to Table 8.11) offers the ease of computation and interpretation, it has the limitation of not providing inter-rater reliability (Bernard, 2011: 448; Bordens and Abbot, 2008: 223; McHugh, 2012: 281) since it does not take into account chance agreement. As a result, it cannot be determined how an obtained percent agreement compares to a level that could have been random (Watkins and Pacheco, 2000: 208). To adjust for the possibility of chance agreement, Cohen's kappa, presented earlier in Formula 5, is often adopted (Bernard, 2011: 448).

Conversely, Cohen's kappa for small sample sizes (less than 30) produces wide confidence interval resulting in "no agreement" (McHugh, 2012: 281) as well as a non-moderate level kappa coefficient (Crewson, 2005: 1392). In such an instance, McHugh's (2012: 281) position holds valid that the percentage of agreement is a direct measure, as against an estimate, and thus requires little need for confidence intervals. According to Bordens and Abbot (2008: 223), a percentage of agreement of approximately 70% is considered acceptable in most applications.

8.7.3.2 Justifications for the results of round 1 of the Delphi

Tables 8.13 and 8.14 present the summaries of important justifications provided by the Delphi experts' to support the rankings derived for their perceived influences of TQM principles and NCDs respectively among the Chinese and the Nigerians.

Table 8.13: Delphi ranks and justifications for the TQM principles among the Chinese and the Nigerians

Delphi ranks	Delphi ranks for TQM principles among the Chinese		Delphi ranks for TQM principles among the Nigerians	
	TQM principles	Critical justifications	TQM principles	Critical justifications
1	Leadership	Chinese firms have demonstrated leadership in Nigeria as could be seen in the ways that they handle, finance, and deliver capital projects. – DE1 The historically based government cooperation between Nigeria and China has nurtured the now booming Chinese businesses in Nigeria. – DE2	Customer focus	Nigerians are more relational than mechanical, which supports the order of customer focus, leadership and involvement of people. – DE1 Nigerian firms focus on relationships to the peril of their businesses; where as effective QM is not based on tactics for immediate economic gains. – DE2
2	Customer focus	Chinese firms are better able to focus on the Nigerian market's needs due to shared experience, being once at Nigeria's developmental phase. – DE2 The government is Nigeria's main client for capital projects, and the Chinese firms keep the government delighted through their performance. – DE3 & DE6	Leadership	Authentic leadership inside and outside of firms in Nigeria is a strong determinant towards achieving good quality, but not yet the case. – DE3 Effective provision of infrastructure to boost institutional and human capacities for developments determines leadership's success. – DE8
3	System approach	The working systems of most Chinese firms are certified to international standards such as the ISO 9001 that undergoes periodic audit. – DE8 Chinese firms rely on systems to regulate and evaluate unlike the Nigerian firms that can conduct surveys to understand the local needs. – DE12	Involvement of people	Experienced and well-respected Nigerian supervisor or manager is a better way to achieving good quality in Nigeria than a foreign manager. – DE5 Nigerians are close-knitted and work equals friendship in a balance that sustains businesses since SMEs dominate the supply chain. – DE6
4	Process approach	With government efforts, Chinese market has become the "World Factory" through a campaign for a process to improve the quality of its products. – DE7	Process approach	Process approach will serve to manage Nigeria's scarce resources effectively through proper planning, award, supervision and execution of projects. – DE8

Delphi ranks	Delphi ranks for TQM principles among the Chinese		Delphi ranks for TQM principles among the Nigerians	
	TQM principles	Critical justifications	TQM principles	Critical justifications
		SON's partnership with Chinese Certification and Inspection Group attests to Nigeria's confidence in the Chinese firm's process approaches. – DE4		In the Nigerian context, process approach balanced with factual approach and involvement of people will be more significant to good quality. – DE3
5	Involvement of people	Chinese firms export most of their workforce from China where labor abounds. Hence, involvement of people in Nigeria is not necessary. – DE1 The prevalent management style among the Chinese firms is to allow competent and trusted Nigerians to manage their Nigerian clients and colleagues. – DE5	System approach	Standards (system approach) sustained via monitoring and control (process approach) and collective responsibilities are crucial. – DE7 Involving competent and ethical Nigerian professionals is a better predictor of good quality performance and not mere allies. – DE11
6	Factual approach	Chinese firms, being SOEs, follow China's scientific outlook on development as a principle for economic and social developments. – DE7 Having studied the Nigerian market, Chinese firms are leveraging on information resources, management and technical skills in their project execution. – DE10	Supplier relationship	Nigeria's market is diverse so much so that people inside and outside of organizations have significant roles to play in achieving good quality. – DE4 In Nigeria's context (like any other), suppliers' inputs largely determine a firm's quality output so weighs in the middle. – DE12
7	Continual improvement	The Chinese government's strategy is to support competent local firms to venture overseas where they can undertake major infrastructure projects. – DE9 Chinese firms are not engaging in continuous improvements, but rather they are adhering to proven workable approaches in Nigeria's market. – DE3	Continual improvement	Nigerian firms' can create competitive edges through continuous improvement of their quality performance than mere benchmarking. – DE9 Continual improvement will place Nigerian firms in better positions to compete locally and overseas and QMS' certification is a critical first step. – DE4
8	Supplier relationship	Chinese firms' supplier relationship is strategic. They seek out competent local firms as long-term	Factual approach	This ensures objectively coming to terms with the prevailing realities and clients' expectations to

Delphi ranks	Delphi ranks for TQM principles among the Chinese		Delphi ranks for TQM principles among the Nigerians	
	TQM principles	Critical justifications	TQM principles	Critical justifications
		partners as against a one-time operation. – DE9 Chinese firms are self-sustaining being large-scale organizations with subsidiaries that can handle most of their complementary services. – DE11		accepting what is reasonably practicable. – DE10 Factual decisions are being affected by the high cost of obtaining critical business information especially for the survival-focused SMEs. – DE1 and DE2

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Table 8.14: Delphi ranks and justifications for the NCDs among the Chinese and the Nigerians

Delphi ranks	Delphi ranks for NCDs among the Chinese		Delphi ranks for NCDs among the Nigerians	
	NCDs	Critical justifications	NCDs	Critical justifications
1	Power distance	The structure of power and authority is important to maintaining order and this allows employees to focus on their tasks to meet quality at all levels. – DE5 Power is culturally and socially determined due to the strong family ties, which creates harmony within their firms for sustained business continuity. – DE11	Individualism versus collectivism	The large local firms and foreign firms that understand the working strategies can nurture the SMEs to help the Nigerian market in the long-term – DE7.
2	Individualism versus collectivism	Chinese firms are unified in their approach of competing and forming partnerships with local firms they can learn from or they perceive as threats. – DE1	Power distance	The large foreign and local firms dominating Nigeria's construction industry are both politically well-connected and financially capable. – DE3
3	Long-term versus short-term orientation	Long-term strategies underlie Chinese firms' operations in Nigeria as clear in their resilience in the face of Nigeria's systemic challenges. – DE2	Long-term versus short-term orientation	Immediate survival outweighs the long-term benefits of implementing quality standards among most of the Nigerian firms. – DE4
4	Masculinity versus femininity	The Chinese firms are interested in bridging Nigerian's developmental gap to create a self-sustaining construction industry for Nigeria. – DE8	Masculinity versus femininity	The Nigerian system has necessitated the local firms to create different niches for themselves so much so that competition is minimal. – DE10
5	Uncertainty avoidance	The Chinese firms are not averse to taking strategic business risks in Nigeria, which is responsible for their different commitments. – DE6 Chinese firms in Nigeria also have different motivations as clear in their different levels of commitments and sectoral involvements. – DE11	Uncertainty avoidance	Nigerian firms prefer tried-and-tested approaches in their operations since there are no incentives to being innovative. – DE11

8.7.4 Statistical testing for Hypothesis 3 (survey and Delphi)

Hypothesis 3 relates to Objectives 4 and 5 of this study. For Objective 4, statistical tests were performed on the data collected through round 2 of the survey and rounds 2 and 3 of the Delphi. For Objective 5, statistical tests were performed on the data collected through the six case studies. The seeming dichotomous approach is premised on the fact that data were sought through round 2 of the survey and deliberated through rounds 2 and 3 of the Delphi prior to conducting the six case studies. Hence, Objective 4 can be construed as a precursor to Objective 5 because the model to be developed in Objective 4 is to be tested in Objective 5.

Premised on the culture-specific and bi-directional relationships between TQM and national culture, round 2 of the survey involved pairing important TQM and NCD attributes so as to be able to test hypothesis 3 of this study. To be able to achieve the foregoing, the top-3 ranked TQM principles with their corresponding top-2 rated attributes were arranged in a matrix with the NCDs as ranked (from 1 to 5) with their corresponding top-2 rated attributes alike (please refer to Chapter 7). The aim was to be able to develop a specific model (Objective 4) to investigate Objective 5 of this study. The specific nature of Objective 5 differentiates it from Objective 1, which was fulfilled before commencing the fieldwork as expounded in Chapter 6.

8.7.4.1 Developing a model that integrates TQM and NCD attributes (stage 1)

The effectiveness of a recommendation is limited by many variables in a model due to increased variability and hampered interpretability (Gunter, Zhu and Murphy, 2011: 44). As such, George (2000: 1305, 1306) has rightly noted, when feasible, to restrict attention to the [estimated] "best subsets" of each variable for reasons attributable to scalability and

computational efficiency. It then follows that the variables and attributes excluded from the "estimated best" for the model are not necessarily unimportant (Anderson *et al*., 2001: 375) but rather substituted off-line according to Rountev and Chandra (2000). Variable substitution is premised on the idea that a set of variables in a program can be replaced by a single representative variable [or representative variables], thereby reducing the input size of the problem (Rountev and Chandra, 2000: 47). In addition, DiStefano, Zhu and Mîndrilă's (2009) use of factor scores to select variables for further investigation and Gunter, Zhu and Murphy's (2011) algorithm for variable selection support the approach taken in this study for the variables and attributes selected for round 2 of the survey.

Based on the questionnaires that were presented in the forms of Matrices 1 and 2 to the Chinese and the Nigerians during round 2 of the survey (please refer to Appendices 4 and 5, respectively), Appendix 37 presents the ratings by the Chinese and the Nigerians. Under Matrices 1 and 2, the respective six TQM attributes selected (from the top-3 ranked TQM principles and their top-2 ranked attributes based on ratings) are arranged under the column of TQM, while the ten NCD attributes selected (from the five NCDs and their top-2 ranked attributes based on ratings) are arranged under the column of NCD. Deriving from round 2 of the survey, the pairs that were rated as being more important to quality, corresponding to the higher numbers of respondents, are differentiated with the additional checked boxes in Appendix 37.

8.7.4.2 Developing a model that integrates TQM and NCD attributes (stage 2)

From Appendix 37, the results of the more important pairs to quality are summarized in Appendices 38 and 39 for the Chinese and the Nigerians respectively. Appendices 38 and 39 are herewith henceforth referred to as Matrices 1A and 2A. Using the Nigerians' Matrix 1 as the base since Nigeria is the overseas market for the Chinese in this study, the

cross-analysis of Matrices 1 and 2 with respect to respondents' rankings has generated the common eighteen-pair Matrix (herewith henceforth, Matrix 3) as presented in Table 8.15. Ladany, Thompson and Hill (2012) construed cross-analysis as involving the identification of common themes across cases. The authors (Ladany, Thompson and Hill, 2012: 117) further added that a cross-analysis is conducted after data have been placed in domains and core ideas have been constructed for each case; this being analogous to ratings of the pairs in this study.

Table 8.15: Pairing of TQM principles and NCDs by the Chinese and the Nigerians (Matrix 3)

Pairs	Paired important attributes for achieving good quality		*Importance ranking	
	TQM & attributes	**NCD** & attributes	Nigerians	Chinese
1		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**	1	1
2		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. **(PDI)**	1	1
3	**CUSTOMER FOCUS** Researching and understanding customer's needs and expectations.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. **(PDI)**	2	2
4		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. **(LTO)**	2	2
5		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. **(MAS)**	1	1
6		Tolerance for uncertainty and poise/confidence under such condition. **(UAI)**	2	0
7	**PEOPLE INVOLVE-MENT** People actively seeking opportunities to enhance	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**	2	2
8		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. **(PDI)**	2	2
9		Handle status with care such that relative position, which also determines rights and responsibilities are	1	1

Pairs	Paired important attributes for achieving good quality		*Importance ranking	
	TQM & attributes	**NCD** & attributes	Nigerians	Chinese
	their competence, knowledge and experience.	protected or maintained. **(PDI)**		
10		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. **(LTO)**	2	2
11		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. **(MAS)**	1	2
12		Tolerance for uncertainty and poise/confidence under such condition. **(UAI)**	2	0
13	**PEOPLE INVOLVE-MENT** People understanding the importance of their contribution and role in the organization.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**	1	1
14		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. **(PDI)**	2	2
15		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. **(PDI)**	1	1
16		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. **(LTO)**	1	1
17		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. **(MAS)**	2	2
18		Tolerance for uncertainty and poise/confidence under such condition. **(UAI)**	2	1

*Notes: 0 = Tied ranking on the importance of a pair as being important to achieving good quality; 1 = More agreed in their rankings as being less important to achieving good quality; 2 = More agreed in their rankings as being more important to achieving good quality.

Matrix 3 was developed by placing the Nigerians and the Chinese' important TQM and

NCD next to each other and selecting the common attributes as presented in Appendix 40.

The common attributes are as indicated in shaded cells under the Nigerians (being the

base) and which can be cross-analyzed for common attributes under the Chinese. It then

followed that since there was no common attribute in the top-2 ranked attributes of

leadership between the Chinese and the Nigerians, *Leadership* was not included in Matrix 3 as presented in Table 8.15. With the Nigerians being more orientated towards Western influences as discussed in Chapter 4, this could be attributable to the differences between the Chinese and the Western management styles (see Anedo, 2011; 2012). Chen and Partington (2004) have found the differences between the two management styles to be influencing leadership style and the relationship between subordinates and superiors differently. Understandably, the Chinese operating in Nigeria will focus more on leader-team dynamics which Zaccaro, Rittman and Marks (2001) investigated as functional leadership and concluded needs reciprocal influence to be successful. Bolden *et al*. (2003) have also argued that the changing nature of work and society demands a more collective and emergent view of leadership. Likewise, Toor and Ofori (2009) have found no relationship between ethical leadership and transactional leadership, the latter being based on the contingent reward dimension.

Customer focus has one common attribute (*Researching and understanding customer's needs and expectations*) and *People Involvement* has both of the top-2 rated as common attributes (*People actively seeking opportunities to enhance their competence, knowledge and experience*; and *People understanding the importance of their contribution and role in the organization*). The same rationale was applied to derive the six common NCD attributes, which are included in Matrix 3 using the results from the Nigerians as the base to arrange the attributes as mentioned earlier. For the NCDs, there was at least one common attribute from the five NCDs; with *Power Distance* having both of the top-2 rated as common attributes.

Gunter, Zhu and Murphy (2011: 44) have rightly noted in their study that when selecting variables for decision-making, investigators must select variables involved in the decision

rules as opposed to those that are merely to facilitate estimation. It then followed that out of the two ties for the Chinese at pairs 39 & 40 and 49 & 50 in Appendix 37, pairs 40 and 50 were selected for having a common NCD attribute with the Nigerians, being *tolerance for uncertainty and poise/confidence under such condition*. Hence, tied rankings are indicated in pairs 6 and 12 for the Chinese as shown in Table 8.15 for Matrix 3. Thus, under the importance rankings, 0 denotes a tied ranking (that is, equal number of respondents ranked as being less and more important) for the pair. 1 denotes that more respondents ranked the pair as being less important and 2 denotes that more respondents ranked the pair as being more important to achieving good quality.

To further substantiate, the Chinese and the Nigerians' rankings of the pairs in Matrix 3 are such to be able to assess their consensus importance rankings and, by extension, their differences on the perceived influences of each of the common pairs relative to each other. This is premised on Zou *et al.*'s (2009) study that has found a strong link between culture and consensus thinking to determining behavior. Likewise, Ajzen's (2011) study has found behavioral interventions to be based on the theory of planned behavior in the forms of behavioral, normative and control beliefs. Specific to Objective 4 of this study, Matrix 3 integrates the important TQM and NCD attributes of the Chinese and the Nigerians, thereby providing critical pairs to investigate the quality performance of the Chinese firms in Nigeria using the case studies.

Matrix 3 revealed that more of the Chinese and the Nigerians both agreed on the rankings of fourteen pairs, seven pairs as being more important to achieving good quality (3, 4, 7, 8, 10, 14 and 17) and seven pairs as being less important to achieving good quality (1, 2, 5, 9, 13, 15 and 16). The Chinese and the Nigerians disagreed on the importance rankings of four pairs to achieving good quality of which three pairs (6, 12 and 18) are on the same

NCD attribute *tolerance for uncertainty and poise/confidence under such condition*. More of the Nigerians agreed with the afore-mentioned three pairs while the Chinese were tied on two pairs (6 and 12) and ranked the third pair (that is, pair 18) as being less important. Conversely, more of the Chinese agreed on pair 11, which is the fourth pair that the Chinese and the Nigerians disagreed over in their importance rankings.

Conceptualizing, the four pairs on which the Chinese and the Nigerians disagreed in their importance ranks and the fourteen pairs on which they agreed in their importance ranks are henceforth adopted to serve as *analytic concepts*. Mercer (2002: 369) defined *analytic concepts* as pre-existing notions that are already part of the tool kit of a researcher and having the potential to offer a great deal of complementarities in the revelations and the conclusions to be drawn from them. This also hinges on the importance ranks (from round 2 of the survey) being premised on the mean ratings (from round 1 of the survey).

8.7.4.3 Assessing the level of agreement between the Chinese and the Nigerians on Matrix 3

The percentage agreement between the Chinese and the Nigerians on the eighteen common pairs, derived as explained in the preceding section, is 77.78% (please refer to Appendix 41). As the percentage agreement is limited in its ability to provide inter-rater reliability as discussed earlier, kappa statistics was computed to correct for chance observation. Since an agreement between two groups of raters (the Chinese and the Nigerians) is being measured in this instance, Cohen's bi-rater kappa was adopted, being the best method to assess the inter-rater reliability between two raters (Gwen, 2011b). Having been cited over 17,000 times as at date, Cohen's (1960) advanced kappa has truly transcended its origin in psychiatric diagnosis and found application in many fields

(Garfield, 1986). From Bordens and Abbot (2008: 223), Cohen's kappa has become a more popular method of assessing inter-rater reliability than percentage agreement.

The calculation of Cohen's kappa entails the tabulation of the frequencies of agreements and disagreements between the two raters in a "confusion matrix" according to Bordens and Abbot (2008: 223) as also shown in Appendix 41. In the matrix, the numbers on the diagonal, which are in the shaded cells in Appendix 38, represent agreements, while the numbers off the diagonal in the matrix represent disagreements. Before applying the general form of kappa statistic presented earlier in Formula 5, the proportion of overall observed agreement (P_0) and the proportion expected by chance (P_e) are calculated. For Cohen's kappa, P_o and P_e are computed with Formula 9 and Formula 10, adapted from Wongpakaran *et al*. (2013). As rightly noted by Randolph *et al*.'s (2005), the various forms of kappa can be distinguished by how P_o and P_e are defined, which sets apart Cohen's kappa from Fleiss' kappa (please refer to Formulas 7 & 8).

$$P_0 = A + D / N \tag{9}$$

$$P_e = (A1 / N) (B1 / N) + (A2 / N) (B2 / N) \tag{10}$$

Where *A* is the number of times both raters agree, D is the number of times both raters disagree, *N* is the total sample size or number of cases, and *A1 & A2* and *B1 & B2* are the corresponding column and row totals.

By performing the fore going operations as shown in Appendix 41, a kappa coefficient approximately 0.6 was achieved. Table 8.16 presents the summary of the kappa coefficient of the agreement between the Chinese and the Nigerians as well as the statistical significance for testing the null hypothesis that the kappa coefficient is not different from zero, adopting Formula 6. Since z was greater than the critical value of

1.96 at α = 5%, the null hypothesis was rejected and the study concluded that there was a good degree of agreement beyond chance among the Chinese and the Nigerians in support of the alternative hypothesis.

Table 8.16: Cohen's kappa statistics – Agreements among the Chinese and the Nigerians on Matrix 3

Among Delphi experts	Cohen's kappa (K)	Interpretation	Decision with statistical significance (α = 5%)
Agreements among the Chinese and the Nigerians on the common eighteen pairs.	0.559	Moderate agreement	***Reject H_0** (z = 2.410, p < 0.05 using a one-tailed test)

*Note: $H_0 = K$ is not different from zero; $H_a = K$ is different from zero

8.7.4.4 Relationship between Matrix 3 and Matrices 1A and 2A

Matrix 3 was generated from Matrix 1A (please refer to Appendix 38) and Matrix 2A (please refer to Appendix 39) through cross-analysis and selection of common TQM and NCD attributes as discussed earlier. As a result, Matrices 1A (containing the Chinese important 30 pairs) and 2A (the Nigerians important 30 pairs) include only the pairs that were ranked as being more important. On the other hand, Matrix 3 (common 18 pairs between the Chinese and the Nigerians) includes the pairs that were both ranked as being more important as well as being less important, premised on the cross-analysis.

Hence, Matrices 1A and 2A (Appendices 38 and 39, respectively) each contains ten out of the eighteen pairs in Matrix 3. The ten pairs include the seven pairs that both the Chinese and the Nigerians agreed in their rankings as being more important to quality (in bold texts) and the four pairs in which the Chinese and the Nigerians disagreed in their rankings (in italics). In Matrix 3, the seven pairs of agreements correspond to pairs 3, 4, 7, 8, 10, 14 and 17 while the four pairs of disagreements correspond to pairs 6, 11, 12 and

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18. Table 8.17 presents categorizations of the afore-mentioned pairs in Matrix 3 and their corresponding pairs in Matrices 1A and 2A for reference in the subsequent discussions. It should also be noted that the eighteen pairs have been conceptualized as serving as analytic concepts in this study to being part of the tool kit of the researcher.

Table 8.17: Pair categorization

Pair categories	Descriptions based on the results of the survey.	Pairs in Matrix 3	Corresponding pairs in:	
			Matrix 1A	Matrix 2A
A	The Chinese and the Nigerians agreed as being less important to achieving good quality.	1, 2, 5, 9, 13, 15 and 16.	Not included	Not included
B	The Chinese and the Nigerians agreed as being more important to achieving good quality.	3, 4, 7, 8, 10, 14, and 17	11, 13, 16, 17, 19, 21, and 24	2, 3, 21, 22, 23, 27, and 29
C	The Chinese and the Nigerians disagreed on their importance ranking (tied and/or higher rankings)	*6, *12, 11 and 18	*20, *25, and 18	5, 25, and 30
	Total	18	10	10

Note: *Tied ranking (for the Chinese)

From Table 8.17, when Matrices 1A and 2A are investigated separately as in round 2 of the Delphi (to be explained in the next section), ten common pairs each from Matrix 3 (corresponding to pair categories B & C under Matrices 1A and 2A) are affected. However, collectively, eleven common pairs (corresponding to pair categories B & C under Matrix 3) are affected since Matrix 3 was derived by cross-analyzing Matrices 1A and 2A. As analytic concepts, pair categories A, B and C were investigated further during the Delphi to distill information from the consensuses reached following the Delphi iterations; and the case studies to investigate in depth for the relevant information. As presented earlier in Figure 8.3, round 2 of the Delphi and comparison of its results with round 2 of the survey is now explained in the next section.

8.7.5 Round 2 of the Delphi: Assessments of Matrices 1A and 2A

Matrices 1A and 2A were presented to the experts in round 2 of the Delphi for their agreements and, by so doing, measures of the relevance of each pair in Matrices 1A and 2A. Presenting the experts with close-ended questionnaires (Matrices 1A and 2A), typical of a Delphi variant, was to focus on the important pairs, save time for the experts to sustain their interest, and, ultimately, avoid a drop out (Hsu and Sandford, 2007b). A similar approach was adopted in round 2 of the survey, which also offered advantage of providing the respondents with results from round 1 of the survey. The approach also resonates with Fumagalli, Laurie and Lynn's (2013) "tailored respondent reports", which they found effective in reducing attrition rate in longitudinal surveys.

The experts were asked to rate each pair in Matrices 1A and 2A on a scale of 1 (not important) to 5 (very important) so as to be able to assess their LOA above that expected by chance. To note, round 2 of the survey adopted a "forced binary scale", which is now being adopted for prompt and factual information to avoid a drop in the response rate and, as a result, an increased response bias (Dolnicar, Grun and Leisch, 2011). The forced binary scale was desirable since the top-ranked attributes based on the mean ratings of respondents' ratings, provided during round 1 of the survey, were being assessed during round 2 of the survey. Dolnicar, Grun and Leisch (2011) have rightly surmised that a forced binary scale should be adopted if it does not detract from the quality of the insights from the data. Conversely, a 5-point Likert scale was adopted for round 2 of the Delphi to achieve higher reliabilities as noted by Preston and Colman (2000: 3) and to facilitate a measure of the experts' estimations of each pair.

8.7.5.1 Comparison of findings of round 2 of the survey and round 2 of the Delphi

Consolidating on the rating scale adopted, the aim of round 2 of the Delphi was two-fold, being to seek the experts' agreements and, by extension, to assess the relevance of each pair included in Matrices 1A and 2A as mentioned in the preceding section. Following three iterations, Table 8.18 presents the results, which revealed poor LOA among the experts on Matrices 1A and 2A. (Please refer to Appendices 42 and 43 for Fleiss' kappa computations of the experts' agreements on Matrices 1A and 2A, respectively.)

Table 8.18: Fleiss' kappa statistics for Delphi ratings of Matrices 1A and 2A

No.	Among Delphi experts	Fleiss' kappa (K)	Interpretation	Decision with statistical significance ($\alpha = 5\%$)
1	Ratings of the important 30 pairs in Matrix 1A (for the Chinese).	0.064	Poor agreement	***Accept H_0** ($z = 0.287$, $p > 0.05$ using a one-tailed test)
2	Ratings of the important 30 pairs in Matrix 2A (for the Nigerians).	0.051	Poor agreement	***Accept H_0** ($z = 0.227$, $p > 0.05$ using a one-tailed test)

*Note: **H_0** = K is not different from zero; **H_a** = K is different from zero

As also summarized in Table 8.18, the statistical test that was performed on the two null hypotheses that the agreements on Matrices 1A and 2A were not different from zero revealed that the agreements were not significant at $\alpha = 5\%$. As such, both of the null hypotheses were accepted to conclude that both agreements among the experts on Matrices 1A and 2A were those that could be expected by chance.

On the second aim of round 2 of the Delphi, closer examinations of the ratings by the experts (DHr) as shown in Appendices 42 and 43 revealed another LOA on the ten common pairs in each of Matrices 1A and 2A (please refer to Table 8.17) as compared with the result of the survey (SVr). For this other LOA, the value of the midpoint in a 5-point Likert scale was utilized as expounded in the next paragraph.

From one school of thoughts, Garland's (1991) study concluded questioning the presence or absence of a midpoint on an importance scale when ascertaining opinion. From another school of thoughts, Gwinner's (2011) study concluded that in a 5-point scale, respondents might truly feel neutral about a given topic. Gwinner (2011) argued that a neutral midpoint both prevents a response bias and serves as a standard point of comparison for values below or above neutral. This study agrees with Gwinner's (2011) position being more realistic and supportive of the notion of a normative meta-consensus, defined by Dryzek and Niemeyer (2006: 642) as a reciprocal understanding and recognition of the legitimacy of the values held by other participants in an interaction.

With that, for Matrix 1A, out of the ten pairs that were not rated less than 3 by the experts (please refer to the shaded column in Appendix 42), eight pairs (11, 13, 16, 17, 18, 19, 21 and 24) are parts of the ten common pairs (categories B & C). This revealed 80% agreement between DHr and SVr. Further cross-analysis revealed that the remaining two pairs of the ten common pairs that were rated less than 3 include pairs 20 and 25. Interestingly, pairs 20 and 25 correspond to the two pairs (6 and 12) in which the Chinese were tied based on the result of the survey (pair category C). At the realization, it was upheld, tentatively, that pairs 6 and 12 are not important pairs among the Chinese.

For Matrix 2A, out of the eleven pairs that were not rated less than 3 as shown in Appendix 42, nine pairs (2, 3, 5, 22, 23, 25, 27, 29 and 30) were parts of the ten common pairs (categories B & C) to confirm 90% agreement between DHr and SVr. Pair 21 was the only pair rated less than 3 among the ten common pairs in Matrix 2A. Since pair 21 was ranked as being more important to quality by the Nigerians, the result from the Delphi did not detract from the relevance as compared to pairs 6 and 12 in Matrix 1A for the Chinese that suggested otherwise as explained in the above paragraph.

Following from the fore going findings of rounds 2 of the survey and the Delphi, while the kappa coefficients suggested poor agreements among the experts on Matrices 1A and 2A, high percentage agreements were, nonetheless, observed between DHr and SVr in favor of the ten common pairs in Matrices 1A and 2A. It has been noted that Cohen's kappa for small sample sizes (less than 30) produces wide confidence interval resulting in "no agreement" (McHugh, 2012: 281) as well as a non-moderate-level kappa coefficient (Crewson, 2005: 1392). As a result, the percentage agreement holds valid in this instance as a direct measure and not just an estimate (McHugh, 2012: 281) for the second aim of round 2 of the Delphi with respect to the ten common pairs in Matrices 1A and 2A.

8.7.5.2 Justifications for the results of round 2 of the Delphi

Ladany, Thompson and Hill (2012: 129) have rightly noted to keep a keen eye during a cross-analysis so as to identify category structures that are either general or not general. The high percentage agreement and low kappa coefficients paradox is not deviant to this study as exemplified by Feintein and Ciccetti's (1990a; 1990b) studies. Beyond the paradox, DHr and SVr still provide a good triangulation with respect to the relevance of the pairs. Williams and Hill (2012: 177) supported triangulation as an important strategy to obtain a more complete representation of qualitative data and recommended a further investigation if results are inconsistent to ascertain if discrepancies are method- or perspective-based.

Relating to methods, the kappa statistic has some limitations, which include (1) unsupported rater independence (McHugh, 2012), (2) marginal probability problem (Wongpakaran *et al*, 2013), and (3) the problem of prevalence (Viera and Garret, 2005). In spite of the more critical reviews of the kappa (Gwet, 2002; Powers, 2012), there has yet to be a validated alternative robust computational approach to inter-rater reliability.

Sim and Wright (2005: 263-4) noted that the prevalence-adjusted bias-adjusted kappa (PABAK) has been disregarded because it relates to a hypothetical situation, hence uninformative. The rejection of PABAK coefficient then negates similar alternatives such as the AC1 coefficient (Gwet, 2002; Wongpakaran *et al*. 2013). The search for an infallible kappa has seen to Powers (2012: 345) subscribing that kappa's usefulness is highly dependent on the assumptions made about the distributions of the data set.

Relating to perspective, Hill (2012: 10-1) has underscored that consensus, defined as an "unforced unanimous decision", is an integral part of *consensual qualitative research* (CQR) for reasons attributable to ethics, trustworthiness, and cultural sensitivity. In addition, Vivino, Thompson and Hill (2012: 55-6) have stressed that too much agreement in bids to avoid conflicts is problematic for CQR due to *groupthink* in favor of *cognitive diversity*. Likewise, Dryzek and Niemeyer (2006: 647) have suggested a normative meta-consensus for situations involving deep difference in identities and value commitments. Dijk van's (1990) comparative study between face-to-face interviews and Delphi studies has also concluded in favor of self-confidence, in particular for round 2 of the Delphi, being the round preceding the final or decision round 3. Specifically, Bénabou and Tirole's (2000) study addresses the impacts of self-confidence in social interactions.

8.7.6 Round 3 of the Delphi: Assessment of Matrix 3

In the final round of the Delphi, the experts were presented Matrix 3 containing the eighteen common pairs for their ratings on a scale of 1 (not important) to 5 (very important) to likewise assess their LOA above that expected by chance. In addition to assessing the LOA, a two-fold aim of the Delphi was to check for the stability of the fourteen pairs that more of both the Chinese and the Nigerians agreed with (corresponding to pair categories A & B in Table 8.17). On the other hand, it was to begin

to develop common themes to place the remaining four pairs that the Chinese and the Nigerians disagreed with (corresponding to pair category C) into categories relative to the results of round 2 of the Delphi as explained in the earlier section.

8.7.6.1 Assessing the level of agreement among the Delphi experts

Table 8.19 presents the summary of the results, which revealed a moderate level of agreement among the experts on their ratings of the eighteen pairs in Matrix 3. (Please refer to Appendix 44 for the Fleiss' kappa computations, following three iterations.) The statistical test performed on the null hypothesis that the agreement was not different from zero revealed that the agreement was significant at $\alpha = 5\%$ since the critical value of z was greater than 1.96. As a result, the null hypothesis was rejected to conclude that there was a good agreement beyond chance among the experts on Matrix 3 in support of the alternative hypothesis.

Table 8.19: Fleiss' kappa statistics for Delphi ratings for Matrix 3

Among Delphi experts	Fleiss' kappa (K)	Interpretation	Decision with statistical significance ($\alpha = 5\%$)
Ratings of the common 18 pairs in Matrix 3.	0.544	Moderate agreement	***Reject H_0** ($z = 2.327$, $p < 0.05$ using a one-tailed test)

*Note: $H_0 = K$ is not different from zero; $H_a = K$ is different from zero

Premised on the two-fold aim of round 3 of the Delphi, Appendix 44 revealed that out of the seven pairs that both the Chinese and the Nigerians agreed on as being less important to achieving good quality (pair category A), five pairs (1, 2, 5, 9 and 15), excluding pairs 13 and 16, were rated less than 3. On the other hand, none of the seven pairs that both the Chinese and the Nigerians agreed on as being more important to achieving good quality (pair category B) was rated less than 3. Hence, it can be argued that twelve pairs out of the fourteen pairs that both the Chinese and the Nigerians agreed on are stable as

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supported by a percent agreement of 85.71% between DHr and SVr. According to Bordens and Abbot (2008: 223), a percent agreement of around 70% is acceptable for most applications.

On the remaining four pairs that the Chinese and the Nigerians disagreed on (pair category C), Appendix 44 revealed that out of the three pairs that the Nigerians ranked as being more important than the Chinese, two pairs (6 and 18) were rated exactly 3 by all the experts while the third pair (that is, 12) was rated 4 by all the experts. The last pair (that is, 11), being the pair that the Chinese ranked as being more important than the Nigerians was rated 5 by all the experts. Overall, none of these four pairs were rated less than 3 in round 3 of the Delphi suggesting that the four pairs are worth being considered in the model (that is, Matrix 3) for further investigation during the case studies.

8.7.6.2 Comparison of findings: round 2 of the survey and round 3 of the Delphi

Comparing the results of round 2 and round 3 of the Delphi, pair category B was fully supported for the Chinese, with the seven pairs maintaining stability in their ratings. With respect to pair category C for the Chinese, pairs 6 and 12 were rated less than 3 in round 2 of the Delphi (under Matrix 1A) while pairs 6 and 18 were rated 3 (neutral midpoint) in round 3 of the Delphi (under Matrix 3). This suggested that pairs 6, 12 and 18 are unstable. By probing further, pairs 6, 12 and 18 have the common NCD attribute *tolerance for uncertainty and poise/confidence under such condition*. Having upheld pairs 6 and 12 as not important among the Chinese following round 2 of the Delphi, a conclusion was drawn that NCD attribute *tolerance for uncertainty and poise/confidence under such condition* is not strongly supported among the Chinese in Nigeria. Hence, the position that, usually, Chinese firms enter an African market in an ad hoc manner without a long-term commitment (Chen *et al*., 2007: 458) for further investigation.

On the other hand, NCD attribute *tolerance for uncertainty and poise/confidence under such condition* was strongly supported among the Nigerians as evident in round 2 of the survey and round 2 of the Delphi (under Matrix 2A) as well as round 3 of the Delphi (under Matrix 3). This could be attributable to the Nigerians' familiarity with the local market unlike the Chinese. It then makes strategic sense that among the Chinese, pair 11 involving NCD attribute *Allow competitive spirit...* and TQM attribute *People actively seeking opportunities…* were strongly supported unlike among the Nigerians. This could be attributable to perceived unhealthy nature of local competition among the Nigerians as evident in previous studies.

8.7.6.3 Justifications for the results of round 3 of the Delphi

The summaries of some important justifications provided by the experts with respect to the eighteen common pairs in Matrix 3 are presented in Table 8.20.

Table 8.20: Some Delphi justifications for Matrix 3

Pairs	Justifications
1	The Chinese have learnt to allow the Nigerians in their firms to manage other Nigerians. The Chinese retain absolute control through the reward systems, which include material and non-material gains (pay structure, encouragement and showing of care on private matters). – DE5
2	Most Chinese firms provide complementary services. Hence, they are so self-sustaining that they often do not necessarily need inter-dependence beyond their firms. The reverse is the case for the Nigerian firms and this could have influenced the outcome of the survey. – DE2
3	The vast number of imported Chinese labor working on projects in Nigeria presents challenges on language on the part of the Nigerians working with them. There are cultural enclaves on project sites straining relationships and affecting effective technology transfer. – DE1
	In overseas market, local competition attracts complaints. Realizing this, the focus is on the client, who determines value. Chinese firms strive to keep up good working relationships with their Nigerian clients to keep them delighted and committed to repeat business – DE6
4	Chinese firms have identified Nigeria as a consumer market and as a result streamlined their market-entry strategies to providing affordable services, albeit at low profit margins, to find a foothold knowing well this will pay off in the long run due to economies of scale. – DE2
	China is vast that the categorization of "Chinese firms" in overseas market is, often, misrepresented. Different "Chinese firms" have entered into Nigeria due to systemic inefficiencies. The delivery of quality services by the authentic firms needs persistence. – DE7

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Pairs	Justifications
5	Most Chinese firms undertaking capital projects in Nigeria have processes certified to international standards. With this, they are able to innovate and sustain their competitive advantages. Nigerian firms must strive towards the same international standards. – DE4 The construction market in Nigeria lags in evaluation mechanism to enforce quality compliance. This has festered uncoordinated and non-competitive practices among the local firms. The lag in the evaluation mechanism is due to Nigeria's political environment. – DE12
6	To the Chinese, African market is still relatively more open and underdeveloped. They see most Africa's construction industries including Nigeria as being strategic in positioning their services and strengthening their brands before launching into the more lucrative markets. – DE2 Chinese firms have shared-values with their Nigerian counterparts having developed from an erstwhile equally harsh environment. Differing past experience among the Chinese firms back in China affect their tolerance level in the face of the current challenges in Nigeria. – DE1
7	Chinese firms are now paying more attention to their service quality in Nigeria due to the stigma on "made in China" products. The attention being paid transcends immediate benefits to protecting the interests of their clients as well as the image of China. – DE7
8	Most Nigerian construction practitioners have no requisite knowledge about the culture and operations of their Chinese counterparts. Strategically, the Chinese engage the very competent Nigerians to complement the Chinese firms' deficient areas. – DE1 Prior to Chinese firms' "re-entry" into Nigeria, other foreign firms have dominated and widened the gap among social classes. Chinese firms' strategy also focuses on the "bottom of the pyramid" by providing affordable services for the medium- and low-end clients. – DE7
9	Most Chinese firms enjoy political connections in Nigeria in that they have influential Nigerians in their Board of Directors. These influential Nigerians allow their Chinese firms to enjoy some preferential treatments especially on established systems. – DE3 The number of qualified local professionals has increased recently. These qualified professionals have moved into the Chinese firms where there are opportunities for professional developments. Survival outweighs management decisions in most of the local firms – DE10
10	While the Nigerians have acknowledged this as very important, the reality is that there is a bias on the part of the government and major private clients towards the foreign firms. Clients often cited perceived incompetence of the local firms and professionals as a major concern. – DE9.
11	Unfair competition is the main reason that there is a continued award of major projects to Chinese firms in Nigeria. This has honed the Chinese firms' local managerial and technical skills at the perils of the local firms. – DE1 Despite the Public Procurement Act that is available online for interested and competent firms, the Nigerian market is complex to the extent that it has nurtured malpractices in bids by different firms' need for competitiveness. Some Chinese firms alike are not immune. – DE8
12	The intentions of Chinese firms in Nigeria are unknown. Regardless of the widely-held belief that they proliferate Nigeria with sub-standard products and services, the rate at which Nigeria's government award projects to the Chinese firms leave the local firms awestruck. – DE3 Chinese firms (mostly, SOEs) are well prepared before going overseas. They have created a niche in infrastructure making their services desirable. The 2008 financial crisis, which China survived, has seen to the decline of activities by other foreign competitor firms. – DE7
13	The perception of service quality of the Chinese firms in Nigeria (like most other countries they are operating in) is that they are sub-standard. It will take serious efforts to change this among

Pairs	Justifications
	the Nigerians. More so, QMS has yet to have a foothold in Nigeria. – DE2
14	There is a misconception that the award of projects to Chinese firms in Nigeria is not in line with the guidelines for government contracts. Interestingly, Chinese firms adhere more to the Public Procurement Act as against securing contracts solely through connections. – DE8
15	Chinese firms' operations in Nigeria are sensitive to the local business culture. Granted that different cultures have different characteristics, still Chinese professionals empathize with their Nigerian colleagues. Chinese firms use Nigerians to manage other Nigerians. – DE5 The code of professional conduct and ethics cannot be enforced on Chinese firms since their directors and staffs are non-members. Sadly, the qualified Nigerians in these Chinese firms are either conniving with them or are being ostracized from the mainstream operations. – DE9
16	Most Chinese entrepreneurs import their materials painstakingly going through the SON conformity assessment program through which they have garnered experience of the standard operating procedures in Nigeria and become familiar over time. – DE4
17	Internally, there are two quality control teams in most Chinese firms. One team ensures quality in the documentation of project information in the office. The other team ensures the implementation and documentation of quality on project sites. – DE6 Chinese firms have the requisite finance to invest in research and development for better and cost-effective technology. Strategically, this places them in vantage positions to edge out local firms to leverage on the evolving privatization policies of the major sections in Nigeria. – DE11
18	Feeling of security, which includes threats and safety of lives in the geographical environment that firms work will affect whether they settle comfortably to deliver quality services or just undertake businesses and leave. – DE12

8.8 Case studies

The final phase of this study involved a total of six case studies as presented in Figure 8.4 (extracted from Figure 7.1).

To select the more important pairs of the 60 pairs based on Matrix 1.	**CASE STUDIES OF 4 CHINESE FIRMS (2 good quality, being HC1 and 2 poor quality firms, being HC2)**
⬇⬇	Interviews with the four Chinese firms for in-depth insights into their companies, their projects investigated and observations made during the site visits with respect to their respective 30-pair matrices.
Four 30-pair matrices: 2 good quality matrices: $1B_1$, $1B_2$ 2 poor quality matrices: $1B_3$, $1B_4$	
⬇⬇	*Examine the four matrices for patterns (by Researcher).*
Compare between good and poor quality Chinese firms based on Matrix 1A and Matrix 3	
⬇⬇	**TEST CASE STUDIES OF 2 CHINESE FIRMS (neither HC1 nor HC2)**
To rate the 18 pairs in Matrix 3 on a scale 1 (strongly disagreed) to 10 (strongly agreed)	
⬇⬇	
Matrix 3A	*Finalize Matrix 3 and recommend Model (QMAM).* **Completion of Case studies (Phase 3)**

Figure 8.4: Case studies (Phase 3)

There were two HC1 firms (reputed for good quality services), two HC2 firms (reputed for poor quality services) and two TC1 firms (to validate the findings from HC1 and HC2) (please refer to Chapter 7). For anonymity and as assured to the firms during the fieldwork, the two HC1 firms are herewith henceforth denoted as Case Study 1 or CS1 and Case study 2 or CS2. Adopting the same approach, the two HC2 firms are herewith henceforth denoted as CS3 and CS4. By extension, the two TC1 firms (to be discussed later) are herewith henceforth denoted as TC1 and TC2. Premised on the fore going descriptions, the six case studies are now discussed in the subsequent sections.

8.8.1 Case Study 1 (CS1)

Background: CS1 is a large-scale state-owned-enterprise (SOE) reputed as one of the pioneers in international project contracting. CS1 also specializes in civil engineering design and consultancy, real estate development, as well as other complementary import and export businesses to strengthen its financial capability and enlarge its business base. Since 2006, the company has been constantly ranked among the top 100 in the *Engineering News-Record* (ENR) world's 225 top international contractors.

CS1 operates in more than 50 countries. Its operations in Nigeria date back more than 30 years with the last 10 years underscoring a series of strategic engagements focused on construction and engineering services. CS1 has been involved in the construction of different projects of varying complexities, which spans rail, road, bridge, stadium, hospital, training center, school and mass housing. As at 2010, CS1 had about 60 projects underway, over USD 10 million investments and numerous local work forces in Nigeria. The outline organization chart for CS1 is presented in Figure 8.5.

Figure 8.5: Case Study 1 organization chart

The following project (please refer to Figure 8.6) undertaken by CS1 was analyzed during the 3-day case study. Day 1 involved a study of the background of the project followed by questions.

Figure 8.6: Case Study 1 project site (on-going work)

Project background: The project is a Rail Mass Transit System procured through the engineering procurement and construction (EPC) contract. The financing arrangement adopted is the public private partnership (PPP). The contract was awarded on 7 May 2009 at an estimated value of USD 1.2billion and for a contract period of 36 months.

The award followed a shortlisting of competent local and foreign firms for the project. The project is a two-phase 27km long rail line design and construction in a major city in Nigeria. It consists of a total of 13 stations, 3 stations to be shared with another 13-station line, which was yet to be awarded as at the time of the fieldwork. Transaction advisers for the two lines had completed feasibility studies and conceptual design work for procuring and financing the rolling stock, as well as depot facilities in addition to operations and

maintenance of the lines under a 25-year concession contract. The project is fully sponsored by the state government with initial 70 per cent of the contract sum underway as at 2010. The project, which originally started in 2009 and due to be completed in 2011 was stalled due to funding issues and then revised for completion in 2015. The state's metropolitan area transport authority is supervising the project.

The line is the first of two of the seven lines that would be in place at full development. The line is being developed to run on a dedicated 15-metre right-of-way in the middle of an expressway, which is also a toll road. The stations are located above the tracks (island-style platforms), with an overhead pedestrian walkways crossing the expressways and separated on either side by concrete barriers between the rail lines and expressways. There are two major bridges: the larger to be shared with the future line serving to connect the mainland with the island in the city while the other crosses a river to link a major part of the city. Other infrastructure to be built includes signaling control and communications systems, supervisory control and data acquisition systems, depot and workshop facilities, and a training facility. The future line would develop infrastructure for the three shared stations with the ongoing one.

About 325 workers (300 Nigerians and 25 Chinese managers/supervisors) have been involved in the rail project. Discipline with respect to time management and meeting targets plays a significant role in the firm's operations. Consequently, the delay in the funding arrangement necessitated the speeding up on progress to working from 6am to 6pm daily as well as on weekends and public holidays. CS1 favors local recruitment so as to help create jobs for the local workforce while reducing its own overall labor costs. The first phase, which is a 7-km line with 6 stations, was on schedule for completion in 2012. In anticipation, the company had also completed and was ready to hand over a railway

technology institution, which would train local technicians and artisans up to the standard that they could take over and manage the completed project and similar other projects in other parts of the country.

From the Chinese construction project manager of the company, CS1's rankings for Matrices 1A and 3 are presented in Appendices 45 and 46, respectively. In comparison with the results of the surveys, CS1's rankings for Matrix 1A have a percent agreement of 60% with the result of the survey among the Chinese and a percent agreement of 44% with the results of the surveys on Matrix 3 both among the Chinese and the Nigerians.

In relation to cross-cultural construction quality challenges and resolutions, the Chinese construction project manager of CS1 explained that the initial phases of the project presented no difficult challenges since the procurement method adopted has taken that into consideration. In addition, the company has worked long in Nigeria to understand what works best especially during the initial phase of any project. According to the Chinese construction project manager of CS1:

> *"The project has been procured through EPC [engineering procurement and construction] so there has been better control over design and construction… The state's representative is supervising the project development to make sure it fits the Nigerian conditions both in the design and execution... The agency also helps to manage bigger problems we encounter with the people… Budget takes longer to approve in Nigeria and financing a major project that has already started and expected to benefit the people means that project sponsors need to play their parts as contractors also try their best... So, we reduce overhead by making the best use of all our resources … On average, we deploy 50 regular staffs and 200 casual local staffs on site and absorb more only if there are more jobs to be done…"*

With respect to recruiting and managing the Nigerians considering that the firm has their own Chinese workforce imported from China, the same Chinese construction project manager of CS1 added that:

> *"The local workers [that CS1 uses] have developed with the company through years of working experience and overseas training in China to be able to take on managerial roles... We also recruit local workers from competitors [those rendering same or complementary services]... These are the experienced Nigerians looking forward to learn new technology, expertise and experience... Our appointed Nigerian supervisors pay workers, while our Chinese managers are responsible for daily briefing of tasks before work starts. Sometimes, workers in the lowest positions [Chinese and Nigerians] are required to multi-task within their capacities because these are the roles they can also function well; otherwise there will be a lot of unsatisfactory works..."*

A Chinese supervisor from CS1, in responding to the question on management of service quality of this project under study, added that:

> *It is about managing the people. When we wanted to increase the working hours, we knew that our Chinese employees would be flexible because they know the nature of overseas projects. That is why we provide them accommodation close to the project site to improve on their response time when situations demand... We had to devise a different approach for the Nigerians. First, we made them understand the decision and [for them] to see it from the benefits to them as Nigerians. Then, we ensured that the tasks involved were very clear and achievable.... As our Nigerian workers are also familiar with us, soliciting for their cooperation did not pose much challenge. Of course not all of them obliged*

for different reasons, which we respected. As encouragements, we compensated those that cooperated with us as we did for the Chinese as well.

8.8.2 Case Study 2 (CS2)

CS2 developed from being a state-owned affiliate to now operating as a large SOE in critical business sectors, which include infrastructure and construction engineering, investments including real estate development and management, as well as highways and hydro electrical works where it is reputed as being very competitive locally and overseas. Through its revenue from overseas projects, CS2 made it to the top 100 firms in the ENR world's 225 top international contractors in 2009 and has since been constantly ranked among the top 100 firms since 2009 when it first made it to the top of the list.

CS2 only recently launched into international businesses, engaging in various EPC contracts; electrical and mechanical (E & M) equipment and plants; as well as production and sales of construction materials, expanding its operations into Nigeria in 2007 with hydropower projects. By 2010, CS2 had secured projects covering urban road renovation, port dredging and dormitories that by 2012, its operations have expanded into parking lots and railway rehabilitation projects. The outline organization chart for CS2 is presented in Figure 8.7.
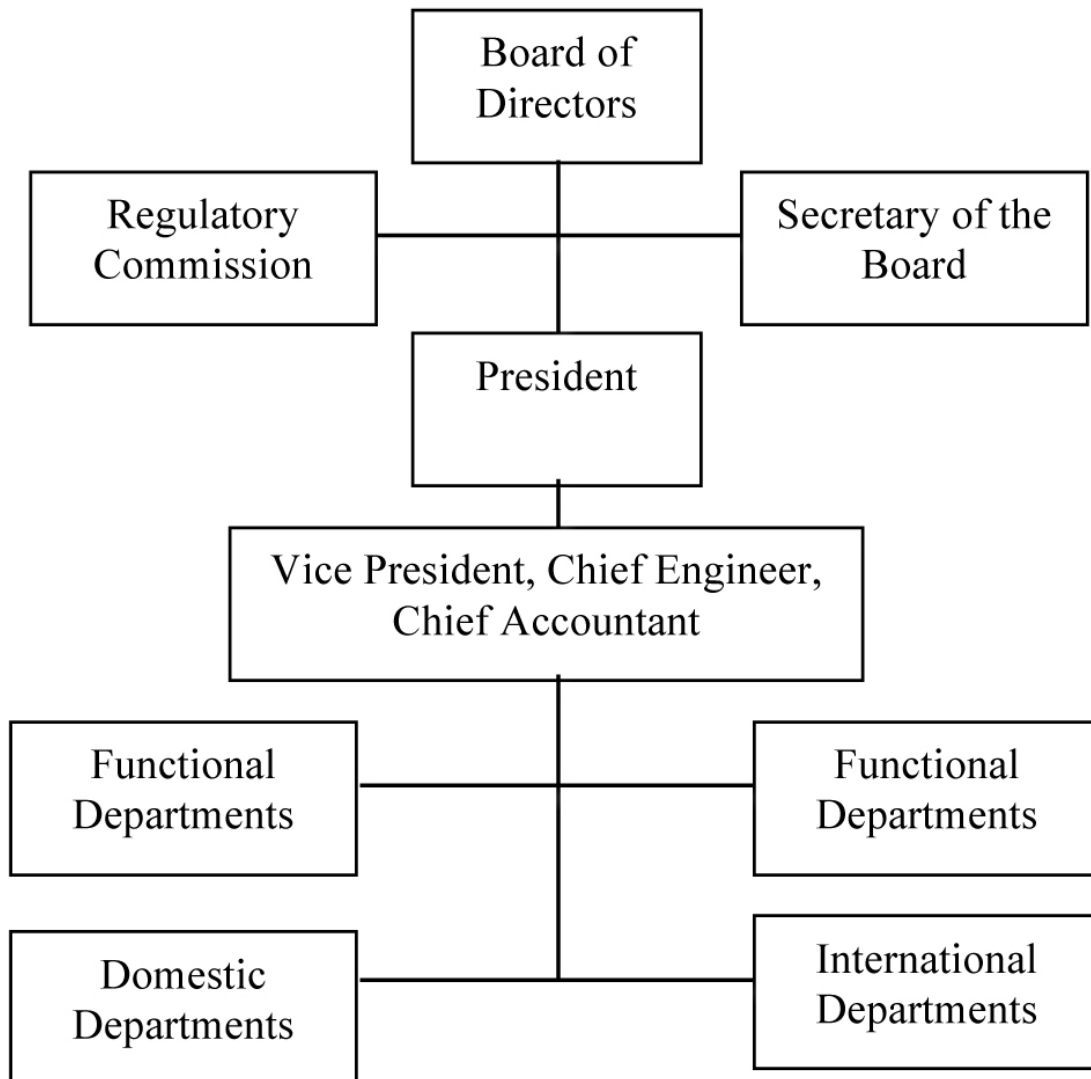
Figure 8.7: Case Study 2 organization chart

The following project (please refer to Figure 8.8) undertaken by CS2 was analyzed during the 3-day case study. Day 1 involved a study of the background of the project followed by questions.

Figure 8.8: Case Study 2 project site (work being undertaken at night)

Project analysis

Project type: Rehabilitation and upgrading of network of roads; Procurement type: Design and construction (Engineering procurement and construction or EPC); Value: USD 24.05 million; Contract award: 23 May 2009; and Contract period: 18 months

The project entailed the renovation of 16 urban roads of 10.5km and is one of the four of such road projects being undertaken by the company. The work scope also covered the measurement, design and construction of the municipal water supply and drainage system to the densely populated and slums district. As a result, a factory for manufacturing materials and parts for the project was built earlier in the project. A logistics company was also appointed by the state to work together with CS2. The state government sponsoring the project made a down-payment of 40 per cent upon the award of the

contract. The project officially commenced in early 2010 and progressed steadily. However, inclement weather, at its peak, necessitated a temporary stoppage, which by 2011 had degenerated into a delay. The state's Office of Infrastructure developed the project on behalf of the state.

Resettlement was a major challenge in the project execution. The renovation of 16 roads affected several retail outlets and residential units and to which the affected owners resisted. The strategies adopted include persuasion through the local chiefs and compensation schemes for the properties to be demolished. At an instance, the state government also played active parts in ordering and facilitating the demolition and relocation of an institutional building that was sitting on a drainage line. Construction work activities during the day also affected commercial activities along the road due to built-up traffic, coupled with the constraint that the road serves as the only route to a university teaching hospital located within the neighborhood. As a result, inconveniences during the temporary stoppages caused complaints about the abandonment of the projects. CS2, on order from the state government, resumed work and strategized to working at nights and during off-peak periods (please refer to Figure 8.8).

About 115 workers (80 Nigerians and 35 Chinese managers/supervisors) were involved in the road project. The company's determination to meeting deadlines while also minimizing inconveniences to residents and road users also influenced its decisions to work at night. The company's managers briefed their workers on the new work plan, incentivized them and were given full cooperation because they have all accepted since project inception to putting in their best to complete all necessary tasks for the work to be done. Security was not a major concern as the police were around the construction site. The focus remained to complete the work in time through meticulous construction and

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planning. Purchase of large amount of local equipment and materials, as well as an on-site factory to produce pipes for the drainage system and concrete mixing had the resultant effect of curtailing further disruptions. By September 2012, the road project was completed and operational.

From the Chinese construction project manager of the firm, CS2's rankings for Matrices 1A and 3 are presented in Appendices 47 and 48, respectively. CS2's rankings for Matrix 1A have a percent agreement of 43.33% with the result of the survey among the Chinese and a percent agreement of 44.44% and 61.11% with the results of the survey among the Chinese and the Nigerians, respectively, on Matrix 3.

In relation to cross-cultural construction quality challenges and resolutions, the Chinese construction project manager of CS2 also explained that:

> *"Better control can be achieved through design and construction (that is EPC). So it was a practical approach for us... This is similar to what we practice in other overseas projects... Working with a local logistics company and client's representative helped a lot to manage most of the cultural differences experienced by many of our other firms in Nigeria e.g. resettlement was borne directly by the client... During the construction, we built a factory on site to fabricate most of the materials through local workers who have better understanding of the local technology. Funding was not a major problem due to the initial down payment, except for weather, which was beyond any company's control [laughed]..."*

A Chinese senior engineer from CS2, in responding to the question on management of service quality of this project under study, added that:

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"We noticed with effective training and management, local workers are very hard working. The Chinese colleagues trained the local employees in different trades and raised their work standards to the required skills. This approach is called "teach-assist-guide" activities [mentoring] in the company. We practice localized management and improve quality of works through various carefully developed training programs including overseas study in China for local project managers. When the need arose to work overtime due to some complaints on "abandoned project", as presented earlier, all workers were duly briefed and incentivized as a motivation to complete the work without any compromise on quality."

8.8.3 Case Study 3 (CS3)

CS3 is an SOE with many subsidiaries and affiliate companies in China. Its core businesses include EPC contracting in transportation and municipal works (water supply, drainage); civil engineering projects, import and export of materials, plants and equipment, service export (labor); and real estate development and management. Since 2008, CS3 has constantly been ranked in ENR world's 225 top international contractors maintaining a comparatively stable position in the top 200.

CS3's international arm was established in 2005 with operations covering general contracting business, which covers housing construction, road and bridge as well as water treatment, irrigation and borehole drilling. With many overseas branches, the company entered into Nigeria in 2007 through a joint venture with another Chinese firm to undertake a 5-year hydropower project, jointly financed between China and Nigeria. Its operations now cover railway rehabilitation. An outline organizational chart for CS3 is presented in Figure 8.9.
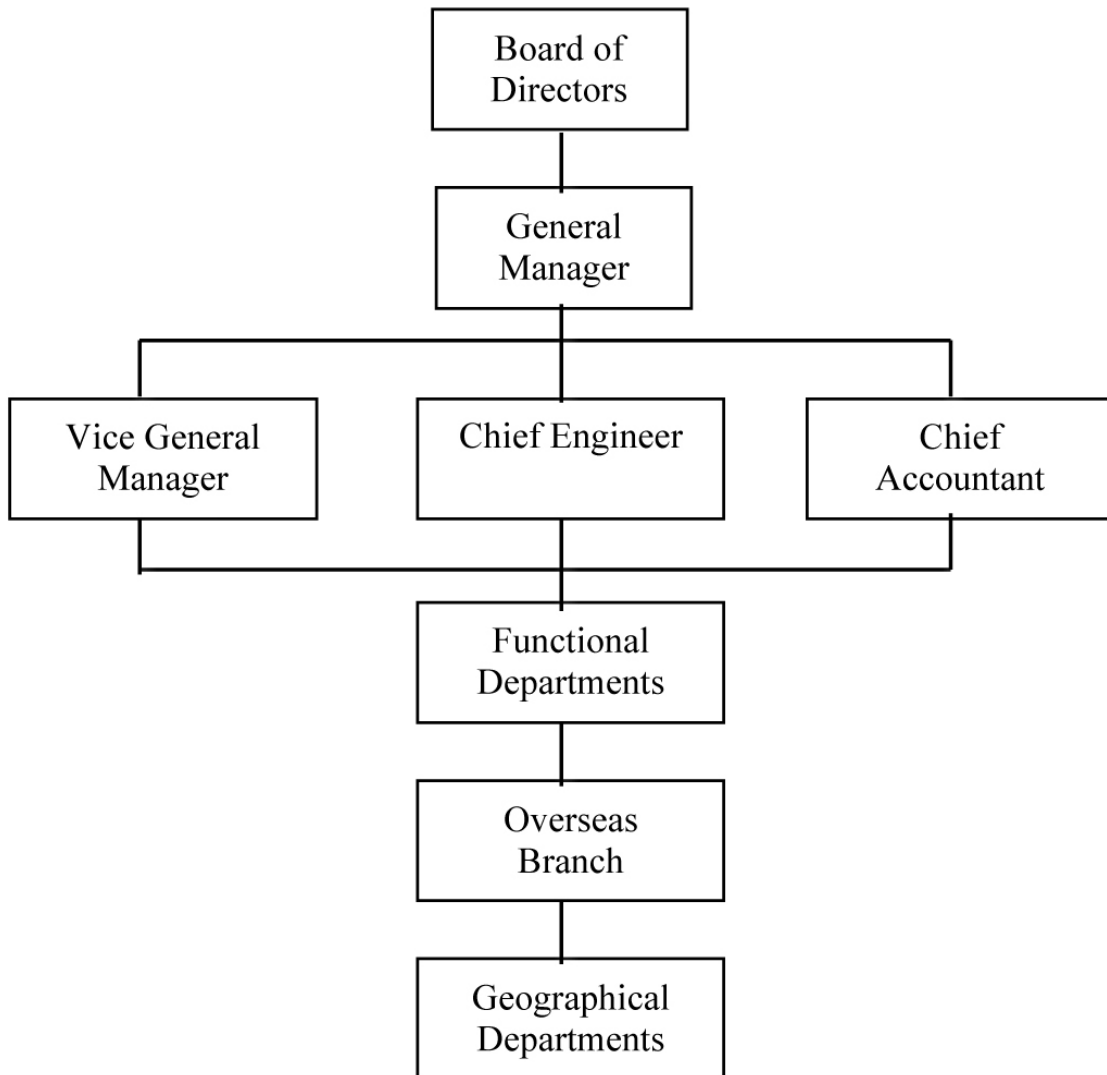
Figure 8.9: Case study 3 organization chart

The following project (please refer to Figure 8.10) undertaken by CS3 was analyzed during the 3-day case study. Day 1 involved a study of the background of the project followed by questions.

Figure 8.10: Case Study 3 project site (delayed project)

Project analysis

Project type: Road widening; Procurement type: Design and construction (Engineering procurement and construction (EPC); Value: USD 190 million (revised to about USD 328 million on 21 November 2012); Contract award: 1 February 2007; Contract period: 36 months (initial completion 10 November 2009). Revised date not yet ascertained as at time of this study.

The project involved the widening of a 96 km road being phase IV of a 5-phase total 560 km road project undertaken concurrently with other local contractors. In addition to the company's section of 96 km, its work scope also covered 14 km dual carriageway by-pass. The Federal Ministry of Finance, through its supervising ministry working with the state government was responsible for the development. As at March 2010, the contractor

was seriously behind schedule with just about 22 per cent of the total work completed. Funding was responsible for the delay, as the contractor had only received about 16 per cent of the initial contract sum. Stalled work on the project caused major inconvenience due to protracted road diversions, incomplete culverts and bridges that posed hazards, caused injuries and major damages to the road users. Similarly, none of the five phases undertaken by all the local contractors was 50 per cent completed as at the time the contract lapsed in 2010.

Casual local staffs of the company were worried due to the impact of the "season of redundancy" (inactivity, similar to inclement weather) on their work and pay schedule. This and with other accumulated concerns attributable to the casual nature of their jobs worsened into a protest in February 2010. With funding issues unresolved, coupled with loan servicing, the company downsized a significant number of its local workers on the project site and deployed some of them to its other active local projects. Negotiations at the top level, involving the Ministry of Works, culminated into mitigating actions, which saw to the approval of reviewed rates and additional works that revised the contract sum for all contractors. The project was on going as at the time of the fieldwork and has yet any revised date for completion ascertained (please refer to Figure 8.10).

Implementation issues that the contractor had faced include: protracted negotiation and procedures for the approval of reviewed rates, which aggravated the already mounting delay. Poor security along the route of the project site impacted the progress as the number of staff deployed shrunk drastically. A section of the road had a hazardous dual curve, which was being corrected at the time of the study and already accounted for in the revised contract value. The events significantly affected the company's operations in the country recalling, in that at about the same time, one of its projects, which was earlier

awarded in 30 March 2007 received a setback due to a change in the government. The revised contract went in favor of other JV of Chinese companies, which would undertake 70 per cent of the revised project scope while the erstwhile winning JV undertakes the remaining 30 per cent.

From the Chinese construction project manager of the firm, CS3's rankings for Matrices 1A and 3 are presented in Appendices 49 and 50, respectively. CS3's rankings for Matrix 1A have a percent agreement of 26.67% with the result of the survey among the Chinese and a percent agreement of 27.77% and 50.00% with the results of the survey among the Chinese and the Nigerians, respectively, on Matrix 3.

In relation to cross-cultural construction quality challenges and resolutions, the Chinese construction project manager of CS3 explained that:

> *"The project progressed smoothly until it got to the execution phase. We had several concurrent projects at about the same time and need a steady cash flow to get the projects running... Constrained finance from the project sponsors affected our operations and even though we tried to absorb as many of the workers, the company was really constrained... When we abandoned the road project, other local contractors had abandoned theirs and continuing on our own terms might have generated worse reactions despite we were trying to protect interests for both the client and the company... Honoring contracts is very important in all our overseas projects and we could not have done contrary here."*

A Nigerian project manager from CS3, in responding to the question on management of service quality of this project under study, added that:

"...Inconsistencies in project executions influence relieving some workers after completion of a project and recruit again once there is a new project. Nigerians misunderstand this strategy... Foreign companies in Nigeria adopt different strategies based on their company culture and competitive edge, so while delivering quality services as deemed fit for the client, the same service conditions should not be expected. Nigerian workers in the management positions have better understanding of this scenario and I think are in better positions to explain to their colleagues... "Work-balance is good but work and pleasure must be separated" and this attitude has yet to be valued by most of the local workers."

8.8.4 Case Study 4 (CS4)

CS4 is a pioneer in the integration of foreign trade with industry. It is a large global conglomerate involved with the contracting of international engineering projects. Some of its main businesses include research and development, design consultancy, light industry, power generation, building materials, telecommunications, railway, harbor and shipbuilding as well as metallurgy and mining. Since 2006, CS4 has been ranked competitively among the top 100 in ENR world's 225 top international contractors.

As a key subsidiary in a large SOE, CS4's operations in Africa dates back over 30 years developing foreign aid, which progressed into the export of plants and machines, and then contracting large engineering contracts. Its economic and technological cooperation grew rapidly and facilitated its entry into Nigeria in 2005 with contracting in a large state-of-the-art gas turbine power plant project. Similar projects followed and expanded the

company's operations into investments in power plants through a consortium. The outline

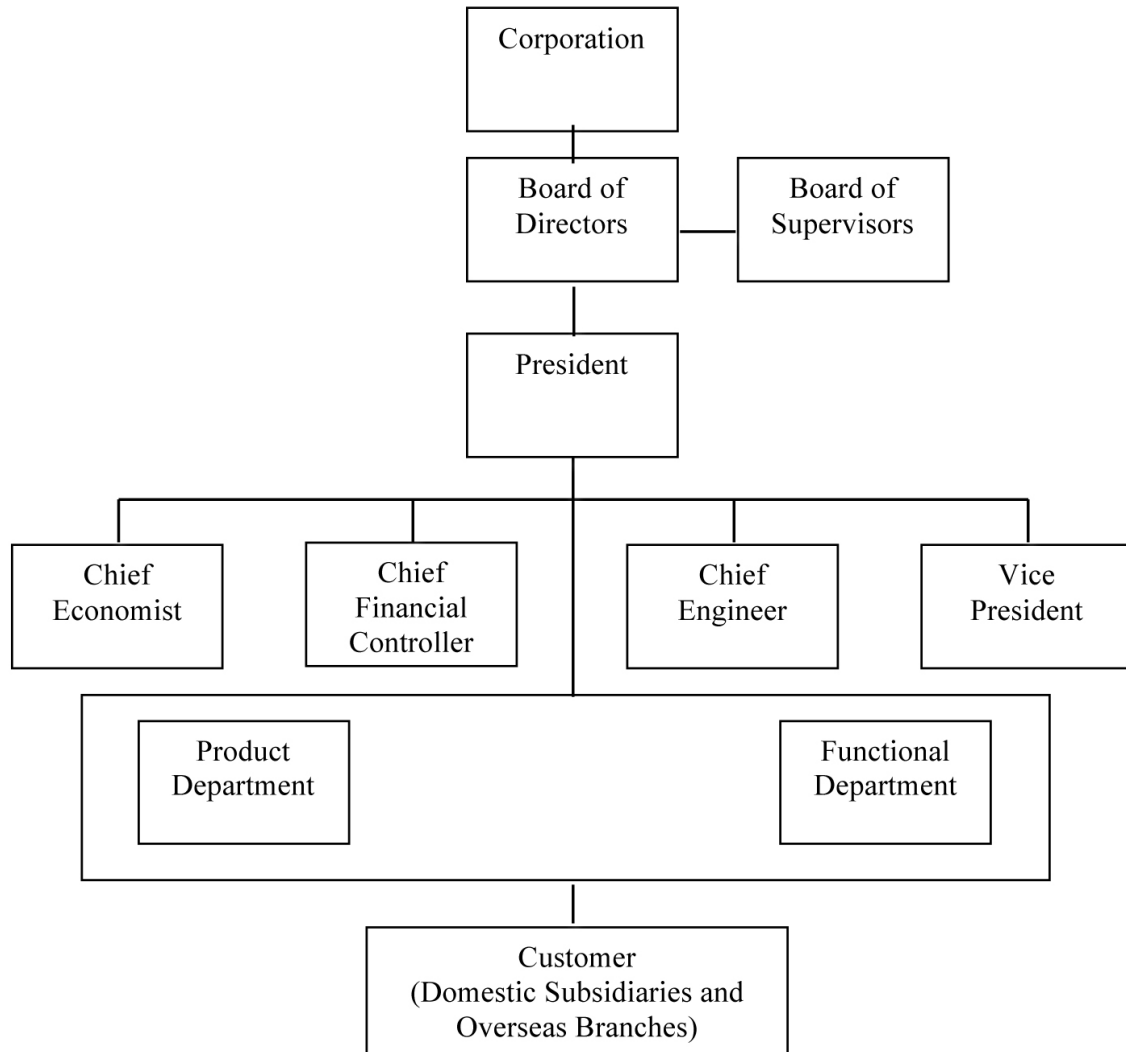organization chart for CS4 is presented in Figure 8.11.
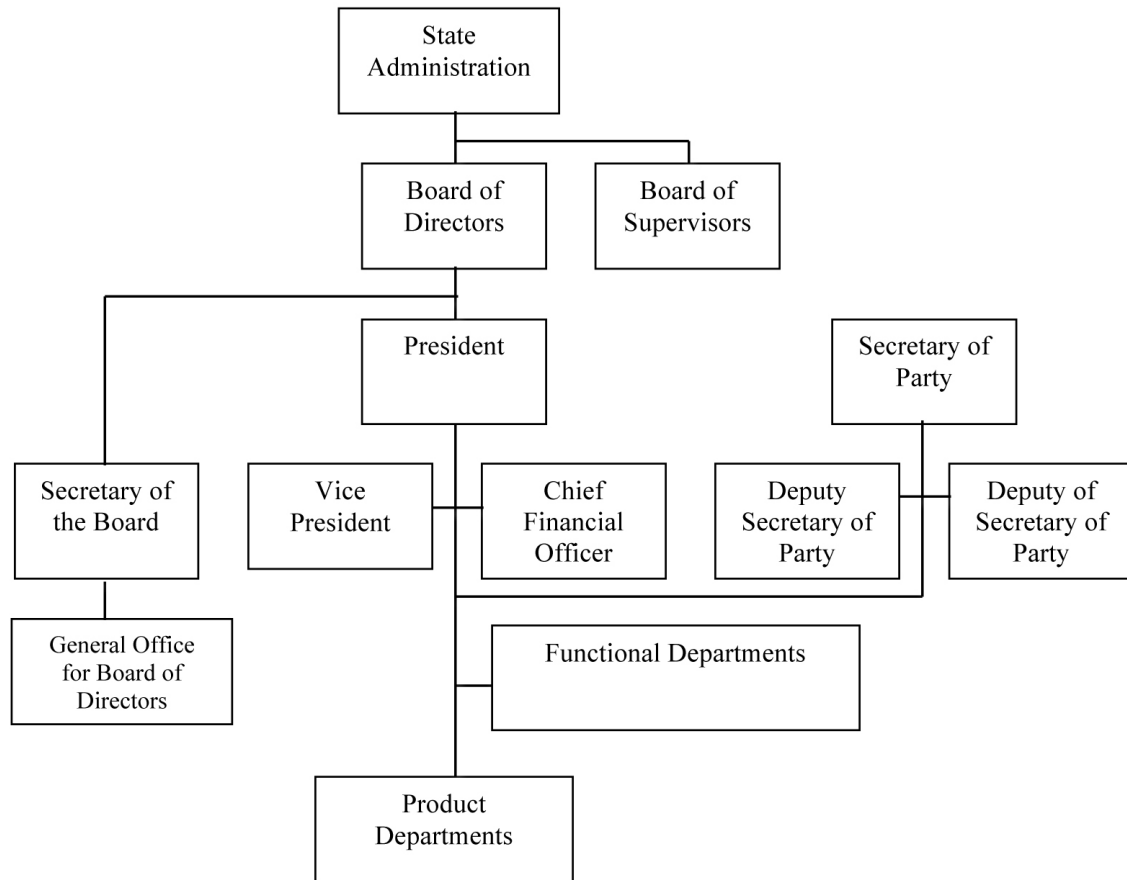
Figure 8.11: Case study 4 organization chart

The following project (please refer to Figure 8.12) undertaken by CS4 was analyzed

during the 3-day case study. Day 1 involved a study of the background of the project

followed by questions.

Figure 8.12: Case Study 4 project site (during an earlier stage of phase 2 of the project)

Project analysis

Project type: Gas Turbine Power Station; Procurement type: Design and construction or EPC; Contract Value: Phase 1 (USD 115 million as at contract signing); Phase 2 (USD 450 million, revised to USD 472 million in 2011); Contract award: March 2005; Contract period: 7 years (both phases)

The project involved the building of two gas stations, in two phases, in the remote part of the country. The gas stations feature modern equipment, advanced technology, automation and control systems. Phase 1, with a total capacity of 335 MW and eight gas turbine units, commenced in March 2005 and was commissioned on 17 April 2007. Phase 2, with a total of 500 MW and four frame 9E gas turbines as well as generators,

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accessories and a third-party technical assistance and training contracted to the Chinese company, commenced in 2010 for commissioning by the first quarter of 2013 (completed in February 2013). Robustness, availability and ease of maintenance were key criteria in opting for the Phase 2 gas turbines, which are primarily fuelled by natural gas. The Federal Ministry of Energy, through its regulatory arm, supervised the power plant development.

The company faced financial difficulties due to funding problems from the project sponsor. Temporary suspension of funding to the regulatory arm during a probe delayed the project and caused variations. Demurrage costs, specifically through increased costs for acquired right of way, delays in obtaining approvals and granting customs duty waivers significantly impacted the progress of work. The company also faced difficulties, which were technical and environmental in nature. These include works for the 330KV TRX line, communication facility to the Nigerian Communication Commission, 33KV TRX line for alternate cold start, inadequate source of water supply in the dry season (summer), and some community related issues. Most significantly, there were complaints from Nigerian technical professionals of being excluded from critical phases of the project unlike their Chinese counterparts on the same project. Overall, few Nigerian technicians and engineers were employed during the execution phase of the project.

Towards the completion of Phase 2, the company had a workforce of about 1,000 personnel of which 700 were local employees. Team effort increased so much so that the company anticipated that three out of the four turbines would be functioning and contributing about 350MW by end 2012, which would be sustained until the fourth turbine becomes operational and completing the contracted 500 MW contracted for. Nevertheless, the company did complete the work within an acceptable timeframe with

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well-trained local employees capable of taking over the system. With the four gas turbines functioning and operating optimally, the company would maintain the new facility for a warranty period of one year before handing it over to the Nigerian government.

From the Chinese construction project manager of the firm, CS4's rankings for Matrices 1A and 3 are presented in Appendices 51 and 52, respectively. CS4's rankings for Matrix 1A have a percent agreement of 56.67% with the result of the survey among the Chinese and a percent agreement of 55.56% and 61.11% with the results of the survey among the Chinese and the Nigerians, respectively, on Matrix 3.

In relation to cross-cultural construction quality challenges and resolutions, the Chinese construction project manager of CS4 explained that:

> *"Being a high-technology project, getting local approvals was a major challenge. Design and fabrication of most of the components was carried out outside Nigeria, so bringing in the components, installation, testing and commissioning were very difficult. ...With the funding issue, the entire supply chain was negatively affected and added to the delays we experienced... As one would expect, interfacing works with the local professionals and regulatory bodies posed serious challenges, which we had to resolve through dialogue and product testing ... the weather condition in Nigeria did not support some of the imported technology, however, being a machine design, the best that can be done is to calibrate and improvise where possible, which we did"*

The same Chinese construction project manager from CS4, in responding to the question on management of service quality of this project under study, added that:

"The project faced serious resistance from the community due to reasons we gathered were related to compensation schemes. Understandably, farmland and other valuable properties were affected during the construction and of which they were to be compensated through their local representatives… We had a timeline and were equally facing financial difficulty together with relationships with some of our overseas suppliers already nose diving… The high technology component of the project involved working with familiar work force, at least to get the shell in place. Training was part of the contract and local workers were involved during the critical stages… and local managers conducted the training selection"

8.8.5 Discussion of the results from the four case studies

Case studies were adopted in the last phase of this study as presented earlier in Figure 8.4 to allow for in-depth investigations of the firms' operations. Against the background of the operations of the four case study firms, their challenges and resolutions, the feedback from the four case studies on Matrices 1A (30 important pairs) and 3 (18 common pairs) are further assessed in this section. The assessments are in relation to the results from the survey and Delphi, characteristic of triangulation.

Tobin and Begley (2004: 388) submitted that triangulation offers the ability of being able to confirm results across paradigms to the extent that it adds completeness to a mixed-method research. Tobin and Begley (2004) clearly defined that when multiple types of triangulation are used appropriately, they approach the concept of crystallization, which could allow for infinite variety of angles of approach, analogous of the "triangulation state of mind".

8.8.5.1 Assessing agreement among the four case studies on Matrix 1A and Matrix 3

From Appendices 53 to 54, Tables 8.21 and 8.22 present the four case studies' results of the rankings of Matrix 1A (from Appendices 45, 47, 49 & 51) and Matrix 3 (from Appendices 46, 48, 50 & 52) expressed as a percent agreement with the Chinese survey results from the Chinese respondents in Nigeria.

Table 8.21: Comparison of percentage agreement of case studies 1 to 4 on Matrix 1A

Criteria (Number of observations = 30)	Good quality firms		Poor quality firms	
	Case study 1 (CS1)	Case study 2 (CS2)	Case study 3 (CS3)	Case study 4 (CS4)
Percent agreement	60.00	43.33	26.67	60.00

Table 8.22: Comparison of percentage agreements of case studies 1 to 4 on Matrix 3

Criteria (Number of observations = 18)	Good quality firms		Poor quality firms	
	Case study 1 (CS1)	Case study 2 (CS2)	Case study 3 (CS3)	Case study 4 (CS4)
Percentage agreements with the Nigerians	44.44	61.11	50.00	61.11
Percentage agreements with the Chinese	44.44	44.44	27.77	55.56
Percentage agreement with the Delphi	55.56	50.00	44.44	66.67

Ben-Gal (2010) noted that one of the first steps towards obtaining a coherent analysis is the detection of an outlaying observation and defined an outlier as an observation that appears to deviate markedly from other observations in which it occurs. An outlier lies apart from the majority of data points and, as a result, can be investigated from a psychometric point of view using either the scale score or the item response score (Liu and Zumbo, 2007: 622). As such, in a one-dimension measure, an outlier can be

identified through its spuriously small or suspiciously large values to being regarded as a low-outlier or high-outlier respectively (Cousineau and Chartier, 2010: 59).

8.8.5.2 Agreement among the four case studies on Matrix 1A and Matrix 3

On a first-level analysis, Table 8.21 revealed that CS3 was an outlier among the four case studies on the rankings for Matrix 1A as evident in its percent agreement. Similarly, Table 8.22 also revealed that CS3 was an outlier on the rankings for Matrix 3 as compared with the survey and the Delphi results. Having revealed outlaying observations as a low-outlier coupled with having been identified as a poor quality firm, this study concluded that CS3 is unable to identify important TQM and NCD pairs to achieve good quality performance. Liu and Zumbo's (2007) study has found that asymmetric outliers inflate the reliability of a statistical test by up to 0.55. Sharing similar view, Ben-Gal (2010) noted as well that outliers detected are deviant data that might otherwise lead to model mis-specification, biased parameter estimation and incorrect results.

On a second-level analysis, from Tables 8.21 and 8.22, CS4 compares favorably with CS1 and CS2 in all the categories with respect to Matrices 1A and 3 suggesting a more robust level of analysis. Specifically, CS4 has the same percentage agreement with CS1 on Matrix 1A generated from the survey results among the Chinese. On that notion, the now-first sub-hypothesis for hypothesis 3 was formulated that there is an agreement between a perceived good quality firm and a perceived poor quality firm on the important TQM and NCD attributes to achieve good quality. Correspondingly, with CS1 and CS2 being perceived as good quality firms, the now-second sub-hypothesis for hypothesis 3 was also formulated that there is an agreement between a perceived good quality firm and another perceived good quality firm on the important TQM and NCD attributes to achieve good quality.

8.8.5.3 Agreement among the four case studies on Matrix 3: Statistical testing for Hypothesis 3 (sub-hypotheses 3.1 and 3.2)

In both the first and second sub-hypotheses for hypothesis 3, CS1 was adopted as the reference by which the agreements with CS2 and CS4 were measured. Table 8.23 presents the results of the Cohen's kappa of agreements between CS1 and CS4 (good and poor quality firms) and CS1 and CS2 (two good quality firms). The statistical test results of the two null hypotheses that the agreements were both by chance are also presented in Table 8.23. (Please refer to Appendix 55 for information on the computation.)

Table 8.23: Agreements between CS1 & CS4 and CS1 & CS2 on Matrix 1A (sub-hypotheses 3.1 and 3.2)

Sub-hypotheses	*Null hypotheses (H_0)*	*Alternative hypotheses (H_a)*	Cohen's kappa (K)	Interpretation	Decision with statistical significance (α = 5%)
$H_{3.1}$	*There is significant agreement between a perceived poor quality firm and a perceived good quality firm on the important TQM and NCD attributes to achieve good quality.*	*There is no significant agreement between a perceived poor quality firm and a perceived good quality firm on the important TQM and NCD attributes to achieve good quality.*	- 0.239	No agreement	**Reject H_0** (z = -6.108, p < 0.05 using a one-tailed test)
$H_{3.2}$	*There is significant agreement between a perceived good quality firm and another perceived good quality firm on the important TQM and NCD attributes to achieve good quality.*	*There is no significant agreement between a perceived good quality firm and another perceived good quality firm on the important TQM and NCD attributes to achieve good quality.*	0.200	Fair agreement	**Accept H_0** (z = 1.095 p > 0.05 using a one-tailed test)

The test between CS1 and CS4 revealed no agreement while the test between CS1 and CS2 revealed a fair agreement. According to Crewson (2005: 1391) and Sim and Wright (2005: 259), although a rare occurrence, but when a kappa exhibits negative values, the observed agreement is less or worse than chance. More critically, McHugh (2012: 279) interprets a kappa value of below zero as indicating a serious problem, which represents a disagreement or, more generally, no agreement for values of 0 to -0.1. Hence, the null hypothesis for $H_{3.1}$ was rejected to conclude that there is no agreement between a perceived poor quality firm and a perceived good quality firm on the important TQM and NCD attributes to achieve good quality in favor of the alternative hypothesis. Conversely, the null hypothesis for $H_{3.2}$ was accepted to conclude that there is an agreement between a perceived good quality firm and another perceived good quality firm on the important TQM and NCD attributes to achieve good quality.

Since z was lesser than the critical value of 1.96 at $\alpha = 5\%$, it suggests that the observed agreement between CS1 and CS4 as well as CS1 and CS2 are not statistically significant at 5% and are, thus, what could be expected by chance. Nonetheless, since CS1 and CS2 that revealed a fair agreement are good quality firms, as compared to CS1 and CS4 that revealed no agreement and are discrete cases with CS4 being a poor quality firm, it is still possible to draw a robust conclusion based on the kappa values regardless of the p-values. The conclusion is supported by findings from new studies (Gelman, 2013; Greenland and Poole, 2013) that have surmised that, in real problems, prior information is always and is often strong enough to have an appreciable impact on inferences.

8.8.5.4 Level 1 analysis of the agreement among the four case studies Matrix 3: Statistical testing for Hypothesis 3 (sub-hypothesis 3)

On a third-level analysis, CS4 revealed outlaying observations as a high-outlier in all the categories in Table 8.22, which suggests an ability to identify some important common pairs with respect to Matrix 3. That being the case, the study proceeded to investigate why CS4 is being regarded as a poor quality firm, albeit (now, arguably) hypothetical taking a cue from CS3's outlaying observations followed by CS4's disagreement with CS1 and CS2. Consolidating on the result of the second-level analysis that has established that there is an agreement between CS1 and CS2 and no agreement between CS1 and CS4, a proposition was made that *there are (more) critical pairs in Matrix 3 that CS4 is unable to identify.*

The proposition, being a priori thinking to hypothesis 3, was not made a separate hypothesis but, rather, approached from the information-theoretic (I-T) paradigm (see Lukacs *et al*. 2007 and Stephens *et al*., 2005). I-T methods offer a direct measure of evidence for or against hypotheses (Lukacs *et al*., 2007: 460) and, as such, a viable measure to a more rigorous inference (Stephens *et al*., 2005: 11). As a consequence, the theory of the presence of critical pairs that CS4 is unable to identify provides evidence for or against CS4's disagreement with CS1 and CS2 on the one hand, and, by achieving that, make the inference from hypothesis 3 more informative.

From Table 8.17, the Chinese and the Nigerians agreed on the rankings of fourteen pairs and disagreed on the rankings of four pairs to achieving good quality. Out of fourteen pairs that they both agreed, seven pairs were ranked as being less important to achieving good quality (pair category A). The other seven pairs were ranked as being more important to achieving good quality (pair category B). The last four pairs in which the

Chinese and the Nigerians disagreed in their rankings have been denoted, collectively, as pair category C. The experts rated pair categories A and B favorably in concordance with the results of the survey. On the hand, pairs 6, 12 and 18 (from pair category C) involving NCD attribute *tolerance for uncertainty and poise/confidence under such condition* were unstable and, as a result, were flagged for further investigation during the case studies.

With pair categories A and B being stable premised on Ladany, Thompson and Hill's (2012: 127) concept of stability check during cross-analysis, the first step in the third-level analysis of the case studies was to check CS1, CS2 and CS4's ratings with respect to the four pairs in pair category C. To avoid chance observations, robustness of *the outlier result(s) of CS1 and/or CS2 agrees with at least two results from among the three other results (Chinese survey, Nigerians survey, and Delphi)* was added. Tobin and Begley (2004) have advanced that emerging criteria such as authenticity, trustworthiness and goodness need to be considered as a demonstration of robustness in a qualitative enquiry.

Table 8.24 presents the case studies' rankings of the afore-mentioned four pairs with respect to the survey and Delphi results (please refer to Appendix 54 for a summary of the four case studies' ratings on Matrix 3). Having identified CS3 as an outlier in the first-level analysis, CS3's rankings in Table 8.24 were not considered due to the impact of its outlier results as supported by other studies (Ben-Gal, 2010; Liu and Zumbo, 2007). In Table 8.24 (and subsequent similar tables), ratings (Delphi results) and rankings (survey and case studies) are being compared. Ratings (1 being not important to 5 being very important) were adopted during the Delphi so as to be able to gauge the experts' estimations of the importance of each pair. Rankings (1 being less important or 2 being more important) were adopted during the survey and case studies for prompt and factual information. "3" and "0" indicate a neutral rating and tied ranking respectively.

Table 8.24: Case studies' analyses

Pairs	Survey results (importance rankings)		Delphi results (ratings): 1 (not important) to 5 (very important)	Case study results (importance rankings)			
	Nigerians	Chinese		Good quality firms		Poor quality firms	
				Case study 1	Case study 2	Case study 3	Case study 4
6	2	0	3	1	2	Not considered (Being an outlier)	2
11	1	2	5	2	1		1
12	2	0	4	1	1		1
18	2	1	3	2	2		1

In congruence with the proposition advanced earlier, Table 8.24 revealed that CS4 had ranked pairs 11 and 18 differently as compared to CS1 and CS2. CS1 agreed with the results of the Chinese survey (higher ranking) and Delphi (higher rating) on pair 11 as being more important to quality. Both CS1 and CS2 agreed with the results from the Nigerians survey and Delphi on pair 18 as being more important to quality. Critically, CS4 rated pairs 11 and 18 differently from the rest of the Chinese as supported by the result of the Chinese survey.

A second step in the third-level analysis of the case studies involved extending the check of the outlier result of CS1 and/or CS2 to the remaining fourteen pairs in Matrix 3 as presented in Table 8.25, which presents additional four pairs. As presented in Table 8.25, the additional four pairs include pairs 10, 13, 14 and 15. Analyzing with respect to the result of the Chinese survey, both CS1 and CS2 agreed with pairs 10 and 13 as being more important. Discretely, CS1 agreed with pair 14 as being more important while CS2 agreed with pair 15 as being less important. Again, CS4 neither displayed any outlaying

observation as prescribed with respect to the four pairs nor agreed with the result of the Chinese survey on all the four pairs in Table 8.25.

Table 8.25: Case studies' analyses (Pairs 10, 13, 14 and 15)

Pairs	Survey results (importance rankings)		Delphi results (ratings): 1 (not important) to 5 (very important)	Case study results (importance rankings)			
	Nigerians	Chinese		Nigerians		Chinese	
				Case study 1	Case study 2	Case study 3	Case study 4
10	2	2	4	2	2	Not considered (Being an outlier)	1
13	1	1	3	1	1		2
14	2	2	5	2	1		1
15	1	1	2	1	2		2

From the third-level analysis of the case studies, this study found six critical pairs that CS4 could not identify in Matrix 3 as gauged by CS4's disagreements with the survey and Delphi results. CS1 and CS2's ability to identify the six critical pairs from the eighteen pairs in Matrix 3 could be expressed as a "33.33%-advantage" confirming the study's proposition that there are critical pairs in Matrix 3 that CS4 cannot identify. Drawing from Gelman (2013) and Greenland and Poole (2013), being a real-time conclusion, the information was taken as strong enough to have an appreciable impact as an inference.

8.8.5.5 Level 2 analysis of the agreement among the four case studies Matrix 3: Statistical testing for Hypothesis 3 (sub-hypothesis 3)

From the preceding section, the eighteen pairs in Matrix 3 have been able to provide complementary information of the Chinese firms' quality performance in Nigeria. In particular, by triangulating results from the case studies, six pairs have been identified in the model that differentiates the good and the poor quality Chinese firms.

From the perspective of the critical mass theory, it can be argued that the six pairs constitute a "critical mass threshold", which Collins, Manning and Carp (2010: 264) expounded as follows:

> *According to critical mass theory, the nature of group interaction depends at least to some extent upon the size of the groups involved. Prior to the reaching of a critical mass threshold, the theory suggests that a minority group would not likely exhibit behavior that is distinct from that of the larger majority. Such a group would instead tend to conform its behavior to the larger, majority norm*

In congruence with the critical mass threshold are Ajzen (2011) and Zou *et al.*'s (2009) studies discussed earlier in this chapter. Zou *et al.* (2009) have found strong link to exist between culture and consensus thinking that determines behavior. Ajzen (2011) has found, based on the theory of planned behavior (TPB), that behavioral, normative and control beliefs determine behavior. Hence, TPB advances Zou *et al.*'s (2009) normative beliefs (expectations of others and motivations to comply with these expectations) to control beliefs (acceptance about the presence of factors that may facilitate or impede performance of the behavior and the perceived power of these factors).

Premised on that realization and the conviction that adopting the eighteen pairs will introduce noise particularly with respect to hypothesis 3, the six pairs were adopted to test hypothesis 3. To some authors (Ladany, Thompson and Hill, 2012: 127), such an approach is analogous to withholding a case, while to some other authors (Anderson *et al.*, 2001: 375; George, 2000: 1305; Gunter, Zhu and Murphy, 2011: 44), it is the selection of the estimated best fit for computational efficiency, improved interpretation, and effective decision-making. This study favors the estimated best-fit paradigm due to

its ability to, in the least, minimize noise derivable from an irrelevant or weak data (Xiong *et al*., 2006).

The first step that was taken on the six pairs was to identify their common theme(s) by taking off all the other pairs in Matrix 3 to focus on the six pairs. The second step involved locating the pairs with respect to their respective TQM principles and NCDs. The last step involved the narrowing down into their respective attributes. Hence, the common themes of the six pairs were derived as presented in Table 8.26.

Table 8.26: The six critical pairs in Matrix 3

Pairs	Paired important attributes for achieving good quality			
	TQM	TQM attributes	NCD	NCD attributes
10	PEOPLE INVOLVE-MENT	People actively seeking opportunities to enhance their competence, knowledge and experience.	Long-term orientation (LTO)	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.
11			Masculinity (MAS)	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.
13		People understanding the importance of their contribution and role in the organization.	Individualism (IDV)	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.
14			Power Distance (PDI)	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.
15			Power Distance (PDI)	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.
18			Uncertainty Avoidance (UAI)	Tolerance for uncertainty and poise/confidence under such condition.

Table 8.26 revealed that all the six pairs share the common TQM principle *People Involvement* supporting this study's first sub-hypothesis for hypothesis 3. Following, Table 8.27 presents the decisions on the different characteristics of $H_{3.3}$. As revealed, the five null hypotheses were accepted in full support of the sub-hypothesis. This translates to a 100% agreement, which is a perfect agreement. Bordens and Abbot (2008: 223) have rightly-noted that a researcher's goal is to obtain a percent agreement as high as possible, approaching 100% but that 70% agreement is, nonetheless, acceptable.

As have been discussed earlier in this chapter, the limitation of the percent agreement is its non-accounting for chance agreement. As a result, Watkins and Pacheco (2000: 207) have underscored that percent agreement tends to inflate the degree of perceived agreement, especially for frequently occurring behaviors, making it potentially misleading. Thus, Cohen's kappa has been advanced to gauge inter-rater reliability due to its ability to adjust for the possibility of chance agreement (Bernard, 2011: 448).

Conversely, another potential limitation of Cohen's kappa is its non-computing capability when observed agreement is either 0% [no agreement] or 100% [perfect agreement] (Watkins and Pacheco, 2000: 210). This is so because in such instances the chance agreement will then be equal to 100% causing the denominator to be resolved to zero since, from Formula 5, kappa coefficient $(K) = P_0 - P_e / 1 - P_e$. It then follows that the significance of the kappa can neither be calculated in such instances since, from Formula 6, kappa significance $(z) = K / SE_{k0}$, by which the numerator will be zero.

Similarly, Cohen's kappa derived for $H_{3.3}$ is 0 as indicated in Table 8.27. This suggests a poor strength of agreement in spite of the 100% perfect agreement. This is a case of high percentage agreement and low kappa coefficient (see Feinstein and Ciccetti, 1990a; 1990b) discussed earlier under results of round 2 of the Delphi.

Table 8.27: Results of testing sub-hypotheses 3.3 (sub sub-hypotheses 3.3.1 to 3.3.5).

Sub-hypotheses	Null hypotheses (H_0)	Alternative hypotheses (H_a)	Decision	Percent agreement and Cohen's kappa (K)	Interpretation
$H_{3.3.1}$	Important attribute of **Power Distance** combined with important attribute of TQM principle leads to good quality performance.	Important attribute of Power Distance combined with important attribute of TQM principle does not lead to good quality performance.	**Accept H_0**		
$H_{3.3.2}$	Important attribute of **Individualism** combined with important attribute of TQM principle leads to good quality performance.	Important attribute of Individualism combined with important attribute of TQM principle does not lead to good quality performance.	**Accept H_0**		
$H_{3.3.3}$	Important attribute of **Masculinity** combined with important attribute of TQM principle leads to good quality performance.	Important attribute of Masculinity combined with important attribute of TQM principle does not lead to good quality performance.	**Accept H_0**	100% $*K = 0$	Perfect agreement; but poor strength of agreement (theoretically)
$H_{3.3.4}$	Important attribute of **Uncertainty Avoidance** combined with important attribute of TQM principle leads to good quality performance.	Important attribute of Uncertainty Avoidance combined with important attribute of TQM principle does not lead to good quality performance.	**Accept H_0**		
$H_{3.3.5}$	Important attribute of **Long-term orientation** combined with important attribute of TQM principle leads to good quality performance.	Important attribute of Long-term orientation combined with important attribute of TQM principle does not lead to good quality performance.	**Accept H_0**		

Note: $K = P_0 - P_e / 1 - P_e$. Where, P_0 and P_e are both 100% (that is, 1); thus resulting into $K = 0$.

Nonetheless, drawing from Watkins and Pacheco's (2000: 210) position on the kappa paradox as being more of a theoretical limitation, the observed agreement of 100% as supported by the five sub-hypotheses can be practically resolved to represent perfect agreement in complete support of hypothesis 3. Similarly, McHugh's (2012: 281) position holds valid, in support of hypothesis 3, that when Cohen's bi-rater kappa cannot be applied [or expresses a paradox as noted by Feintein and Ciccetti (1990a; 1990b)], the percent agreement becomes a direct measure and not just an estimate; thus requiring little need for confidence intervals. In addition, Vierra and Garret (2005: 362) have revealed that, for rare findings, very low values of kappa might not necessarily reflect poor agreement. Lastly, premised on the information-theoretic (I-T) method adopted in the third level analysis of the case studies, it is possible to conclude that the six pairs, all sharing the common TQM principle *People Involvement*, are characteristic advantage of CS1 and CS2 over CS4. Hence, hypothesis 3 is fully supported as exemplified by its sub-hypotheses 1 to 3 expounded thus far in the preceding four sections.

8.9 Validation

As purposed, different approaches were adopted in analyzing the case studies for more informative inferences. References were made to the results of the survey and the Delphi in characteristic manner of triangulation's inferences across paradigms (Tobin and Begley, 2004). As a result, the preceding section has shown that there is a no agreement between good quality and poor quality firms on important TQM and NCD attributes. The disagreement was investigated further to identify six pairs, which were, tested and found to completely support the study's third sub-hypothesis.

From the quality experts discussed earlier in Chapter 1, "customer defines quality" (Deming, 1986) suggesting that this embraces "conformance to requirements" (Crosby,

1979) and "fitness for purpose" (Juran, 1988). In consequence, quality [the ability to satisfy a customer] bears on the ability to satisfy stated [conformance to requirements] or implied needs [fitness for purpose] (ANSI/ASQC, 1987). Following, TQM embraces a set of systematic activities undertaken by the entire organization to achieve objectives at a level of quality that satisfies customers (Deming Prize Committee, 2011: 2).

From the foregoing, it is then possible to develop themes for the eighteen pairs in Matrix 3 for the Chinese firms in Nigeria based on the Nigerians' rankings of the pairs relative to the distinction that has been found between the good and the poor quality Chinese firms. To recall, Matrix 3 evolved as having seven pairs that both the Chinese and the Nigerians ranked as being less important to quality (pair category A), seven pairs that both the Chinese and the Nigerians ranked as being more important to quality (pair category B), and four pairs that the Chinese and the Nigerians disagreed over in their rankings (pair category C). Pair category C includes three pairs that only the Nigerians ranked as being more important to quality (herewith henceforth C1) and one pair that only the Chinese ranked as being more important to quality (herewith henceforth C2).

8.9.1 Quality management assessment model (QMAM) for the Chinese firms in Nigeria

With the Nigerians agreeing with pair categories B & C1, these pairs are construed as relating to the *stated needs* of the customer. In the review of the Kano's model of customer satisfaction, Sauerwein *et al*. (1996) defined the requirements that are usually explicitly demanded by the customer as being the *one-dimensional requirements*. This is so because a customer's satisfaction is [directly] proportional to the level of fulfillment of these requirements. Hence, fulfilling the *one-dimensional requirements* exceeds the mere meeting of the customer's expectations on the *must-be requirements*, which the customer, according to Sauerwein *et al*. (1996), views as the basic criteria of a firm or the decisive

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competitive factor to a firm being engaged in the first instance. As such, *one-dimensional requirements* can be likened to multimarket competitiveness of a Chinese firm. From van Witteloostuijn (1993: 83), an example of multimarket competition is firms competing against each other in different geographical markets [from their origin] for the same product, which increases with increasing globalization and economic integration.

From pair categories A & C2, the pairs that were ranked as being less important by the Nigerians but ranked as being more important by both of the firms under HC1 (good quality firms) are construed as relating to the *implied needs* of the customer. Sauerwein *et al*. (1996) defined *attractive requirements* as those that are neither explicitly expressed nor expected by the customer, but, nonetheless, have the greatest influence on how satisfied the customer would be. This implies that fulfilling the *attractive requirements* exceeds meeting the *must-be requirements* and the *one-dimensional requirements* so much so that Sauerwein *et al*. (1996) submitted that it leads to more than proportional satisfaction. The *attractive requirements* can then be likened to the strategic abilities of a Chinese firm. Holistically, Lessard (2003) has viewed strategic thinking as involving:

> *The identification of a set of issues, the selection and/or development of an appropriate conceptual framework for assessing these issues and identifying potential courses of action, measuring key variables, and selecting courses of action.*

Further on pair categories A & C2, the pairs that were ranked as being less important by the Nigerians but ranked as being more important by just one of the two firms under HC1 and one or both of the firms under HC2 (poor quality firms) are construed as relating to the *potential needs* of the customer. The *potential needs*, being advanced in this study, is premised on the notion that the pairs are not necessarily unimportant, but rather has to do

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with a Chinese firm's approach to the pairs. It is analogous to how a Chinese firm deals with ambiguity in Nigeria recalling, in particular, that NCD attribute *tolerance for uncertainty and poise/confidence under such condition* is not supported among the Chinese firms as realized following round 3 of the Delphi.

Analytically, the *potential needs* relate to a Chinese firm's risk appetite, which connotes a broader concept than risk aversion or risk avoidance. Gai and Vause (2006: 168) viewed risk aversion as a component of risk appetite and defined risk appetite as the willingness of an investor to bear risk depending on the degree to which an investor dislikes such uncertainty (that is, risk aversion) and the level of that uncertainty (that is, risk premium). This agrees with Hofstede's (2011) delineation that uncertainty avoidance is not the same as risk avoidance, but rather a measure of a tolerance for ambiguity. It is another level of strategy, which can be argued, from Lucier and Dyer (2003: 4), as involving taking a long view to select or create a niche and to build a brand so as to sustain a firm's profitability despite the [current] demands of customers, competitors, and suppliers. van Witteloostuijn (1993: 83) rightly noted that multimarket competition could be both actual and potential and introduces new elements into strategy choice.

From the foregoing arguments, Table 8.28 presents the quality management model developed in this study for the Chinese firms in Nigeria. Each of the six critical pairs (from Table 8.26) is indicated with "Critical pair" in parenthesis after the justifications provided for these pairs in Table 8.28. Based on the importance of the critical pairs as this study has established, pair 11, which was ranked as being more important by just one of the two firms under HC1, has been categorized under the *implied needs* in contrast with pair 2 that has been categorized under the *potential needs*.

Table 8.28: Developing quality management assessment model for Chinese firms in Nigeria

Pairs	TQM principles & attributes	NCDs & attributes	Nigerians	Good quality firms (HC1)		Poor quality firms (HC2)		Themes & justifications
				Case study 1 (CS1)	Case study 2 (CS2)	Case study 3 (CS3)	Case study 4 (CS4)	
1	**CUSTOMER FOCUS** Researching and understanding customer's needs and expectations.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**	1	2	2	1	2	Implied needs as supported by CS1 and CS2.
2		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. **(PDI)**	1	2	1	1	1	Potential needs of a firm as supported by CS1.
3		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. **(PDI)**	2	1	2	2	2	Stated needs as supported by the Nigerians.
4		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. **(LTO)**	2	2	1	1	2	Stated needs as supported by the Nigerians.
5		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. **(MAS)**	1	2	2	2	1	Implied needs as supported by CS1 and CS2.
6		Tolerance for uncertainty and poise/confidence under such condition. **(UAI)**	2	1	2	2	2	Stated needs as supported by the Nigerians.
7	**PEOPLE INVOLVE-MENT**	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**	2	1	2	1	2	Stated needs as supported by the Nigerians.

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Pairs	TQM principles & attributes	NCDs & attributes	Nigerians	Good quality firms (HC1)		Poor quality firms (HC2)		Themes & justifications
		Important TQM and NCD attributes		Rankings				
				Case study 1 (CS1)	Case study 2 (CS2)	Case study 3 (CS3)	Case study 4 (CS4)	
8	People actively seeking opportunities to enhance their competence, knowledge and experience.	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. **(PDI)**	2	2	2	1	2	Stated needs as supported by the Nigerians.
9		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. **(PDI)**	1	1	1	2	1	Potential needs of a firm as supported by CS3.
10		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. **(LTO)**	2	2	2	1	1	Stated needs as supported by the Nigerians. (Critical pair)
11		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. **(MAS)**	1	2	1	1	1	Implied needs as supported by CS2. (Critical pair)
12		Tolerance for uncertainty and poise/confidence under such condition. **(UAI)**	2	1	1	2	1	Stated needs as supported by the Nigerians
13	**PEOPLE INVOLVE-MENT**	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**	1	1	1	1	2	Potential needs of a firm as supported by CS4. (Critical pair)
14	People understanding the importance of their	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. **(PDI)**	2	2	1	1	1	Stated needs as supported by the Nigerians. (Critical pair)
15	contribution and	Handle status with care such that relative position, which also determines rights and responsibilities are	1	1	2	2	2	Potential needs of a firm as supported by CS3 and

Pairs	Important TQM and NCD attributes		Rankings					Themes & justifications
	TQM principles & attributes	**NCDs** & attributes	Nigerians	Good quality firms (HC1)		Poor quality firms (HC2)		
				Case study 1 (CS1)	Case study 2 (CS2)	Case study 3 (CS3)	Case study 4 (CS4)	
	role in the organization.	protected or maintained. **(PDI)**						CS4 (Critical pair)
16		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. **(LTO)**	1	2	1	1	1	Implied needs as supported by CS1 (strategic abilities)
17		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. **(MAS)**	2	1	1	1	2	Stated needs as supported by the Nigerians.
18		Tolerance for uncertainty and poise/confidence under such condition. **(UAI)**	2	2	2	2	1	Stated needs as supported by the Nigerians. (Critical pair)

8.9.2 Applying the QMAM

By denoting the *one-dimensional requirements*, *must-be requirements*, *attractive requirements*, and *potential needs* as *O*, *M*, *A*, and *P*, it is possible to calculate the customer satisfaction (CS) quotient for the Chinese firms in Nigeria. From Sauerwein *et al*. (1996), the CS-quotient is indicative of how strongly a product feature influences satisfaction (that is, fulfillment of requirements) or dissatisfaction (that is, non-fulfillment of requirements). Adapting from Sauerwein *et al*. (1996), the extent of satisfaction and extent of dissatisfaction are calculated by formulas 11 and 12 respectively.

Extent of satisfaction (*EOS*) = A+O / A+O+M+P   (11)

Extent of dissatisfaction (*EOD*) = O+M / (A+O+M+P) (*-1*)   (12)

In both *EOS* and *EOD*, the normalizing factor is *A+O+M+P* with a minus sign included for *EOD* as an emphasis of its negative influence on customer satisfaction if the product or service quality is not met. *EOS* ranges from 0 to +1 while *EOD* ranges from 0 to -1. For *EOS*, the closer a value is to +1, the more the *EOS*; for *EOD*, the closer a value is to -1, the lesser the *EOD*; and a value of 0 indicates that there is very little influence for both *EOS* and *EOD*.

More applicable to this study, the CS-quotient is herewith henceforth referred to as the service quality performance (SP) quotient. The SP-quotient (SP_Q) for the four Chinese case studies with respect to Matrix 3 is presented in Table 8.29, which reflects their performance as investigated. Similarly, by adopting Matrix 3, SP-quotient can be computed for other Chinese firms in Nigeria. From Table 8.28 presented earlier, there are a total of ten pairs under *explicit needs* (that is, *O*), four pairs under *implied needs* (that is, *A*) and another four pairs under *potential needs* (that is, *P*). The *must-be requirements*

(that is, *M*) was assigned a value of zero in all the case studies since, as explained earlier, these are the basic criteria for any firm to be engaged in the first instance and, often, not explicitly demanded [again] by the customer (Sauerwein *et al*., 1996).

Table 8.29: Service quality performance quotient for the case studies

Firms	Good quality firm		Poor quality firm	
	Case study 1 (CS1)	Case study 2 (CS2)	Case study 3 (CS3)	Case study 4 (CS4)
O	6	7	4	6
M	0	0	0	0
A	4	2	1	1
P	1	1	2	2
Total	11	10	7	9
EOS (formula 11)	0.909	0.818	0.455	0.636
EOD (formula 12)	-0.545	-0.636	-0.363	-0.545

Since there are eighteen pairs in the model proposed (Matrix 3) and the *must-be requirements* are taken as constant, except otherwise indicated by the customer, the normalizing factor or the denominator in formulas 11 and 12 can be replaced with the value 18 to compute the service quality performance conflict (SC) quotient.

The SC-quotient (SC_Q) is premised on the notion that culture shapes perceptions and perceptions create conflicts when expectations are not met as discussed in Chapter 2 and supported with a model. SC_Q, similar to the computation for the percent agreement as performed on the results of the survey and the Delphi, can be computed by adopting Formula 13; expressed as a ratio of the observed agreement (*OA*) and the expected agreement (*EA*).

$$SC_Q = OA \ / \ EA \hspace{8cm} (13)$$

Taking a tilt away from the percent agreement, SC_Q is expressed as a ratio because a ratio measurement provides an absolute or actual zero that is meaningful (Trochim, 2006) and has also been found having conceptual, interpretive and statistical advantages as compared to other alternatives to ratio correlation (Karsada and Nolan, 1979). As a result, it is preferable to express SC_Q as a ratio, in which case it is a unitless number measured relative to the absolute zero.

Following from the above explanations, the value of SC_Q can, thus, only range from 0 to 1, which implies that the more the value of SC_Q is away from 0, the lesser the conflicts relating to the service performance of a Chinese firm in Nigeria; 1 being taken as a perfect agreement (no conflict). Application-wise, SC_Q can be assessed both at the levels of individuals (at all the levels of management) as well as the firms (including potential or formed JV). Hypothetical SC_Q of the four Chinese case studies is presented in Table 8.30.

Table 8.30: Service quality performance conflict quotient for the case studies

Firms	Good quality firm		Poor quality firm	
	Case study 1 (CS1)	Case study 2 (CS2)	Case study 3 (CS3)	Case study 4 (CS4)
O	6	7	4	6
M	0	0	0	0
A	4	2	1	1
P	1	1	2	2
Total = observed agreement	11	10	7	9
SC_Q (formula 13)	0.611	0.556	0.389	0.500

Expected agreement = 18 (total number of pairs in Matrix 3)

A very low SC_Q suggests that a Chinese firm will have or will have more conflicts to manage in its business undertakings in Nigeria. As discussed in Chapters 3 and 4,

differences exist between the Chinese and the Nigerian construction industries and the differences play important considerations in China and Nigeria's business relationships as discussed in Chapter 5. On the other hand, if a Chinese firm having a very low (close to 0) SC_Q is at the point of taking a decision to venture into Nigeria, this suggests a reconsideration of its *patterns of international competition* (Porter, 1986). From one view, business strategies with high national contents are usually unsuccessful internationally (Rapp, 1976). From another view (Lucier and Dyer, 2003), if such a firm is convinced about its strategies, a new value proposition will demonstrate that there are more effective strategies that are as important as operational excellence. Lucier and Dyer's (2003) view also supports the notion of TQM as being premised on continuous improvement as discussed earlier. Either way, the model proposed in this study complements a Chinese firm's effort during SWOT analysis or the application of Porter's (1990) framework since quality, productivity and competitiveness share strong linkages as discussed earlier in Chapter 6.

8.9.3 Optimizing the QMAM

Recalling from Table 8.28, that there are ten pairs of *O* (that is, the *one-directional requirements related to the stated needs of customers*), 4 pairs of *A* (that is, the *attractive requirements related to the implied needs of customers*), 4 pairs of *P* (that is, the *potential needs related to the risk appetites of a firm*), *and M* (that is, the *must-be requirements*) equals 0 since these requirements are related to the basic criteria to engage a firm; hence, these are not explicitly stated again.

From the foregoing total eighteen pairs, if SC_Q equals 1, it is expected that service quality performance quotient (SP_Q) would be situations that *EOS* equals 1 and *EOD* equals 0. Conversely, that will not be the case if formulas 11 and 12 are applied. As an analogy

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taking a hypothetical case of a firm (denoted as X-firm) with SC_Q that is equal to 1 adopting the maximum number of 18 cases in the model proposed for the Chinese firms (that is, Matrix 3). Then, X-firm would have achieved the maximum attainable number O = 10, A= 4, and P = 4 (from Table 8.29 as recalled in the preceding paragraph). Hence, the values of *EOS* and *EOD* for X-firm would be computed as follow:

$$EOS = A+O \: / \: A+O+M+P = 4+10 \: / \: 4+10+0+4 = 0.778$$

$$EOD = O+M \: / \: (A+O+M+P) \: (-1) = 10+0 \: / \: 4+10+0+4 = -0.556$$

As realized, there are lags of 0.222 and 0.556 (both with a positive sign) for *EOS* (equals 1) and *EOD* (equals 0), respectively. The lags are due to the values of *M* that are not accounted for in both formulas 11 and 12.

To adjust for the lags in situations that *M* was not stated, a value of 0.222 or, more flexibly, 1 − *EOS* is added to the value of *EOS*. Mathematically, 1 − *EOS* can be expressed as the *M* constant (M_c).

Logically, in a situation that SC_Q equals 1, there will be no need to compute *EOD* since it would be 0 suggesting that *EOD* needs only to be computed when SC_Q is less than 1. As a result, there is no need to correct for a lag in a situation that SC_Q is less than 1 since it is an indicator that there is a need to compute *EOD*. Hence, where *M* is not stated and SC_Q for a party (individual or firm) equals 1, the adjusted *EOS* (EOS_A) for that particular firm can be computed by adopting Formula 14.

$$EOS_A = EOS + M_c \tag{14}$$

Where M_c is the *M* constant expressed as 1 − *EOS*.

Assuming a situation where a customer specifically states M, then, the value of M would range from 1 to n; where n is the maximum number of M specified by the customer. In such a scenario, the inability of a party to satisfy M would then be quantifiable. As such, where M is stated, the adjusted EOS (EOS_{AM}) for all the parties under consideration can be computed by adopting Formula 15.

$$EOS_{AM} = EOS \pm M_c / n \tag{15}$$

Where n is the customer's maximum number of M specified and $\pm$ is the maximum number computed for a party based on its ability to satisfy or fail to satisfy n.

8.9.4 Verification and validation of the QMAM developed for the Chinese firms in Nigeria

Following from the model developed, this study proceeded to verify and validate the model adopting two other Chinese firms (test case studies or TC1), which were neither HC1 nor HC2 but, rather, relatively newer entrants into Nigeria (please refer to Chapter 7). The aim was to test the prediction and predictive use of the model, the former relating to the model's serious observations and intuitive contents while the latter relates to the model's inferential and forecasting abilities (Hodges and Dewar, 1992). According to Macal (2005), verification and validation are essential parts of the model development process to support the information being provided and, by so doing, their subsequent adoption to support decision-making. Likened to case-based reasoning (CBR), it is the extension of the most relevant cases to predict business performances in spite of CBR's foundation in problem-solving paradigm (Leeland, 2011: vii) as discussed in Chapter 7.

The representatives from the firms were asked to rate Matrix 3 on a scale 1 (strongly disagree) to 10 (strongly agree). Admittedly, as at the time of the fieldwork, the model was yet to be as refined as presented in Table 8.29, nonetheless, the eighteen pairs have been identified as definitive of the model following the surveys, Delphi and round-1 case studies (please refer to Figure 8.4). In addition, prior to conducting the actual separate test case studies, telephone calls were made to TC1 and TC2 Chinese firms to explain the aim and objectives of the interviews with their firms and to discuss the format of the questionnaire as a matrix. Following their consents, a covering letter and Matrix 3 were emailed to the two firms in advance for their deliberations and selection of qualified representative(s) to participate in the interviews. The aim was to assess the prediction and predictive use of the model, and, by extension, measure the effectiveness of the pairs in the model to decide if there is any pair that is unfit. To achieve the foregoing, it was construed to take the average of the scores by TC1 and TC2 Chinese firms and then eliminate any pair having a value (that is, an average rating) less than 5.

8.9.4.1 Test Case Study 1 (TC1)

TC1 specializes in the general contracting of housing and other related projects. In 2009, it established an overseas branch, which specializes in construction in Nigeria to undertake building and road construction projects. TC1 was officially registered in Nigeria in 2010 and as at date have projects spanning high-end residential projects, bridge, road, training quarters, and civic center and museum. Company size, at the time of the interview, was less than 50 personnel (about 45% and 55% Chinese and Nigerian employees respectively). TC1 commenced the building of 18-month, state-of-the-art, USD 32 million Civic Center cum Museum in October 2012, located on a former prison site that was built in 1922.

8.9.4.2 Test Case Study 2 (TC2)

TC2 specializes in developing and manufacturing construction machinery of all kinds. Recently, TC2 has expanded into concrete, road, port, hoisting, coal mining, pile driving, as well as excavating and wind energy machineries, which saw it gaining an inroad into road projects in Nigeria in 2009. TC2 is also in partnership with a Nigerian firm to expand its distribution network of construction equipment in Nigeria, as its ultimate target to effectively cover the distribution, construction and port equipment in Nigeria. Company size, at the time of the Interview, was less than 50 personnel (about 60% and 40% Chinese and Nigerian employees respectively).

8.9.4.3 Discussion of the results from the two test case studies

The ratings by TC1 and TC2 are presented in Table 8.31. Their ratings revealed positive correlations with the prediction of the model based on the results of the surveys, Delphi and round 1 of the case studies. In particular, the TC1 and TC2's ratings echoed pairs 6, 12 and 18 (from pair category C) as not strong pairs among the Chinese firms in Nigeria as indicated in the shaded cells, which shows values less than 5. Still, the highest among these fore going three pairs is pair 18 having a value of 4.5. Notably, this accorded well with pair 18 as a critical pair (please refer to Table 8.28).

TC1 and TC2 rated the same fifteen pairs above 5 to both derive SC_Q of 0.833 (adopting Formula 13). This is based on this study's criteria of above 5, which implies that the computation of SC_Q adopting the proposed model requires an agreement between or among the parties on the service quality performance threshold (SP_T). Values below SP_T are not considered and, as a result, the decision on the value of SP_T is important. More

critically, SP_T underpins SC_Q, SP_Q in terms of *EOS* and *EOD*, EOS_A (where $SC_Q = 1$ and *M* is not specified) and EOS_{AM} (where $SC_Q = 1$ and *M* is specified).

Table 8.31: Chinese test case studies' ratings of the model

Pairs	Test case study 1 (TC1)	Test case study 2 (TC2)	Average
1	7	5	6
2	6	5	5.5
3	7	5	6
4	6	5	5.5
5	6	5	5.5
6	4	4	4
7	7	5	6
8	8	5	6.5
9	10	5	7.5
10	9	5	7
11	9	5	7
12	4	4	4
13	9	5	7
14	6	5	5.5
15	7	5	6
16	6	5	5.5
17	6	5	5.5
18	5	4	4.5

This suggests that subjectivity might be involved and if this is not desirable between the parties, an objective decision can equally be reached by adopting binary or nominal measurements (such as, 0 and/or 1 and 2) characteristic of rankings as opposed to ratings. Strategic management has, often, been a juggle of objective and subjective approaches to decision making as exemplified by the studies conducted by Bentley (2003), Dawes

(1999), Dess and Robinson (1984), and Keeney and Raiffa (1993), to mention a few. Following their studies, Dawes (1999) and Dess and Robinson (1984), nonetheless, recommended a hybrid of the two measures. The hybrid system likewise accords well with this study's approach in that the development of the model is also premised on triangulated results from the survey rankings and the Delphi ratings.

Once parties have decided on the value of SP_T, SC_Q, SP_Q (that is, EOS and EOD) and, if applicable, EOS_A and EOS_{AM} can then be computed. Collectively, the foregoing parameters are herewith henceforth referred to as the service quality performance indicators (SP_I). Table 8.32 presents SP_I for the two Chinese test case studies excluding EOS_A and EOS_{AM} since SC_Q is less than 1 and M is not specified. (Please note that relative to SP_T adopted, TC1 and TC2 Chinese firms were both only in conflict with the three pairs 6, 12 and 18, hence generic have been computed in Table 8.32)

Table 8.32: Service quality performance indicators for the Chinese test case studies

SP_T	SC_Q	SP_Q	
		EOS	*EOD*
5	0.833	0.611	-0.389

Based on the high value (close to 1) of SC_Q, the predictive capability of the model is also argued as confirmed since a lower value (for example, ≤ 0.4) would have suggested that there are more pairs that do not fit the final model. According to Ladany, Thompson and Hill (2012: 129), this could be attributable to an extreme heterogeneous sample or poor research design and/or method.

Relating to the predictive power of the model is the effectiveness of the pairs in the model as set out to achieve as well. Pairs 6, 12 and 18 have been proven not to be strongly

supported among the Chinese, nonetheless, it is still desirable to have these three pairs in the final model since the Nigerians are in favor of the three pairs. In particular, Ladany, Thompson and Hill (2012: 129) have submitted that it is unrealistic to complete stability checks and recommended that data should be continuously subjected to external validation for improvements. Deriving from the foregoing position and also based on the notion of TQM as being premised on continuous improvement for productivity improvement and customer satisfaction, this study advances the model to also serve as a case-based reasoning (CBR) system.

8.9.4.4 Optimizing the proposed model as a CBR system

Voskoglou (2011a) broadly construed CBR as the process of solving new problems based on the solutions of similar past problems. Delineating in CBR terminology, Voskoglou (2011a) underscored that a *case* denotes a problem situation. Expounding further, Voskoglou (2011a: 63) construed that:

> *CBR is a four-step process, known as the dynamic model of the CBR cycle includes a four-step process involving retrieve (the most similar to the new problem past case), reuse (the information and knowledge of the retrieved case for the solution of the new problem), revive (the proposed solution), and retain (the part of this experience likely to be useful for future problem-solving).*

In a follow-up study, Voskoglou (2011b: 118) reasoned that a good CBR system should support a variety of retrieval mechanisms, allow them to be mixed when necessary, and be robust to handle large case libraries with the retrieval time increasing linearly (at worst) with the number of cases. In consequence, Voskoglou (2011b: 118) has defined a

CBR system's *effectiveness* (in solving new related problems) denoted as *t* to be the mean value of the t_i's cases, such that

$$t = \sum_{i=1}^{n} ti \, / \, n \tag{16}$$

Adapting from Formula 16, it is possible to compute the *effectiveness* (denoted as *e*) of each pair in the proposed model by averaging the number of ratings (denoted as A_r) for each pair. By so doing, the effectiveness of the model can be derived by summing up A_r of the different pairs and dividing by the number of pairs (*N*). This is presented in Formulas 17 and 18.

$$e \, (P1, \, P2, \, ...PN) = r1 + r2 + ...rn \, / \, n \tag{17}$$

Where, *P1 to PN* denotes pair 1 to the maximum number of pairs (18 for the model) and $A_r = r1 + r2 + rn \, / \, n$, where *n* is the maximum number of ratings (per time since this will continue to change).

$$E = \sum Ar \, / \, N \tag{18}$$

In consequence, rather than to eliminate pairs having values less than the service quality performance threshold (SP_T) as initially purposed, assessing the effectiveness of the pairs and the model typifies a more ideal situation supported by TQM. Since the values of *e* and *E* will continue to change (increasing or decreasing), parties will have a more holistic view of the ineffective pairs and their impacts on the overall effectiveness of the model. Going back to TC1 and TC2 Chinese firms, the derived average ratings represent the current effectiveness of the pairs, which can be improved over time.

By applying Formula 18, the effectiveness of the model based on the results presented in Table 8.31 is, thus, 5.861. The effectiveness of the pairs (that is, *e*) and the model (that is,

E) can only take the maximum value of 10 with a value of 0 almost impossible. It is conceivable that the interpretation of *E* might then be subjected to yet another subjective-objective debate. In anticipation of that, it is recommended that the agreed value of SP_T be adopted to interpret *E* in future applications of the model proposed in this study. The results of the two test case studies have validated the model based on its prediction (positive correlations with the results from earlier phases), predictive power (high SC_Q), and effectiveness as earlier explained in this paragraph.

Hence, with respect to Table 8.28, the format of the model for future applications will exclude the ratings by the Nigerians to derive objective assessments. New parties will occupy the columns under the ratings (currently, CS1 to CS4), and the themes and justifications will be replaced with the effectiveness of the different pairs (to be presented in the next Chapter).

8.10 Summary

This chapter reviewed the research design and methodology. It assessed the benefits of different research designs and methods viz-a-viz the aim and objectives of this study. It justified the different methodologies for this study, which include review of the relevant literature for objective 1; survey of stratified samples of the Chinese and the Nigerians using structured questionnaires followed by a Delphi technique of experts using snowball sampling and adopting structured questionnaire for objectives 2, 3 and 4; and case studies based on prescribed criteria (that is, stratified sampling) with interviews using structured questionnaire for the first part of objective 5; and finally test case studies to validate the model developed for the Chinese firms in Nigeria based on triangulation of results from all the phases of the study.

The chapter found out that there is no significant difference among the Chinese on their perceptions of the influence NCD and TQM principles have to quality both in their firms and among the Nigerians'. On the other hand, it found out significant difference among the Nigerians only in their perceptions of the influence of TQM principles to quality in their own firms. The chapter also found a significant association in between China and Nigeria's NCD scores and the perceptions of the influence of national culture on quality management both among the Chinese and the Nigerians. This chapter also found out that there is no agreement between the perceived good quality Chinese firm and the perceived poor quality Chinese firm on the important NCD and TQM attributes to achieve good quality in Nigeria. On the other hand, it found out that there is agreement between one perceived good quality firm and another perceived good quality firm. This chapter presented the model to be adopted by the Chinese firms in Nigeria to measure their service quality performance vis-à-vis the Nigerians to boost their quality performance on the stated needs, implied needs and the potential needs of the Nigerian customers.

CHAPTER 9: SUMMARY AND CONCLUSIONS

9.1 Summary

With globalization and opportunities that abound in international construction, cross-cultural encounters have become a part of international projects, which does not necessarily necessitate contracting parties moving out of their countries. The benefits accruable from international contracting suggest that parties must be well equipped and informed of the cultural differences that could deter them from deriving the maximum benefits from such ventures.

Coming out from a closed economy, Chinese firms' strategic operations with most developing countries require these countries to have a deep understanding of the Chinese culture and how it impacts their operations. National culture is a macro culture, which subsumes and affects all other forms of culture to suggest that a strategic approach to a better understanding is the national culture. It then follows that international contracting parties must be aware of their own culture and the impact on their operations. No country enjoys any inherent rights to its domestic market anymore. Companies would be better positioned to engage and compete with new entrants when they are culturally sensitive.

Quality delivery in international construction transcends the final constructed product to encompassing the whole process that culminates into the final product. TQM offers a pragmatic approach to ensuring that quality is delivered throughout the stages of a construction project by responding to changes continuously and engaging parties horizontally and vertically within and without an organization. A first step to the TQM journey is ISO 9000; however, TQM being more of a habit suggests that non-certification does not preclude a company from developing into a TQM organization.

The entry of Chinese firms into Nigeria has improved the construction industry significantly. Their sectoral deployments and scale of projects attest to their competitiveness, which has been honed through years of domestic undertakings back in China before the eventual opening up to the rest of the world. Their active participation in the critical Nigerian infrastructure sectors have further opened up more opportunities. However, these firms continue to face major challenges with respect to the quality of their construction projects among their Nigerian counterparts.

Cultural differences play an important part and would appear to be the main reason for the challenges. However, there is the critical question as to why some Chinese firms have been able to manage the cultural difference to distinguishing themselves as capable of delivering quality services in Nigeria most of the time. On the other hand, some other Chinese firms have had to grapple with protests over different aspects of their construction projects, protracted power tussle and even termination of contracts for reasons attributable to both parties. Hence, there appeared to be cross-cultural conflicts over quality by the Chinese firms in Nigeria. This study aimed to investigate this and set out five objectives in Chapter 1.

Based on the concepts of TQM, national culture and conflicts, a model was developed to investigate the relationships among these three key concepts. TQM was based on the ISO 9001 QMS principles, which is the more internationally recognized standard for quality; national culture was based on Hofstede's five-dimensional model following the seminal study; and conflicts followed the conflict intensities and scales, which supports the notion that conflicts develop over time and could be addressed before escalating into the need for conflict resolution. To corroborate the fore going, prevalent NQAs and case studies of

some countries that have realized the need to implement TQM in consonance with their underlying cultural values were undertaken (see Chapter 2).

Comprehensive study of the developments and features of the Chinese and Nigerian construction markets was undertaken (see Chapters 3 and 4 respectively). This led to a study on the developments of strategic relationships between the two countries, which have resulted into the construction activities and the ensuing cross-cultural encounters over quality of services of construction activities (see Chapter 5). To fulfill the objectives, a quality management assessment model (QMAM) was first developed based on gaps identified in the existing literature. The QMAM brought the NCDs and TQM principles together, which was then transcribed into survey questionnaires. Several methodologies were adopted to fulfill the different objectives of this study, which include literature review, surveys and case studies (refer to Chapter 7) using different questionnaires (refer to the Appendices). Data were collected via email, supplemented with face-to-face-interviews and site observations. Statistical computation were used to analyze the data using Friedman, Wilcoxon rank sum, Spearman correlation, Fleiss' and Cohen's kappa inter-reliability tests.

9.2 Summary of findings and validation of hypotheses

The first objective of this study was to design a model to investigate the influence of national culture on TQM implementation between two international parties (see Section 1.4). This was achieved through the review of the relevant literature, which found culture-specific and bi-directional relationships to exist between TQM and national culture, the latter being an independent variable. There was a gap in a model that integrates TQM and NCDs; which this study filled by developing TQM principles and NCDs into a quality

management assessment matrix (QMAM) (see Table 6.2). The matrix was adapted as questionnaires to achieve the other objectives in this study.

The second and third objectives of this study were to investigate important TQM principles and NCDs and their attributes that affect project quality in Nigeria as perceived by the Chinese and the Nigerians (see Section 1.4). This was achieved through 2-round cross-sectional surveys of the Chinese and the Nigerians. The first round of the survey established the relative ranks of the TQM principles and NCDs (see Table 8.3 and Table 8.5, respectively) as well as the mean ratings of the TQM and NCD attributes (see Table 8.4 and Table 8.6, respectively). The second round of the survey established the more important pairs out of the top-3 ranked TQM principles & their top-2 ranked attributes and the five NCDs (as ranked) & their top-2 ranked attributes (see Appendix 37). Corresponding to the first hypothesis of this study (see Section 1.5), it was found that significant differences exist in the Chinese and the Nigerians' perceptions of the influences of TQM principles and national culture on the management of quality. This was achieved by performing the Friedman tests on the results of round 1 of the survey (see Table 8.8 and Table 8.9). Corresponding to the second hypothesis of this study (see Section 1.5), it was found that significant association exists between China and Nigeria's NCD scores and the Chinese and the Nigerians' perceived influences of national culture on quality management. This was established by performing the Wilcoxon rank sum tests on the results of round 2 of the survey (see Table 8.10).

The fourth objective of this study was to develop a model that integrates TQM principles and NCDs of the Chinese and the Nigerians to boost the Chinese firms' project quality in Nigeria (see Section 1.4). This was achieved through a 3-round Delphi followed by four Chinese case studies. Prior to conducting the Delphi, the results of the round 2 of the

surveys of the Chinese or Matrix 1A (see Appendix 38) and the Nigerians or Matrix 2A (see Appendix 39) were cross-analyzed to generate common 18-pair matrix or Matrix 3 (see Table 8.15). Matrix 3 reflected a moderate agreement between the Chinese and the Nigerians as measured by Cohen's kappa for inter-rater agreement (see Table 8.16). The eighteen common pairs in Matrix 3 include fourteen pairs that both the Chinese and the Nigerians agreed in their ratings and four pairs in which they disagreed (see Table 8.17). The 3-round Delphi confirmed the stability of the fourteen pairs and provided insights into the other four pairs. The experts' ratings of Matrix 3 revealed a moderate agreement as measured by the Fleiss' kappa inter-reliability tests (see Table 8.19). Corresponding to hypothesis 3 of this study (see Section 1.5), the results from the four case studies (two good and two poor quality Chinese firms) on Matrix 3 revealed that Chinese firms that are able to identify and manage differences on the influences of national culture on TQM, between them and the Nigerians, are perceived as firms with good quality performance. This was established through Cohen's kappa inter-reliability tests performed on the ratings of Matrix 1A between two good quality firms and one good quality firm and one poor quality firm (see Table 8.23). The complementary information provided through triangulation of findings from the four case studies, insights from the Delphi, and consensus of the survey allowed developing themes for the eighteen pairs in Matrix 3 as a model (see Table 8.28). The model, thus, consists of 10 pairs related to the stated needs of the Nigerians, 4 pairs related to the implied needs of the Nigerians and 4 pairs related to the risk appetites of the Chinese in Nigeria.

The fifth objective was to test the model and recommend effective quality management strategies by the Chinese firms in Nigeria. This was achieved by applying the model developed to other two Chinese case studies. The two Chinese firms validated the model

through confirmation of the model's prediction, predictive capability and efficiency. The validation also provided a basis to optimize the model as a retrieval and application system for solving similar future cases. In addition, this study has also developed indicators in the forms of different quantifiable parameters in the application and optimization of the model.

From some other perspectives, the model developed in this study addresses the four fundamental questions relating to the financial perspective, internal business perspective, the customer perspective, and the innovation and learning perspective that Neely, Bourne and Kennerley (2000) underscore as needing answers in the development of performance measurement systems. Likewise, the model addresses the three core activities of model validation, which according to Malak and Paredis (2007), includes the process of developing a validity description, the process of determining whether the context of a behavioral model is consistent with that of the simulation study of interest, and the process of determining whether the uncertainty of a behavioral model is acceptably small for simulation study.

9.3 Recommendations

This study has developed eighteen important pairs of NCD and TQM attributes. These are important considerations for both the Chinese firms in Nigeria as well as other foreign firms. The model can serve to identify areas of conflicts on service quality performance with respect to TQM implementation between the Chinese and the Nigerians. This study has also developed indicators to measure the important parameters related to the model for strategic management decision. Following the design, development and validation of the model, the recommended format of the model for future applications is presented in Table 9.1 followed by some guidance or application architecture of the model.

Table 9.1: Model to boost Chinese firms' quality management in Nigeria

Pairs	Important TQM and NCD attributes		∑ of ratings (Ordinal) or rankings (Nominal) [R]	Effective-ness of pairs = *∑R/nR
	TQM principles & attributes	**NCDs** & attributes		
1		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**		
2		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. **(PDI)**		
3	**CUSTOMER FOCUS** Researching and understanding customer's needs and expectations.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. **(PDI)**		
4		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. **(LTO)**		
5		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. **(MAS)**		
6		Tolerance for uncertainty and poise/confidence under such condition. **(UAI)**		
7		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**		
8	**PEOPLE INVOLVEMENT** People actively seeking opportunities to enhance their competence, knowledge and experience.	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. **(PDI)**		
9		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. **(PDI)**		
10		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. **(LTO)**		
11		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. **(MAS)**		
12		Tolerance for uncertainty and poise/confidence under such condition. **(UAI)**		
13		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride,		

Pairs	Important TQM and NCD attributes		∑ of ratings (Ordinal) or rankings (Nominal) [R]	Effective-ness of pairs = *∑R/nR
	TQM principles & attributes	**NCDs** & attributes		
		confidence, and positive thoughts. **(IDV)**		
14		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. **(PDI)**		
15	**PEOPLE INVOLVEMENT** People understanding the importance of their contribution and role in the organization.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. **(PDI)**		
16		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. **(LTO)**		
17		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. **(MAS)**		
18		Tolerance for uncertainty and poise/confidence under such condition. **(UAI)**		
	Service quality performance indicators (SP_I)			
	Indicators		Criteria	Value
A	Service quality performance threshold (SP_T)		As agreed	
B	Service quality performance conflict quotient (SC_Q)		Formula 13	
C	Extent of satisfaction (EOS)		Formula 11	
D	Extent of dissatisfaction (EOD)		Formula 12	
E	Adjusted EOS for $SC_Q = 1$, where basic requirements are not specified		Formula 14	
F	Adjusted EOS for $SC_Q = 1$, where basic requirements are specified		Formula 15	
G	Effectiveness of pairs		Formula 17	
H	Effectiveness of model		Formula 18	

 *Notes: ∑R = Summation of the individual ratings or rankings for each pair. nR = Combined number of ratings and/or rankings for each pair. ∑R/nR = Effectiveness of each pair (that is, Formula 17).

Dittman (2000) construed "application architecture" as that which specifies the technologies to be used to implement all information systems in terms of data, process, and interface, and how these components interact across a network. The application

architecture for the model proposed in this study relates to the service quality performance indicators included in the model as shown beneath Table 9.1. Save for the service performance threshold, which can either be subjective or objective as realized following the validation of the model, computations for all the other service quality performance indicators can be cross-referenced with their respective formulae as indicated in the model. The column on the summation of ratings and/or rankings (denoted as $\sum R$) means that some other columns on R1 to Rn precede $\sum R$ (for example, as presented in Table 8.31). R1 to Rn have been excluded in the model as presented in Table 9.1 for two reasons, which includes theoretical since the range R1 to Rn is infinite and practical since the components R1 to Rn typify back-end operations; and thus strategic. Some notable past studies in support of the latter reason include those undertaken by Sue, Kleiner and McPhee (1998) as well as Shin and Gomaa (2007). Still, where R1 to Rn are desired as front-end operations, such as during information retrieval and/or reuse, the upper part of the model features as presented in Table 8.31.

As discussed earlier, the pairs can be rated subjectively (by adopting ordinal measurements) or ranked objectively (by adopting nominal measurements). It is also conceivable that there could be instances where rankings agreed between (or among) parties extend beyond binary measurements. To the fore going, Treiblmaier and Filzmoser (2009) have rightly posited that the higher the number of categories in a ranking, the more the ranking scale resembles a continuous rating scale. Still, the efficiency of the pairs in the model (and future pairs) can be computed using the formula provided in this study. Cumulatively, the results obtained from the different applications of the model can be stored for subsequent retrieval and reuse similar to a CBR-system. Similar to the three different tests in a software development (TECH Share, 2003), the

model developed in this study has undergone the *alpha test* during the Delphi, following the survey; the *beta test* with four Chinese case studies, following triangulation of results from the survey and the Delphi; and the *pilot test* with the two Chinese test case studies, following triangulation of results from the survey, the Delphi, and the four Chinese case studies. Premised on the fore goings, the specific recommendations of the model to the following parties include:

9.3.1 Recommendations for the Chinese

Firstly, this study highlights the role of China's culture on the Chinese perceptions of quality relating to construction services. It underscores that the business culture still manifests the deep-rooted influence of national culture. It is fruitless trying to change the national culture. Conversely, the business culture, particularly in the overseas market, is subject to change and can, thus, more readily take care of some potential conflicts in the host country, which also reflects their own national culture.

Secondly, this study has found differences among the Chinese firms in Nigeria on their knowledge of the important TQM and NCD attributes to achieving good quality among their own firms as evident in the results of the case studies (see Tables 8.21 and 8.22). Hence, the Chinese firms should learn from each other some of the pragmatic approaches to operate in Nigeria successfully. This will bring their service quality performance to par on the must-be requirements (see Section 8.9.1) to minimize conflicts with the Nigerians.

Thirdly, this study recommends to the Chinese in Nigeria to be well informed about the stated needs, implied needs and potential needs of the Nigerians with respect to construction service quality (see Table 8.28). The stated needs transcend meeting just the basic requirements (see Section 8.9.1). The ability to satisfy the implied needs of the

Nigerian customers is a function of a Chinese firm's strategic thinking. While this study has found uncertainty avoidance not to be strongly supported among the Chinese, nonetheless, satisfying the potential needs of the Nigerian customers is underpinned by a Chinese firm's risk appetite.

Fourthly, the model developed in this study can be adopted by the Chinese firms that are already in Nigeria or those planning to venture into Nigeria to assess their knowledge of TQM implementation in Nigeria. This will allow these firms to be able to identify potential conflicts with their Nigerian counterparts and be able to prioritize their resources for the critical areas. The service quality performance indicators developed in this study can be used to benchmark their performance against their partners' and competitors'.

Lastly, the model is not an end in itself, but rather a means to an end. This suggests that full mastery of the pairs covered in the model would soon evolve into being the must-be requirements. Hence, Chinese firms must boost both their strategic abilities and risk appetite to be better positioned to take advantage of the implied needs and the potential needs of the Nigerians. This can be achieved through involvement of competent Nigerians in their key activities to manage risks more efficiently.

9.3.2 Recommendations for the Nigerians

Firstly, the findings from this study provide an alternative perspective to understand the construction service quality of the Chinese firms. These have constituted debates both in Nigeria and beyond. This study recommends to the Nigerians to adopt the model developed in this study to better assess the Chinese firms. If the Nigerians are aware of their own culture and its impact on the perception of quality as found in this study, potential conflicts can be addressed more effectively.

Secondly, it is recommended that QMS certification among the Nigerian firms be given serious attention. This study has found that there is a significant difference among the Nigerians on the perception of TQM principles to achieve good quality in their own firms (see Table 8.8). About 33% of the 80 Nigerian respondents indicated that their companies' QMSs were certified to ISO 9001-certified with only 17% of the other respondents indicating that their companies were in the process of obtaining the certification (see Figure 8.1).

Thirdly, it is recommended that the Nigerians should be more aware of their own needs. The stated needs can be specified to minimize conflicts relating to quality of services in their dealings with the Chinese. With international competition, it is recommended that Nigerian firms begin to adopt business cultures that reflect international best practices. In addition to ISO 9001 certification, the model advanced in this study can be used to assess how a Nigerian party compares with a potential partner (local or overseas).

Fourthly, as highlighted by the Delphi experts, the Nigerians are more relational than mechanical in their approaches to businesses. It is then recommended that the Nigerians, in their initial meetings with the Chinese, adopt the model proposed in this study. Since relationships are still healthy during this stage, strategic decisions to address any conflict can be made more effectively. Premised on the notion of continuous improvements, the Nigerians can address the effectiveness of the pairs and the model.

Lastly, the Nigerian firms can adopt the model developed in this study to seek out local and foreign firms of the same values for short-term business engagements. The Nigerian clients can also adopt the model to identify firms that best meet their needs as a crucial start for business transactions. The model will expand with time and improve in its

effectiveness through different applications and feedback from the different local and foreign parties involved in the construction industry.

9.3.3 Recommendations for the Nigerian government

The Nigerian government has been identified as the major client for the Chinese firms. It is recommended to the Nigerian government to align their business dealings with the Chinese firms towards more inclusive benefits with a majority of the Nigerians. Conflicts on the quality of services of the Chinese firms can also be addressed making sure that government policies address the stated needs, implied needs and potential needs of the Nigerians as best as possible.

The model proposed in this study can be adopted (and even improved upon) during tender assessments to gauge the capability and competence of a Chinese firm (or other foreign firm) with regard to the quality needs of the Nigerians. It is recommended that the Nigerian government invest in research and developments for more performance-based frameworks to allow for more transparent procurement procedures that benefit both the local firms and the foreign firms.

It is recommended that the government institutionalize QMS certification to raise the level of standard of the local industry and support local firms to be equally competitive. The government can also institutionalize more specific partnering conditions and technology transfer mechanisms for the competent foreign firms in Nigeria to engage with the local firms. Both the Chinese and the Nigerians ranked *people involvement*, *customer focus* and *leadership* in top-3 suggesting that these three needs to be cohesive.

The Nigerian government should see the need to develop other complementary frameworks that are robust enough to support short-, medium- and long-term strategies

with built-in feedback systems for real-time monitoring and performance enhancement. The model developed in this study can be applied to registered local firms to build a central system of continuous performance measurements for feedback to the local firms as well as a basis for shortlisting of local firms for specific projects.

9.4 Contributions to theory and knowledge

Firstly, this study has developed a matrix that integrates national culture and TQM principles (see Table 6.1 and Table 6.2). This study has, hereinafter, filled a gap in the literature. The matrix proposed in this study combines the benefits of two separate models addressing quality and culture, thus, optimizing the benefits while deriving computational efficiency. The indicators developed for the different parameters derivable from the model add quantitative dimensions to the model for more objective assessments.

Secondly, it has established a process to develop more specific models for different construction markets (see Section 8.7.4.2). Depending on the specific interest of a researcher or the strategic interest of an investor, particular NCDs and TQM principles can be investigated from the matrix to develop models for short-term or long-term purposes. The model is also robust to take care of continuously evolving results from applications and assessments to improve its effectiveness and that of its users.

Thirdly, it has found a very strong association between NCD scores and the perceived influence of national culture on TQM implementation (see Table 8.10), which, hitherto, was not established. This finding has the potential implication of the need for parties' thorough understanding of each other's national culture, the differences that exist, and how these bear on quality management. This is more crucial in view of the purported dominance of information technology over national culture in international businesses.

Fourthly, this study has, to a great extent, validated Hofstede's findings for the Chinese and Nigerian building professionals with respect to the effects of national culture on quality perceptions. It has also validated the impact of culture-specific TQM on the perceptions of overall quality performance of firms in cross-cultural project contracting. As highlighted by the Delphi study, perceptions are bound to change over time thus suggesting constant review of culture-specific TQM, which the model allows for through the measurement of the effectiveness of the pairs and, by extension, that of the model (see Table 9.1). As perceptions change, complacency might set in, which defeats the premise of TQM as a continuous improvement process. The model responds to this by allowing for flexibility of use and of the capacity to handle future changes in handling new pairs without detracting on the working principles of the model.

Lastly, quality has often been held as being subjective. This is also acknowledged in this study and likewise supported by the model. Nonetheless, where contracting parties prefer a more objective approach to measuring quality, the model supports this since it has been designed to be responsive to both the subjective and objective measurements (see Table 9.1). Unique to this model, is the feedback mechanism that has been built into its design so much so that parties can keep track of and improve on their performances.

9.5 Contributions to practice

This study has identified the important attributes of NCDs and TQM principles between the Chinese and the Nigerians. This is an important tool for strategic decision making for the two groups of professionals. As discussed earlier with respect to Table 8.29, the model contains pairs related to competitiveness, strategic thinking, and risk appetites of firms. Hence, it is imperative for firms to be informed of the differences between their approaches and that of their potential partners or competitors.

This study has developed a method to systematically identify the potential areas of conflicts with regard to the perceived influence of national culture on quality management between the Chinese and the Nigerians. By identifying these conflicts more objectively, resources are better deployed by the respective parties to address their differences and even to measure the effectiveness continuously. The model can be adopted in the tender award procedures to gauge a Chinese firm's potential service quality performance.

This study, through the fieldwork conducted and the results obtained, has created new knowledge on the impact of national culture in shaping the perceptions of quality in international construction projects. The results of round 1 of the survey have improved the knowledge of the respondents on important TQM and NCD attributes as perceived by their counterparts, which, hitherto, was not established. The needs for QMS certification and the benefits have been brought to the fore with the research.

This study has provided insights into why some Chinese firms have been perceived as delivering quality construction services as compared to some other Chinese firms. As revealed, there is a disagreement between the perceived good quality firm and the perceived poor quality firm on the important attributes while there is an agreement between the perceived good quality firm and another perceived good quality firm (see Table 8.23). Other firms can therefore adopt the strategies implemented by the good quality firms.

It is unrealistic to think that some Nigerian firms have yet to develop their own internal frameworks that they use in strategic decisions, especially the large-scale firms. This is acknowledged and the model developed in this study (and its variants depending on the firms) complement their local frameworks, particularly with regard to TQM

implementation. Unique to the model developed in this study is the ability to measure the effectiveness of the different pairs in real time and be able to devise mitigation measures.

9.6 Limitations of the research

The sample size of the Chinese and the Nigerians in the survey was small, relative to what could reasonably constitute critical masses from both groups on issues relating to national culture. Nonetheless, the sample size adopted is still in congruence with the minimum number of fifteen respondents from other notable studies (see Section 8.3), thus permitting reasonable inferences to be drawn from the results of the study. The Chinese and the Nigerians covered in the survey by adopting stratified sampling also precluded others who might have generated alternative insights. Nonetheless, it is expedient to undertake this particular study with respondents having prior knowledge of each other to derive objective assessments, which can then be further validated.

Due to the limited time of the respondents, this study has focused on the top-3 ranked TQM principles and top-2 ranked TQM attributes. On the one hand, this has facilitated an in-depth study of the selected pairs with reduced variability and hampered interpretability (see Section 8.7.4.1). More so, the selected pairs were generated through the objective feedback of round 1 of the survey and, as such, in consonance with variable selection techniques based on factor scores and algorithm (see Section 8.7.4.1). On the other hand, there could be latent or other manifest conflicts in the other five TQM principles and attributes, which would have increased the common pairs beyond the current eighteen for more inferences to be drawn.

As raised by the Delphi experts (see Table 8.20), the major perception of the service quality of the Chinese firms is that of poor quality and that it would take a while for this

to be improved in Nigeria, which is, in particular, still grappling with its QMS. On the other hand, some experts have expressed that the perceptions will change with time with improved working relationships between the Chinese and the Nigerians. The foregoing two views suggest that the findings from this study are time-bound. Nonetheless, it is a focus of this study to bring to the fore the areas of conflicts for better understanding and to minimize future conflicts. Conflicts are intrinsic in international construction projects; however, by identifying the cross-cultural differences, these can be avoided. As have also been argued in the design of the model, it has not been designed as a static model, but rather to respond to continuously evolving cases for subsequent retrieval and reuse (see Section 8.9.3.4).

9.7 Conclusion

The aim of this study was to investigate the strategies that would enable the Chinese firms to achieve good quality performance in Nigeria, given the cultural differences between the Chinese and the Nigerians. This study fulfilled its aim in the findings of the Chinese firms' TQM implementation with respect to the national culture of their Nigerian counterparts to minimize conflicts relating to their service quality perceptions by the Nigerians. Not only is it necessary to implement TQM with respect to national culture of the Nigerians, the ability to identify the important TQM principles and attributes combined with the important national cultural dimensions and attributes was also found to be important so as to minimize the conflicts that impact on quality.

The specific objectives of this study included designing a model to investigate the influence of national culture on TQM implementations between two international parties. This was achieved in the development of the quality management assessment matrix (QMAM), which fills an identified gap in the existing literature. The QMAM

complements some frameworks adopted by firms when they want to venture overseas, such as the SWOT analysis and Porter's Diamond. Adopting the QMAM, this study derived different purpose-designed questionnaire from the QMAM to fulfill all its other objectives as expounded in the ensuing paragraphs.

This study also fulfilled its objectives of investigating the important TQM principles and attributes as well as NCDs and attributes that affect project quality in Nigeria between the Chinese and the Nigerians. This was achieved through the results of the survey among the Chinese and the Nigerians. In furtherance, this study integrates the important attributes into a matrix that was subjected to different phases of further assessments to make convincing inference. By triangulating the results of the different approaches adopted, the matrix was advanced into a model comprising stated needs, implied needs, and potential needs of the Nigerians to boost the Chinese firms' project quality in Nigeria. It validated the model and found it to be efficient in its prediction, predictive capability and effectiveness. The model is flexible for immediate, short-, and long-term strategies.

9.8 Recommendations for future research

Firstly, it is recommended that a future study be conducted, using the matrix, on non-Chinese and non-Nigerians in some other construction industries. This is to identify if there is any significant difference in the results obtained from these other respondents and to assess how these results complement or deviate from the ones obtained in this study. The matrix is also to stir up further debates and refinements among scholars.

Secondly, having established a procedure to investigate with the matrix to develop a model (see Section 6.5 and Section 8.7.4.2), a future study is also to extend the investigation to the remaining five TQM principles as well as the sixth NCD (see Section

2.3.5) to add to the eighteen pairs identified in the current model. A future study should allow ample time to triangulate information to make meaningful inferences.

Thirdly, a future study can also focus on the validation of the model (Table 9.1) and its indicators and how these can be programmed as computer software. As the number of pairs increases, manual handling will become tedious and cumbersome to the extent that it might deter users from using the model. Hence, it is expedient that this be given serious and urgent consideration among the other complementary disciplines.

Fourthly, it has been suggested in this study that the model can be applied together with some other notable frameworks adopted during decision making to venture overseas such as the SWOT analysis and Porter's Diamond. It is also recommended that a future research study investigates this position for viability and improvisation. It is being opined that models should complement each other for improved efficiency.

Lastly, a future study can focus on the financial perspective, internal business perspective, the customer perspective, and the innovation and learning perspective of the model proposed in this study. This is to serve as a feedback on the performance measurements of the model while further improving on the theoretical and the practical contributions of the model, including its indicators.

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APPENDIX 1: SAMPLING FRAME FOR THE CHINESE FIRMS IN NIGERIA

S/No.	Name of firm	Specialty
1	Alcatel Shanghai Bell (ASB)	Telecommunication
2	Anhui Construction Engineering Group Company	Civil Engineering
3	China Civil Engineering Construction Corporation (CCECC)	Civil Engineering
4	China Dalian International Cooperation (Group) Holdings	Real Estate
5	China Geo-engineering Corporation (CGC)	Civil Engineering
6	China Gezhouba Group Corporation (CGGC)	Civil Engineering
7	China Harbor Engineering Company (CHEC)	Civil Engineering
8	China National Electronics Import and Export Corporation (CEIEC)	Civil Engineering
9	China National Machinery and Equipment Import & Export Corporation (CMEC)	Civil Engineering
10	China National Overseas Oil Company Limited (CNOOC)	Civil Engineering
11	China Jiangsu International Economic Technical Cooperation	Real Estate
12	China Oil & Gas Pipeline Bureau (COG)	Civil Engineering
13	China Railway Engineering Corporation (CREC)	Civil Engineering
14	China Shanghai (Group) Corporation for Foreign & Technological Cooperation (SFECO)	Real Estate
15	China State Construction Engineering Corp. (CSCEC)	Civil Engineering
16	Chongqing Construction Engineering Group	Civil Engineering
17	Guangdong Xinguang African Investment Group (GDIG)	Civil Engineering
18	Henan Province Construction Engineering Corporation	Civil Engineering
19	Henan Hongye Construction (Group) Co. Ltd.	Civil Engineering
20	Huawei Technologies	Telecommunication
21	Hunan Construction Engineering Group Corporation (HNCEG)	Civil Engineering
22	Jintan Construction and Installation Engineering Company	Civil Engineering
23	North China Power Engineering (Beijing) Company Limited (NCPE)	Civil Engineering
24	Sany Group Co. Ltd.	Equipment and Machinery
25	Shandong Electric Power Construction Corporation	Electricity

	(SEPCO)	
26	Shengli Land Global Nigeria Limited	Real Estate
27	Shenzhen Energy Investment Co. Limited (Shenzhen Energy Group)	Real Estate
28	Sino Hydro (SINO)	Power Plants
29	Sinoma International Engineering Company Limited	Civil Engineering
30	Sinopec Group	Civil Engineering
31	Tianjin Yuyang Construction Engineering Co. Ltd.	Civil Engineering
32	Transtech Engineering Corporation (TEC)	Telecommunication
33	Zhongxing Telecommunication Equipment Company Limited (ZTE)	Telecommunication
34	Zhuhai Minghong Group Corporation Limited	Electronics

APPENDIX 2: SURVEY REQUEST FORM AND ROUND-ONE SURVEY QUESTIONNAIRE PACKAGE FOR THE CHINESE

Company address

Dear Sir/Madam,

Cross-cultural conflicts management on quality: request for survey participation

I am a Nigerian PhD candidate at the National University of Singapore (www.nus.edu.sg). I am carrying out a research on cross-cultural conflicts management relating to quality by Chinese construction firms (CCFs) working in Nigeria. This is borne out of the debates over the quality of services of the CCFs in Nigeria.

The thesis for the study is that when CCFs are able to identify differences (conflicts) between them and the Nigerian construction practitioners (NCPs) (Clients/developers, Consultants and Contractors – main, sub and specialists) of the significant influences of culture on quality, management of the differences could bear on the NCPs' perceptions of the delivery of quality services by the CCFs.

To the fore going, this study is undertaking a two-round survey of CCFs that have been involved in Federal government and State government projects in Nigeria to seek: (1) their views on **significant influences of culture on the perceptions of quality of services** and (2) their views on the **same for the NCPs, whom they have worked with in Nigeria**.

To achieve an objective assessment, the survey is geared towards CCFs with prior working experience with the NCPs. Hence, this first letter to your firm, identified from the list of **XXX** is **to obtain an expression of "interest to participate" (ITP) in the survey**. The survey will be held within the last quarter of 2012.

Looking ahead, with a response of an interest to participate in the survey using the **enclosed ITP form**, Survey questionnaires will be mailed to your firm for feedback from, preferably, three representatives (one each from the senior, middle and junior management level).

Please note that a questionnaire will take about 45 minutes to fill and is to be returned within two working weeks from receipt. Please be assured that anonymity of your firm and personnel as well as confidentiality of returned information will be maintained. A complimentary copy of a summary the study report will also be extended to your firm once completed.

For any further information on this study, please contact me via +65 8-22-44-639 or g0700347@nus.edu.sg. Thank you.

Yours sincerely,

Babatunde Oluwayomi Kayode
Ph.D. Candidate

cc.   Professor Low, Sui Pheng (Supervisor)   bdglowsp@nus.edu.sg

         Professor Ofori, George (Thesis Committee Member)   bdgofori@nus.edu.sg

         Assoc. Professor Ling, Yean Yng (Thesis Committee Member)   bdglyy@nus.edu.sg

ITP Form

Department of Building
National University of Singapore
4 Architecture Drive
Singapore 117566

Dear Mr. Babatunde,

Expression of Interest to participate in a survey on cross-cultural conflicts management on quality.

We received your letter with date dd/mm/yy on the above caption. We will/will not be able to participate in the survey.

If applicable:
Reason(s) for our inability to participate in the survey include(s):

_____

_____

_____

_____

_____

Thank you for the invitation.

_____
Name

_____
Designation

_____
Company

Nigeria High Commission
Singapore

NHS/CON.036/VOL.1

3rd September 2012

TO WHOM IT MAY CONCERN

This is to certify that, Mr. Babatunde Oluwayomi Kayode is a Nigerian, studying for his Phd at the School of Design and Environment of the National University of Singapore. As a part of the prerequisite for the award of the Degree, he is required to conduct a research work. Mr Kayode has chosen as his area of research issues relating to Cross Cultural Conflicts Management Relating to Quality by Chinese Construction Firms (CCFs) working in Nigeria.

In this regard, he would need to carry out a survey and interview some Chinese Companies registered in Nigeria that falls within the purview of the research work. In view of the above, kindly grant him the necessary assistance to enable him fulfill and complete the research project.

Michael. A. Fegbeboh
First Secretary
For High Commissioner

Survey Questionnaire on the Perceptions of the Influence of National Culture on Quality Management among Chinese Construction Practitioners

SECTION A: Bio-data. (Approx. 5 mins)

Age Group (years): 24 & below [   ]   25 – 34 [   ]   35 – 44 [   ]   45 – 54 [   ]   55 – 64 [   ]   *tick as applicable*

Highest academic qualification: Diploma [   ] Bachelors [   ] Masters [   ] Doctorate [   ] others [   ]   *tick one*

Overseas education (academic qualification or vocational training): Yes [   ] No [   ]   **Sex**: Male [   ]   Female [   ]

Company specialty: Developer [   ] Consultant [   ] Main contractor [   ] Sub-contractor / Specialist [   ] others [   ] *tick one*

Company size (i.e. staff strength): _____

Profession: _____ **Designation**: _____ **Years of Experience**: _____

Professional Affiliation: If you are a registered member of a professional body (e.g. Architects, Engineers, Quantity Surveyors, Project Managers, etc.), please state
_____

Quality Management: Is your Company's quality management system ISO 9001 certified? Yes [   ]   No [   ]

If your answer on ISO 9001 certification is "No", please state reason(s) _____
_____

SECTION B1: Perceptions of the significance of Total Quality Management (TQM) principles to quality management. (Approx. 10 mins)

Please arrange the following TQM principles (8 in total) as perceived to be significant to quality management in your company (starting from the most significant at the top i.e. 1). Please refer to the brief descriptions of the principles provided under the list:

(**A**). Customer focus; (**B**) Leadership; (**C**) Involvement of people; (**D**) Process approach; (**E**) System Approach to management; (**F**) Continual Improvement; (**G**) Factual Approach; and (**H**) Supplier Relationship.

1. _____ (*Most significant to quality*)

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____ (*Least significant to quality*)

Descriptions:

a) **Customer Focus** – Ensuring current products and/or services deliver customer satisfaction will continue to do so in the future.
b) **Leadership** – Senior and Middle Managers' clear involvement in promoting and leading quality improvement.
c) **Involvement of People** – Encouragement of company-wide (i.e. all departments) contribution to quality improvement.
d) **Process Approach** – Improvements in processes used in delivering outputs to both external and internal customers.
e) **System Approach to management** – Adoption of systems to deliver consistent products and services
f) **Continual Improvements** – Planning and setting goals for quality improvements.
g) **Factual Approach** – Use of information resources in the drive for quality improvement. Quality improvements decision should be based on some facts.
h) **Supplier relationship** – The use of high-regard, interdependent and mutually beneficial supply chain to create value.

1

SECTION B2: Perceptions of the significance of the attributes of the TQM principles on quality management. (Approx. 15 mins)

This section presents attributes of each of the eight TQM principles given in Section B1. Please rank on a 5-point scale, in the next Table, to indicate your degree of agreement of the perceived significance of the application of each of the attributes to achieving good quality. **5** being **"strongly agree"** and **1** being **"strongly disagree"** as insignificant to achieving good quality.

Principles of total quality management	Attributes of total quality management	Strongly agree as significant to achieving good quality	Agree as significant to achieving good quality	Neither agree nor disagree as significant to achieving good quality	Disagree as significant to achieving good quality	Strongly disagree as significant to achieving good quality
		5	4	3	2	1
Customer focus	Researching and understanding customer's needs and expectations.					
	Ensuring organization's objectives are linked to customer's needs and expectations.					
	Communicating customer's needs and expectations throughout the organization.					
	Measuring customer's satisfaction and acting on the results.					
	Systematically managing customer relationships.					
	Ensuring a balanced approach between satisfying the customers and other interested parties.					
Leadership	Considering the needs of all interested parties.					
	Establishing a clear vision of the organization's future.					
	Setting challenging goals and targets.					
	Creating and sustaining shared values, fairness and ethical role models at all levels of the organization.					
	Establishing trust and eliminating fear.					
	Providing people with the required resources, training and freedom to act with responsibility and accountability.					
	Inspiring, encouraging and recognizing people's contributions					

2

Principles of total quality management	Attributes of total quality management	Strongly agree as significant to achieving good quality	Agree as significant to achieving good quality	Neither agree nor disagree as signifi-cant to achieving good quality	Disagree as signifi-cant to achieving good quality	Strongly disagree as signifi-cant to achieving good quality
		5	4	3	2	1
People involvement	People understanding the importance of their contribution and role in the organization.					
	People identifying constraints to their performance.					
	People accepting ownership of problems and their responsibility for solving them.					
	People evaluating their performance against their personal goals and objectives.					
	People actively seeking opportunities to enhance their competence, knowledge and experience.					
	People freely sharing knowledge and experience.					
Process approach	Systematically defining the activities necessary to obtain a desired result.					
	Establishing clear responsibility and accountability for managing key activities.					
	Analyzing and measuring of the capability of key activities.					
	Identifying the interfaces of key activities within and between the functions of the organization.					
	Focusing on the factors such as resources, methods and materials that will improve key activities of the organization.					
	Evaluating risks, consequences and impacts of activities on customers, suppliers and other interested parties.					
System approach	Structuring a system to achieve the organization's objectives in the most effective and efficient way.					
	Understanding the interdependencies between the processes of the system.					
	Structured approaches that harmonize and					

3

Principles of total quality management	Attributes of total quality management	Strongly agree as significant to achieving good quality	Agree as significant to achieving good quality	Neither agree nor disagree as signifi-cant to achieving good quality	Disagree as signifi-cant to achieving good quality	Strongly disagree as signifi-cant to achieving good quality
		5	4	3	2	1
System approach	integrate processes.					
	Providing a better understanding of the roles and responsibilities necessary for achieving common objectives and thereby reducing cross-functional barriers.					
	Understanding organizational capabilities and establishing resource constraints prior to action.					
	Targeting and defining how specific activities within a system should operate.					
	Continually improving the system through measurement and evaluation.					
Continual improvement	Employing a consistent organization-wide approach to continual improvement of the organization's performance.					
	Providing people with training in the methods and tools of continual improvement.					
	Making continual improvement of products, processes and systems an objective for every individual in the organization.					
	Establishing goals to guide, and measures to track, continual improvement.					
	Recognizing and acknowledging improvements.					
Factual approach	Ensuring that data and information are sufficiently accurate and reliable.					
	Making data accessible to those who need it.					
	Analyzing data and information using valid methods.					
	Making decisions and taking action based on factual analysis, balanced with experience and intuition.					

4

Principles of total quality management	Attributes of total quality management	Strongly agree as significant to achieving good quality	Agree as significant to achieving good quality	Neither agree nor disagree as signifi-cant to achieving good quality	Disagree as signifi-cant to achieving good quality	Strongly disagree as signifi-cant to achieving good quality
		5	4	3	2	1
Supplier relationship	Establishing relationships that balance short-term gains with long-term considerations.					
	Pooling of expertise and resources with partners.					
	Identifying and selecting key suppliers.					
	Clear and open communication.					
	Sharing information and future plans.					
Supplier relationship	Establishing joint development and improvement activities.					
	Inspiring, encouraging and recognizing improvements and achievements by suppliers.					

SECTION C1: Perceptions of the significance of the National cultural dimensions on quality management. (Approx. 10 mins)

The under-listed national cultural dimensions (5 in total) are used to measure cultural differences between two or more countries:

(**A**) Power Distance; (**B**) Individualism versus collectivism; (**C**) Masculinity versus Femininity; (**D**) Uncertainty Avoidance; and (**E**) Long Term Orientation versus Short Term Orientation.

Please arrange the five national cultural dimensions as perceived to be significant to quality management in your company (starting from the most significant at the top i.e. 1). Please refer to the brief descriptions of the cultural dimensions provided under the list:

1. _____ (*Most significant to quality*)

2. _____

3. _____

4. _____

5. _____ (*Least significant to quality*)

Descriptions

a) **Power distance** – is the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally.
b) **Individualism / collectivism** – is the extent to which the ties between individuals are either loose (individualism) or integrated into strong, cohesive in-groups (collectivism).
c) **Masculinity / Femininity** – is the extent of the desirability for assertive behaviour (masculine) or modest behaviour (feminine) in a society.
d) **Uncertainty Avoidance** – is the extent to which a society feels threatened by ambiguous or unknown situations expressed through intolerable anxiety or nervous stress and in a need for predictability.
e) **Long Term Orientation / Short Term Orientation** – is the extent to which a society values the virtues of persistence, thrift, status, and having a sense of shame.

5

SECTION C2: Perceptions of the significance of the attributes of the national cultural dimensions on quality management. (Approx. 10 mins)

This section presents attributes of each of the five national cultural dimensions given in Section C1. Please rank on a 5-point scale, in the next Table, to indicate your degree of agreement of the perceived significance of the application of each of the attributes to achieving good quality. **5** being **"strongly agree"** and **1** being **"strongly disagree"** as insignificant to achieving good quality.

Dimensions of national culture	Attributes of the dimensions of national culture	Strongly agree as significant to achieving good quality	Agree as significant to achieving good quality	Neither agree nor disagree as signifi-cant to achieving good quality	Disagree as signifi-cant to achieving good quality	Strongly disagree as signifi-cant to achieving good quality
		5	4	3	2	1
Power distance	Minimize inequalities among people such that subordinates take own initiatives and challenge the superiors' opinions.					
	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.					
	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.					
	Strict obedience to authority, superiors hold infallible truths and are excellent such that others' opinions do not necessarily count.					
Individualism versus collectivism	Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share.					
	Tolerance for direct confrontations in speaking one's mind, even if it means creating a temporary dis-harmony.					
	Adopting low-context communication i.e. explicit expressions against having to infer from circumstances around an idea.					
	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.					
Masculinity versus femininity	Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority.					
	Assertive, ambitious, and tough. Forceful personality and strong determination to explicitly express, believe, and succeed.					
	Facts and feelings: willingness to try out new ways of doing things as against adopting					

6

Dimensions of national culture	Attributes of the dimensions of national culture	Strongly agree as significant to achieving good quality	Agree as significant to achieving good quality	Neither agree nor disagree as signifi-cant to achieving good quality	Disagree as signifi-cant to achieving good quality	Strongly disagree as signifi-cant to achieving good quality
		5	4	3	2	1
Masculinity versus femininity	something proven or the status quo.					
	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.					
Uncertainty avoidance	Tolerance for uncertainty and poise/confidence under such condition.					
	Not being stressed/anxious in uncertain situations such that there is no uncomfortable feeling of worry.					
	Not showing emotion (positive or negative) in spite of one's circumstances, mood or relationships with others.					
	Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.					
Long-term versus short-term orientation	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.					
	Being sparing with resources and practicing thrift such that money and other resources are carefully deployed.					
	Respect for circumstances such that a fact or condition connected with or relevant to an event or action is preserved or referred.					
	Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses.					

SECTION D: How the Chinese Construction Practitioners perceive the TQM principles to be significant to quality management among the Nigerian Construction Practitioners. (Approx. 5 mins)

Based on your working experience in Nigeria, please arrange the following eight TQM principles, as you perceive to be significant to quality management __among the Nigerian construction practitioners__ (starting from the most significant at the top i.e. 1):

 (**A**). Customer focus; (**B**) Leadership; (**C**) Involvement of people; (**D**) Process approach; (**E**) System Approach to management; (**F**) Continual Improvement; (**G**) Factual Approach; and (**H**) Supplier Relationship.

7

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1. _____ (*Most significant to quality*)

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____ (*Least significant to quality*)

SECTION E: How the Chinese Construction Practitioners perceive national cultural dimensions to be significant to quality management among the Nigerian Construction Practitioners. (Approx. 5 mins)

Based on your working experience in Nigeria, please arrange the five national cultural dimensions, as you perceive to be significant to quality management **among the Nigerian construction practitioners** (starting from the most significant at the top i.e. 1).

 (**A**) Power Distance; (**B**) Individualism versus collectivism; (**C**) Masculinity versus Femininity; (**D**) Uncertainty Avoidance; and (**E**) Long Term Orientation versus Short Term Orientation.

1. _____ (*Most important to quality*)

2. _____

3. _____

4. _____

5. _____ (*Least important to quality*)

Thank you.

8

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APPENDIX 3: SURVEY REQUEST FORM & ROUND-ONE SURVEY QUESTIONNAIRE PACKAGE FOR THE NIGERIANS

Date
Company address

Dear Sir/Madam,

Cross-cultural conflicts management on quality: request for survey participation

I am a Nigerian PhD candidate at the National University of Singapore (www.nus.edu.sg). I am carrying out a research on cross-cultural conflicts management relating to quality by Chinese construction firms (CCFs) working in Nigeria. This is borne out of the debates over the quality of services of the CCFs in Nigeria.

The thesis for the study is that when CCFs are able to identify differences (conflicts) between them and the Nigerian construction practitioners (NCPs) of the significant influences of culture on quality, management of the differences could bear on the NCPs' perceptions of the delivery of quality services by the CCFs.

To the fore going, this study is undertaking a two-round survey of NCPs (Clients/developers, Consultants and Contractors – main, sub and specialists) to seek: (1) their views on **significant influences of culture on the perceptions of quality services** and (2) their views on the **same for the CCFs working in Nigeria**.

To achieve an objective assessment, the survey is geared towards NCPs with prior working experience with the CCFs working in Nigeria. Hence, this first letter to your firm, identified from the list of **XXX** is **to obtain an expression of "interest to participate" (ITP) in the survey**. The survey will be held within the last quarter of 2012.

Looking ahead, with a response of an interest to participate in the survey using the **enclosed ITP form**, Survey questionnaires will be mailed to your firm for feedback from, preferably, three representatives (one each from the senior, middle and junior management level).

Please note that a questionnaire will typically take about 45 minutes to fill and is to be returned within two working weeks from receipt. Please be assured that anonymity of your firm and personnel as well as confidentiality of returned information will be maintained. A complimentary copy of a summary of the study report will also be extended to your firm once completed.

For any further information on this study, please contact me via +65 8-22-44-639 or g0700347@nus.edu.sg. Thank you.

Yours sincerely,

Babatunde Oluwayomi Kayode
Ph.D. Candidate

cc.   Professor Low, Sui Pheng (Supervisor)   bdglowsp@nus.edu.sg

         Professor Ofori, George (Thesis Committee Member)   bdgofori@nus.edu.sg

         Assoc. Professor Ling, Yean Yng (Thesis Committee Member)   bdglyy@nus.edu.sg

ITP Form

Department of Building
National University of Singapore
4 Architecture Drive
Singapore 117566

Dear Mr. Babatunde,

Expression of Interest to participate in a survey on cross-cultural conflicts management on quality.

We received your letter with date dd/mm/yy on the above caption. We will/will not be able to participate in the survey.

If applicable:
Reason(s) for our inability to participate in the survey include(s):

_____
_____
_____
_____
_____

Thank you for the invitation.

_____
Name

_____
Designation

_____
Company

Dear Sirs,

Please find attached a questionnaire brought to the secretariat by Mr. Oluwayomi Kayode Babatunde which he would like completed as part of his PhD thesis. We would appreciate as many of you as can find time to go through the questionnaire and send the duly completed forms back to us or to him on the following e mail address: readgenesys@yahoo.co.uk

Thanks for your cooperation in advance.

Adeyale Khalil | Executive Secretary

ASSOCIATION OF
CONSULTING
ARCHITECTS
NIGERIA

3rd Floor, Okoi Arikpo House
5 Idowu Taylor Street, Victoria Island, Lagos
Tel: +234-1-8724486 .Email:info@acanigeria.com

Survey Questionnaire on the Perceptions of the Influence of National Culture on Quality Management among Nigerian Construction Practitioners

SECTION A: Bio-data. (Approx. 5 mins)

Age Group (years): 24 & below [   ]   25 – 34 [   ]   35 – 44 [   ]   45 – 54 [   ]   55 – 64 [   ]   *tick as applicable*

Highest academic qualification: Diploma [   ] Bachelors [   ] Masters [   ] Doctorate [   ] others [   ]   *tick one*

Overseas education (academic qualification or vocational training): Yes [   ] No [   ]   **Sex**: Male [   ]   Female [   ]

Company specialty: Developer [   ] Consultant [   ] Main contractor [   ] Sub-contractor / Specialist [   ] others [   ] *tick one*

Company size (i.e. staff strength): _____

Profession: _____ **Designation**: _____ **Years of Experience**: _____

Professional Affiliation: If you are a registered member of a professional body (e.g. Architects, Engineers, Quantity Surveyors, Project Managers, etc.), please state
_____

Quality Management: Is your Company's quality management system ISO 9001 certified? Yes [   ]   No [   ]

If your answer on ISO 9001 certification is "No", please state reason(s) _____

_____

SECTION B1: Perceptions of the significance of Total Quality Management (TQM) principles to quality management. (Approx. 10 mins)

Please arrange the following TQM principles (8 in total) as perceived to be significant to quality management in your company (starting from the most significant at the top i.e. 1). Please refer to the brief descriptions of the principles provided under the list:

(A). Customer focus; *(B)* Leadership; *(C)* Involvement of people; *(D)* Process approach; *(E)* System Approach to management; *(F)* Continual Improvement; *(G)* Factual Approach; and *(H)* Supplier Relationship.

1. _____ (*Most significant to quality*)
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____ (*Least significant to quality*)

Descriptions:

a) **Customer Focus** – *Ensuring current products and/or services deliver customer satisfaction will continue to do so in the future.*
b) **Leadership** – *Senior and Middle Managers' clear involvement in promoting and leading quality improvement.*
c) **Involvement of People** – *Encouragement of company-wide (i.e. all departments) contribution to quality improvement.*
d) **Process Approach** – *Improvements in processes used in delivering outputs to both external and internal customers.*
e) **System Approach to management** – *Adoption of systems to deliver consistent products and services*
f) **Continual Improvements** – *Planning and setting goals for quality improvements.*
g) **Factual Approach** – *Use of information resources in the drive for quality improvement. Quality improvements decision should be based on some facts.*
h) **Supplier relationship** – *The use of high-regard, interdependent and mutually beneficial supply chain to create value.*

1

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SECTION B2: Perceptions of the significance of the attributes of the TQM principles on quality management. (Approx. 15 mins)

This section presents attributes of each of the eight TQM principles given in Section B1. Please rank on a 5-point scale, in the next Table, to indicate your degree of agreement of the perceived significance of the application of each of the attributes to achieving good quality. **5** being **"strongly agree"** and **1** being **"strongly disagree"** as insignificant to achieving good quality.

Principles of total quality management	Attributes of total quality management	Strongly agree as significant to achieving good quality	Agree as significant to achieving good quality	Neither agree nor disagree as signifi-cant to achieving good quality	Disagree as signifi-cant to achieving good quality	Strongly disagree as signifi-cant to achieving good quality
		5	4	3	2	1
Customer focus	Researching and understanding customer's needs and expectations.					
	Ensuring organization's objectives are linked to customer's needs and expectations.					
	Communicating customer's needs and expectations throughout the organization.					
	Measuring customer's satisfaction and acting on the results.					
	Systematically managing customer relationships.					
	Ensuring a balanced approach between satisfying the customers and other interested parties.					
Leadership	Considering the needs of all interested parties.					
	Establishing a clear vision of the organization's future.					
	Setting challenging goals and targets.					
	Creating and sustaining shared values, fairness and ethical role models at all levels of the organization.					
	Establishing trust and eliminating fear.					
	Providing people with the required resources, training and freedom to act with responsibility and accountability.					
	Inspiring, encouraging and recognizing people's contributions					

2

Principles of total quality management	Attributes of total quality management	Strongly agree as significant to achieving good quality	Agree as significant to achieving good quality	Neither agree nor disagree as significant to achieving good quality	Disagree as significant to achieving good quality	Strongly disagree as significant to achieving good quality
		5	4	3	2	1
People involvement	People understanding the importance of their contribution and role in the organization.					
	People identifying constraints to their performance.					
	People accepting ownership of problems and their responsibility for solving them.					
	People evaluating their performance against their personal goals and objectives.					
	People actively seeking opportunities to enhance their competence, knowledge and experience.					
	People freely sharing knowledge and experience.					
Process approach	Systematically defining the activities necessary to obtain a desired result.					
	Establishing clear responsibility and accountability for managing key activities.					
	Analyzing and measuring of the capability of key activities.					
	Identifying the interfaces of key activities within and between the functions of the organization.					
	Focusing on the factors such as resources, methods and materials that will improve key activities of the organization.					
	Evaluating risks, consequences and impacts of activities on customers, suppliers and other interested parties.					
System approach	Structuring a system to achieve the organization's objectives in the most effective and efficient way.					
	Understanding the interdependencies between the processes of the system.					
	Structured approaches that harmonize and					

3

Principles of total quality management	Attributes of total quality management	Strongly agree as significant to achieving good quality	Agree as significant to achieving good quality	Neither agree nor disagree as signifi-cant to achieving good quality	Disagree as signifi-cant to achieving good quality	Strongly disagree as signifi-cant to achieving good quality
		5	4	3	2	1
System approach	integrate processes.					
	Providing a better understanding of the roles and responsibilities necessary for achieving common objectives and thereby reducing cross-functional barriers.					
	Understanding organizational capabilities and establishing resource constraints prior to action.					
	Targeting and defining how specific activities within a system should operate.					
	Continually improving the system through measurement and evaluation.					
Continual improvement	Employing a consistent organization-wide approach to continual improvement of the organization's performance.					
	Providing people with training in the methods and tools of continual improvement.					
	Making continual improvement of products, processes and systems an objective for every individual in the organization.					
	Establishing goals to guide, and measures to track, continual improvement.					
	Recognizing and acknowledging improvements.					
Factual approach	Ensuring that data and information are sufficiently accurate and reliable.					
	Making data accessible to those who need it.					
	Analyzing data and information using valid methods.					
	Making decisions and taking action based on factual analysis, balanced with experience and intuition.					

4

Principles of total quality management	Attributes of total quality management	Strongly agree as significant to achieving good quality	Agree as significant to achieving good quality	Neither agree nor disagree as signifi-cant to achieving good quality	Disagree as signifi-cant to achieving good quality	Strongly disagree as signifi-cant to achieving good quality
		5	4	3	2	1
Supplier relationship	Establishing relationships that balance short-term gains with long-term considerations.					
	Pooling of expertise and resources with partners.					
	Identifying and selecting key suppliers.					
	Clear and open communication.					
	Sharing information and future plans.					
Supplier relationship	Establishing joint development and improvement activities.					
	Inspiring, encouraging and recognizing improvements and achievements by suppliers.					

SECTION C1: Perceptions of the significance of the National cultural dimensions on quality management. (Approx. 10 mins)

The under-listed national cultural dimensions (5 in total) are used to measure cultural differences between two or more countries:

(**A**) Power Distance; (**B**) Individualism versus collectivism; (**C**) Masculinity versus Femininity; (**D**) Uncertainty Avoidance; and (**E**) Long Term Orientation versus Short Term Orientation.

Please arrange the five national cultural dimensions as perceived to be significant to quality management in your company (starting from the most significant at the top i.e. 1). Please refer to the brief descriptions of the cultural dimensions provided under the list:

1. _____ (*Most significant to quality*)

2. _____

3. _____

4. _____

5. _____ (*Least significant to quality*)

Descriptions

a) **Power distance** – is the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally.
b) **Individualism / collectivism** – is the extent to which the ties between individuals are either loose (individualism) or integrated into strong, cohesive in-groups (collectivism).
c) **Masculinity / Femininity** – is the extent of the desirability for assertive behaviour (masculine) or modest behaviour (feminine) in a society.
d) **Uncertainty Avoidance** – is the extent to which a society feels threatened by ambiguous or unknown situations expressed through intolerable anxiety or nervous stress and in a need for predictability.
e) **Long Term Orientation / Short Term Orientation** – is the extent to which a society values the virtues of persistence, thrift, status, and having a sense of shame.

5

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SECTION C2: Perceptions of the significance of the attributes of the national cultural dimensions on quality management . (Approx. 10 mins)

This section presents attributes of each of the five national cultural dimensions given in Section C1. Please rank on a 5-point scale, in the next Table, to indicate your degree of agreement of the perceived significance of the application of each of the attributes to achieving good quality. **5** being **"strongly agree"** and **1** being **"strongly disagree"** as insignificant to achieving good quality.

Dimensions of national culture	Attributes of the dimensions of national culture	Strongly agree as significant to achieving good quality	Agree as significant to achieving good quality	Neither agree nor disagree as significant to achieving good quality	Disagree as significant to achieving good quality	Strongly disagree as significant to achieving good quality
		5	4	3	2	1
Power distance	Minimize inequalities among people such that subordinates take own initiatives and challenge the superiors' opinions.					
	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.					
	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.					
	Strict obedience to authority, superiors hold infallible truths and are excellent such that others' opinions do not necessarily count.					
Individualism versus collectivism	Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share.					
	Tolerance for direct confrontations in speaking one's mind, even if it means creating a temporary dis-harmony.					
	Adopting low-context communication i.e. explicit expressions against having to infer from circumstances around an idea.					
	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.					
Masculinity versus femininity	Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority.					
	Assertive, ambitious, and tough. Forceful personality and strong determination to explicitly express, believe, and succeed.					
	Facts and feelings: willingness to try out new ways of doing things as against adopting					

6

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Dimensions of national culture	Attributes of the dimensions of national culture	Strongly agree as significant to achieving good quality	Agree as significant to achieving good quality	Neither agree nor disagree as signifi-cant to achieving good quality	Disagree as signifi-cant to achieving good quality	Strongly disagree as signifi-cant to achieving good quality
		5	4	3	2	1
Masculinity versus femininity	something proven or the status quo.					
	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.					
Uncertainty avoidance	Tolerance for uncertainty and poise/confidence under such condition.					
	Not being stressed/anxious in uncertain situations such that there is no uncomfortable feeling of worry.					
	Not showing emotion (positive or negative) in spite of one's circumstances, mood or relationships with others.					
	Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.					
Long-term versus short-term orientation	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.					
	Being sparing with resources and practicing thrift such that money and other resources are carefully deployed.					
	Respect for circumstances such that a fact or condition connected with or relevant to an event or action is preserved or referred.					
	Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses.					

SECTION D: How the Nigerian Construction Practitioners perceive the TQM principles to be significant to quality management among the Chinese Construction Practitioners working in Nigeria. (Approx. 5 mins)

Based on your working experience with Chinese construction firm(s), please arrange the following eight TQM principles, as you perceive to be significant to quality management **among the Chinese construction practitioners** (starting from the most significant at the top i.e. 1):

7

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(A). Customer focus; (B) Leadership; (C) Involvement of people; (D) Process approach; (E) System Approach to management; (F) Continual Improvement; (G) Factual Approach; and (H) Supplier Relationship.

1. _____ (*Most significant to quality*)

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____ (*Least significant to quality*)

SECTION E: How the Nigerian Construction Practitioners perceive national cultural dimensions to be significant to quality management among the Chinese Construction Practitioners working in Nigeria. (Approx. 5 mins)

Based on your working experience with Chinese construction firm(s), please arrange the five national cultural dimensions, as you perceive to be significant to quality management **among the Chinese construction practitioners** (starting from the most significant at the top i.e. 1).

(A) Power Distance; (B) Individualism versus collectivism; (C) Masculinity versus Femininity; (D) Uncertainty Avoidance; and (E) Long Term Orientation versus Short Term Orientation.

1. _____ (*Most important to quality*)

2. _____

3. _____

4. _____

5. _____ (*Least important to quality*)

Thank you.

8

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APPENDIX 4: ROUND-TWO SURVEY QUESTIONNAIRE FOR THE CHINESE

Survey Questionnaire on the Perceptions of the Influence of National Culture on Quality Management among Chinese Construction Practitioners

Aim: This second round of the Survey is aimed at investigating the significant influences of the national cultural dimensions on the total quality management principles. (Approx. 30 mins)

1) Based on the feedback on the perceived significance of the total quality management (TQM) principles as well as the national cultural dimensions (NCD) to quality management, the Matrix below presents the top-3 ranked TQM principles and the five NCDs (as ranked) along the column and row respectively. Please note that for the purpose of this study, focus in on the top-3 ranked TQM principles.

2) Similarly, based on the feedback on the degree of agreement of the perceived significance of the application of each of the attributes of the TQM principles and NCDs to achieving good quality, the top-2 ranked attributes of the TQM principles and NCDs mentioned in item 1 are also included in the Matrix.

3) On the Matrix, NCD 1/ TQM 1 corresponds to NCD/TQM perceived most significant to quality, while NCD 1.1/TQM 1.1 corresponds to NCD/TQM attribute perceived most significant to achieving good quality. Please also note that only the top-2 ranked TQM and NCD attributes have been included in the Matrix for further investigation in this second round of the Survey.

4) For each attribute under the TQM principles, please indicate **ONE** out of the two attributes under each NCD, which you perceive to be more significant to achieving good quality construction services in Nigeria when applied together with the TQM attribute in question. Please note that for each TQM attribute, you can only have maximum of **FIVE** NCD attributes (one from each pair). The same NCD attribute can be selected twice under a TQM principle if applicable to the two attributes of the TQM principle.

National cultural dimensions (NCDs)		Power distance (NCD 1)		Individualism versus collectivism (NCD 2)		Masculinity versus femininity (NCD 3)		Long-term versus short-term orientation (NCD 4)		Uncertainty avoidance (NCD 5)	
		NCD 1.1	NCD 1.2	NCD 2.1	NCD 2.2	NCD 3.1	NCD 3.2	NCD 4.1	NCD 4.2	NCD 5.1	NCD 5.2
Total quality management (TQM) principles		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	Adopting low-context communication i.e. explicit expressions against having to infer from circumstances around an idea.	Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	Being sparing with resources and practicing thrift such that money and other resources are carefully deployed.	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	Tolerance for uncertainty and poise/ confidence under such condition.
Leadership (TQM 1)	Establishing trust and eliminating fear.										

1

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National cultural dimensions (NCDs)		Power distance (NCD 1)		Individualism versus collectivism (NCD 2)		Masculinity versus femininity (NCD 3)		Long-term versus short-term orientation (NCD 4)		Uncertainty avoidance (NCD 5)	
		NCD 1.1	NCD 1.2	NCD 2.1	NCD 2.2	NCD 3.1	NCD 3.2	NCD 4.1	NCD 4.2	NCD 5.1	NCD 5.2
Total quality management (TQM) principles		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	Adopting low-context communication i.e. explicit expressions against having to infer from circumstances around an idea.	Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	Being sparing with resources and practicing thrift such that money and other resources are carefully deployed.	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	Tolerance for uncertainty and poise/ confidence under such condition.
	(TQM 1.1)										
	Creating and sustaining shared values, fairness and ethical role models at all levels of the organization. (TQM 1.2)										
People involvement (TQM 2)	People understanding the importance of their contribution and role in the organization. (NCD 2.1)										

National cultural dimensions (NCDs)		Power distance (NCD 1)		Individualism versus collectivism (NCD 2)		Masculinity versus femininity (NCD 3)		Long-term versus short-term orientation (NCD 4)		Uncertainty avoidance (NCD 5)	
		NCD 1.1	NCD 1.2	NCD 2.1	NCD 2.2	NCD 3.1	NCD 3.2	NCD 4.1	NCD 4.2	NCD 5.1	NCD 5.2
Total quality management (TQM) principles		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	Adopting low-context communication i.e. explicit expressions against having to infer from circumstances around an idea.	Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	Being sparing with resources and practicing thrift such that money and other resources are carefully deployed.	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	Tolerance for uncertainty and poise/ confidence under such condition.
	People actively seeking opportunities to enhance their competence, knowledge and experience. (TQM 2.2)										
Customer focus (TQM 3)	Researching and understanding customer's needs and expectations. (TQM 3.1)										
	Ensuring a balanced approach between										

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National cultural dimensions (NCDs)		Power distance (NCD 1)		Individualism versus collectivism (NCD 2)		Masculinity versus femininity (NCD 3)		Long-term versus short-term orientation (NCD 4)		Uncertainty avoidance (NCD 5)	
		NCD 1.1	NCD 1.2	NCD 2.1	NCD 2.2	NCD 3.1	NCD 3.2	NCD 4.1	NCD 4.2	NCD 5.1	NCD 5.2
Total quality management (TQM) principles		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	Adopting low-context communication i.e. explicit expressions against having to infer from circumstances around an idea.	Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	Being sparing with resources and practicing thrift such that money and other resources are carefully deployed.	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	Tolerance for uncertainty and poise/ confidence under such condition.
	satisfying the customers and other interested parties. (TQM 3.2)										

Thank you.

APPENDIX 5: ROUND-TWO SURVEY QUESTIONNAIRE FOR THE NIGERIANS

Survey Questionnaire on the Perceptions of the Influence of National Culture on Quality Management among Nigerian Construction Practitioners

Aim: This second round of the Survey is aimed at investigating the significant influences of the national cultural dimensions on the total quality management principles. (Approx. 30 mins)

1) Based on the feedback on the perceived significance of the total quality management (TQM) principles as well as the national cultural dimensions (NCD) to quality management, the Matrix below presents the top-3 ranked TQM principles and the five NCDs (as ranked) along the column and row respectively. Please note that for the purpose of this study, focus in on the top-3 ranked TQM principles.

2) Similarly, based on the feedback on the degree of agreement of the perceived significance of the application of each of the attributes of the TQM principles and NCDs to achieving good quality, the top-2 ranked attributes of the TQM principles and NCDs mentioned in item 1 are also included in the Matrix.

3) On the Matrix, NCD 1/ TQM 1 corresponds to NCD/TQM perceived most significant to quality, while NCD 1.1/TQM 1.1 corresponds to NCD/TQM attribute perceived most significant to achieving good quality. Please also note that only the top-2 ranked TQM and NCD attributes have been included in the Matrix for further investigation in this second round of the Survey.

4) For each attribute under the TQM principles, please indicate **ONE** out of the two attributes under each NCD, which you perceive to be more significant to achieving good quality construction services in Nigeria when applied together with the TQM attribute in question. Please note that for each TQM attribute, you can only have maximum of **FIVE** NCD attributes (one from each pair). The same NCD attribute can be selected twice under a TQM principle if applicable to the two attributes of the TQM principle.

National cultural dimensions (NCDs)		Individualism versus collectivism (NCD 1)		Power distance (NCD 2)		Long-term versus short-term orientation (NCD 3)		Masculinity versus femininity (NCD 4)		Uncertainty avoidance (NCD 5)	
		NCD 1.1	NCD 1.2	NCD 2.1	NCD 2.2	NCD 3.1	NCD 3.2	NCD 4.1	NCD 4.2	NCD 5.1	NCD 5.2
Total quality management (TQM) principles		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share.	Encourage interdepen-dence to eliminate absolute reliance on or control by someone or a group for continued operation.	Handle status with care such that relative position, which also determines rights and responsibili-ties are protected or maintained.	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses.	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority.	Not being stressed/ anxious in uncertain situations such that there is no uncomfortabl e feeling of worry.	Tolerance for uncertainty and poise/ confidence under such condition.
Customer focus (TQM 1)	Researching and understan-ding customer's										

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National cultural dimensions (NCDs)		Individualism versus collectivism (NCD 1)		Power distance (NCD 2)		Long-term versus short-term orientation (NCD 3)		Masculinity versus femininity (NCD 4)		Uncertainty avoidance (NCD 5)	
		NCD 1.1	NCD 1.2	NCD 2.1	NCD 2.2	NCD 3.1	NCD 3.2	NCD 4.1	NCD 4.2	NCD 5.1	NCD 5.2
Total quality management (TQM) principles		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share.	Encourage interdepen-dence to eliminate absolute reliance on or control by someone or a group for continued operation.	Handle status with care such that relative position, which also determines rights and responsibili-ties are protected or maintained.	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses.	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority.	Not being stressed/ anxious in uncertain situations such that there is no uncomfortable feeling of worry.	Tolerance for uncertainty and poise/ confidence under such condition.
	needs and expectations. (TQM 1.1)										
	Measuring customer's satisfaction and acting on the results. (TQM 1.2)										
Leadership (TQM 2)	Establishing a clear vision of the organiza-tion's future. (TQM 2.1)										
	Providing people with the required resources, training and freedom to										

National cultural dimensions (NCDs)		Individualism versus collectivism (NCD 1)		Power distance (NCD 2)		Long-term versus short-term orientation (NCD 3)		Masculinity versus femininity (NCD 4)		Uncertainty avoidance (NCD 5)	
		NCD 1.1	NCD 1.2	NCD 2.1	NCD 2.2	NCD 3.1	NCD 3.2	NCD 4.1	NCD 4.2	NCD 5.1	NCD 5.2
Total quality management (TQM) principles		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share.	Encourage interdepen-dence to eliminate absolute reliance on or control by someone or a group for continued operation.	Handle status with care such that relative position, which also determines rights and responsibili-ties are protected or maintained.	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses.	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority.	Not being stressed/ anxious in uncertain situations such that there is no uncomfortabl e feeling of worry.	Tolerance for uncertainty and poise/ confidence under such condition.
	act with responsibility and accountabili-ty. (TQM 2.2)										
People involvement (TQM 3)	People actively seeking opportunities to enhance their competence, knowledge and experience. (TQM 3.1)										
	People understan-ding the importance of their contribution										

National cultural dimensions (NCDs)		Individualism versus collectivism (NCD 1)		Power distance (NCD 2)		Long-term versus short-term orientation (NCD 3)		Masculinity versus femininity (NCD 4)		Uncertainty avoidance (NCD 5)	
		NCD 1.1	NCD 1.2	NCD 2.1	NCD 2.2	NCD 3.1	NCD 3.2	NCD 4.1	NCD 4.2	NCD 5.1	NCD 5.2
Total quality management (TQM) principles		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share.	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	Handle status with care such that relative position, which also determines rights and responsibili-ties are protected or maintained.	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses.	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority.	Not being stressed/ anxious in uncertain situations such that there is no uncomfortable feeling of worry.	Tolerance for uncertainty and poise/ confidence under such condition.
	and role in the organization. (TQM 3.2)										

Thank you.

APPENDIX 6: DELPHI REQUEST & ROUND ONE QUESTIONNAIRE

Dear Delphi Participant,

As previously discussed with you, you have been selected as an Expert to participate in a Delphi Process on the research aim "Perception of the influence of national culture on quality management".

This is Phase 2, which aims to deliberate the outcome of Phase 1 (surveys among the Nigerian and the Chinese construction practitioners on the research aim) towards consensus on the ranking. For this Phase 2, there will be 3 rounds. Here is Round 1.

First, I have attached in this email the summary of the feedback for the Nigerian construction practitioners. Please note that there are two pages, however, only page 1 has content. There are two Tables on Page 1, the upper Table is on the summary on the perceived significance of total quality management principles on achieving good quality by the Nigerians. The lower Table is on the summary on the perceived significance of national cultural dimensions on achieving good quality also by the Nigerians.

1. Please give your supports and rebuttals for and against the ranking for total quality management principles and national cultural dimensions as perceived among the Nigerians for themselves and for the Chinese.
2. Please Cite personal experience and real life construction project examples to buttress your stand and convince other Experts.

Summary of the perceptions among the Chinese will be sent tomorrow morning. You are requested to approach it in like manners as for the Nigerians, which have been expounded in the preceding paragraph.

In closing, please note the schedule for the 3-round Delphi below:

Round 1: To send by Monday, 19 Nov 2012 | To return by Friday, 23 Nov 2012, 6pm.

Round 2: To send by Monday, 26 Nov 2012 | To return by Wednesday, 28 Nov, 6pm.

Round 3: To send by Friday, 30 Nov 2012 | To return by Monday, 3 Dec 2012.

Thanks for your time to participate and valuable insights in advance.

Kind regards,
Yomi

Sent from my BlackBerry® Smartphone, from Etisalat. Enjoy high speed internet service with Etisalat easy net, available at all our experience centres

Summary of Survey feedback (Chinese Construction Practitioners)

How Chinese construction practitioners perceive to be significant in their own firms				How Chinese construction practitioners perceive to be significant among the Nigerian construction practitioners			
Total quality management (TQM) principles	Mean Item Score = ∑total ranking / number of respondents	Ranks	Top-3 percentage ranking by respondents = rank (% respondents)	Total quality management (TQM) principles	Mean Item Score = ∑total ranking / number of respondents	Ranks	Top-3 percentage ranking by respondents = rank (% respondents)
Leadership	5.2083	1	**1** (27%); **3&6** (13%).	Leadership	5.2917	1	**1** (27%); **2** (23%); and **7&8** (13%)
Involvement of People	4.9375	2	**3** (21%); and **2&4** (17%).	Involvement of People	4.9583	2	**4** (25%); **3** (20.83%); and **5** (17%).
Customer Focus	4.8333	3	**1** (25%); **6** (19%); and **7** (15%)	Customer Focus	4.7500	3	**1** (27%); **6** (19%); and **7** (15%).
Continual Improvement	4.6042	4	**8** (21%); **1** (15%); and **5&6** (13%).	Factual Approach	4.4792	4	**8** (23%); **2** (17%); and **1** (15%)
Factual Approach	4.2917	5	**1** (23%); **8** (15%); and **4** (13%).	Process Approach	4.3958	5	**3** (21%); **7** (19%); and **6** (17%).
System Approach	4.1667	6	**5** (25%); **7** (17%); and **4** (15%).	Continual Improvement	4.1875	6	**6** (25%); **5** (19%); and **4** (15%)
Process Approach	4.0625	7	**5&6** (19%); and **7** (15%)	System Approach	4.0625	7	**7** (25%); **4** (21%); and **3&5** (15%)
Supplier Relationship	3.8958	8	**8** (27%); and **3&4** (15%).	Supplier Relationship	3.8750	8	**8** (27%); and **2&3** (15%)

How Chinese construction practitioners perceive to be significant in their own firms				How Chinese construction practitioners perceive to be significant among the Nigerian construction practitioners			
Dimensions of National Culture	Mean Item Score = ∑total ranking / number of respondents	Ranks	Top-3 percentage ranking by respondents = rank (% respondents)	Dimensions of National Culture	Mean Item Score = ∑total ranking / number of respondents	Ranks	Top-3 percentage ranking by respondents = rank (% respondents)
Power Distance	3.2917	1	**1** (29%); **4** (25%); and **3** (19%).	Individualism	3.4375	1	**2** (33%); **4** (21%); and **1** (19%).
Individualism	3.1667	2	**1** (25%); and **2&4** (23%).	Power Distance	3.1042	2	**3** (29%); **4** (21%); and **1** (19%).
Masculinity	3.0208	3	**3** (29%); and **1&4** (19%).	Masculinity	3.0000	3	**4** (29%); and **2&3** (21%).
Long-term Orientation	2.8750	4	**5** (29%); **2** (23%); and **1** (19%).	Long-term Orientation	2.8750	4	**5** (35%); **1** (31%); and **4** (15%).
Uncertainty Avoidance	2.6458	5	**5** (27%); **3** (25%); and **2** (21%).	Uncertainty Avoidance	2.7292	5	**5** (29%); **3** (25%); and **2** (17%).

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Summary of Survey feedback (Nigerian Construction Practitioners)

How Nigerian construction practitioners perceive to be significant in their own firms				How Nigerian construction practitioners perceive to be significant among the Chinese construction practitioners			
Total quality management (TQM) principles	Mean Item Score = ∑total ranking / number of respondents	Ranks	Top-3 percentage ranking by respondents = rank (% respondents)	Total quality management (TQM) principles	Mean Item Score = ∑total ranking / number of respondents	Ranks	Top-3 percentage ranking by respondents = rank (% respondents)
Customer Focus	5.2250	1	**1** (35%); **6** (14%); and **8** (11.25%)	Leadership	4.9000	1	**1** (25%); **6** (21%); and **4** (11%).
Leadership	5.1250	2	**1** (33%); and **4&7** (14%)	Customer Focus	4.8125	2	**2** (20%); **1** (18%); and **5** (16%).
Involvement of People	4.9125	3	**5** (21%); **2** (20%); and **3** (15%)	Process Approach	4.7125	3.5	**3&5** (20%); and **4** (14%).
Process Approach	4.6875	4	**6** (18%); and **2,3&4** (16%)	System Approach	4.7125	3.5	**2** (18%); and **3&6** (15%).
System Approach	4.6000	5	**3&4** (16%); and **2** (15%).	Involvement of People	4.5750	5	**4&5** (16%); and **7** (14%).
Continual Improvement	4.1625	6	**3&8** (20%); and **5** (19%).	Factual Approach	4.2375	6	**3** (21%); **7** (16%); and **8** (15%).
Factual Approach	3.7625	7	**8** (24%); **6** (18%); and **4** (13%).	Continual Improvement	4.1125	7	**6** (19%); and **2&8** (15%).
Supplier Relationship	3.5250	8	**8** (24%); **7** (21%); and **4** (19%).	Supplier Relationship	3.9375	8	**8** (23%); **7** (18%); and **1** (14%).

How Nigerian construction practitioners perceive to be significant in their own firms				How Nigerian construction practitioners perceive to be significant among the Chinese construction practitioners			
Dimensions of National Culture	Mean Item Score = ∑total ranking / number of respondents	Ranks	Top-3 percentage ranking by respondents = rank (% respondents)	Dimensions of National Culture	Mean Item Score = ∑total ranking / number of respondents	Ranks	Top-3 percentage ranking by respondents = rank (% respondents)
Individualism	3.2375	1	**1** (24%); and **3&4** (23%).	Power Distance	3.2875	1	**1** (31%); **4** (24%); and **3** (18%).
Power Distance	3.1000	2	**1** (27%); and **3&4** (23%).	Individualism	3.1375	2	**1&2** (23%); and **3&4** (19%).
Long-term Orientation	3.0000	3	**1** (28%); **5** (26%); and **3&4** (16%).	Long-term Orientation	3.0125	3	**5** (26%); **3** (25%); and **1** (23%).
Masculinity	2.8875	4	**1** (29%); **3** (26%); and **4** (20%)	Uncertainty Avoidance	2.8625	4	**4** (30%); **1&5** (19%).
Uncertainty Avoidance	2.7750	5	**5** (28%); **2** (23%); and **4** (20%).	Masculinity	2.7000	5	**2** (29%); **5** (25%); and **3** (23%).

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APPENDIX 7: ROUND TWO DELPHI QUESTIONNAIRE (FOR CHINESE)

National cultural dimensions (NCDs)		Power distance (NCD 1)		Individualism versus collectivism (NCD 2)		Masculinity versus femininity (NCD 3)		Long-term versus short-term orientation (NCD 4)		Uncertainty avoidance (NCD 5)	
		NCD 1.1	NCD 1.2	NCD 2.1	NCD 2.2	NCD 3.1	NCD 3.2	NCD 4.1	NCD 4.2	NCD 5.1	NCD 5.2
Total quality management (TQM) principles		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	Adopting low-context communication i.e. explicit expressions against having to infer from circumstances around an idea.	Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	Being sparing with resources and practicing thrift such that money and other resources are carefully deployed.	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	Tolerance for uncertainty and poise/ confidence under such condition.
Leadership (TQM 1)	Establishing trust and eliminating fear. (TQM 1.1)	31	17	33	15	27	21	19	29	27	21
	Creating and sustaining shared values, fairness and ethical role models at all levels of the organization. (TQM 1.2)	31	17	25	23	30	18	19	29	22	26
People involvement (TQM 2)	People understanding the importance of their contribution and role in the organization. (NCD 2.1)	21	27	21	27	19	29	28	20	29	19

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National cultural dimensions (NCDs)		Power distance (NCD 1)		Individualism versus collectivism (NCD 2)		Masculinity versus femininity (NCD 3)		Long-term versus short-term orientation (NCD 4)		Uncertainty avoidance (NCD 5)	
		NCD 1.1	NCD 1.2	NCD 2.1	NCD 2.2	NCD 3.1	NCD 3.2	NCD 4.1	NCD 4.2	NCD 5.1	NCD 5.2
Total quality management (TQM) principles		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	Encourage interdepen-dence to eliminate absolute reliance on or control by someone or a group for continued operation.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	Adopting low-context communication i.e. explicit expressions against having to infer from circumstances around an idea.	Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	Being sparing with resources and practicing thrift such that money and other resources are carefully deployed.	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	Tolerance for uncertainty and poise/ confidence under such condition.
Customer focus (TQM 3)	People actively seeking opportunities to enhance their competence, knowledge and experience. (TQM 2.2)	15	33	29	19	22	26	18	30	24	24
	Researching and understanding customer's needs and expectations. (TQM 3.1)	29	19	23	25	31	17	19	29	24	24
	Ensuring a balanced approach between satisfying the customers and other interested parties. (TQM 3.2)	26	22	19	29	32	16	29	19	23	25

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APPENDIX 8: ROUND TWO DELPHI QUESTIONNAIRE (FOR NIGERIANS)

National cultural dimensions (NCDs)		Individualism versus collectivism (NCD 1)		Power distance (NCD 2)		Long-term versus short-term orientation (NCD 3)		Masculinity versus femininity (NCD 4)		Uncertainty avoidance (NCD 5)	
		NCD 1.1	NCD 1.2	NCD 2.1	NCD 2.2	NCD 3.1	NCD 3.2	NCD 4.1	NCD 4.2	NCD 5.1	NCD 5.2
Total quality management (TQM) principles		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share.	Encourage interdepend-dence to eliminate absolute reliance on or control by someone or a group for continued operation.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses.	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority.	Not being stressed/ anxious in uncertain situations such that there is no uncomfortable feeling of worry.	Tolerance for uncertainty and poise/ confidence under such condition.
Customer focus (TQM 1)	Researching and understanding customer's needs and expectations. (TQM 1.1)	36	44	30	50	43	37	31	49	37	43
	Measuring customer's satisfaction and acting on the results. (TQM 1.2)	49	31	31	49	51	29	47	33	46	34
Leadership (TQM 2)	Establishing a clear vision of the organization's future. (TQM 2.1)	38	42	47	33	30	50	38	42	44	36
	Providing people with the required resources,	45	35	31	49	41	39	46	34	33	47

National cultural dimensions (NCDs)		Individualism versus collectivism (NCD 1)		Power distance (NCD 2)		Long-term versus short-term orientation (NCD 3)		Masculinity versus femininity (NCD 4)		Uncertainty avoidance (NCD 5)	
		NCD 1.1	NCD 1.2	NCD 2.1	NCD 2.2	NCD 3.1	NCD 3.2	NCD 4.1	NCD 4.2	NCD 5.1	NCD 5.2
Total quality management (TQM) principles		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share.	Encourage interdepend-dence to eliminate absolute reliance on or control by someone or a group for continued operation.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses.	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority.	Not being stressed/ anxious in uncertain situations such that there is no uncomfortable feeling of worry.	Tolerance for uncertainty and poise/ confidence under such condition.
	training and freedom to act with responsibility and accountability. (TQM 2.2)										
People involvement (TQM 3)	People actively seeking opportunities to enhance their competence, knowledge and experience. (TQM 3.1)	43	37	46	34	44	36	33	47	37	43
	People understanding the importance of their contribution and role in the organization. (TQM 3.2)	31	49	44	36	36	44	42	38	38	42

APPENDIX 9: ROUND THREE DELPHI QUESTIONNAIRE (COMBINED RESULTS)

Common 18 pairs from the importance rating of TQM principles and NCDs by the Chinese and the Nigerians (Matrix 3)

National cultural dimensions (NCDs) — Total quality management (TQM) principles		Individualism versus collectivism	Power distance		Long-term versus short-term orientation	Masculinity versus femininity	Uncertainty avoidance
		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	Encourage inter-dependence to eliminate absolute reliance on or control by someone or a group for conti-nued operation.	Handle status with care such that relative position, which also deter-mines rights and responsibilities are protected or main-tained.	Persist in doing something, in a determined way, despite difficulty or delay in achie-ving success or results seem not forthcoming.	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	Tolerance for uncertainty and poise/ confidence under such condi-tion.
Customer focus	Researching and understanding customer's needs and expectations.						
People involvement	People actively seeking opportu-nities to enhance their competence, knowledge and experience.						
	People understand-ding the importan-ce of their contri-bution and role in the organization.						

**APPENDIX 10: INTERVIEW REQUEST FORM & QUESTIONNAIRE FOR HC1
& HC2 CHINESE FIRMS**

Company address

Dear Sir/Madam,

Cross-cultural conflicts management on quality: request for survey participation

I am a Nigerian PhD candidate at the National University of Singapore (www.nus.edu.sg). I am currently in Nigeria carrying out a research on cross-cultural conflicts management relating to quality by Chinese construction firms (CCFs) working in Nigeria. This is borne out of the debates over the quality of services of the CCFs in Nigeria.

The thesis for the study is that when CCFs are able to identify differences (conflicts) between them and the Nigerian construction practitioners (NCPs) (Clients/developers, Consultants and Contractors – main, sub and specialists) of the significant influences of culture on quality, management of the differences could bear on the NCPs' perceptions of the delivery of quality services by the CCFs.

Phase 1 of this research involved separate surveys of NCPs and CCFs. I am requesting for your reputable firm's participation in a 3-day case study, to be conducted in the month of December 2012 for the Phase 2. Over the course of the three days, your firm would provide concise information on: (1) its operations and venture into Nigeria, (2) background into a specific project in Nigeria, and (3) cross-cultural construction quality challenges it encountered on the project. A maximum of a 1-hour site visit, steered by one of personnel familiar with the particular project is also required on Day 2.

To assist you in your firm's preparations, I have enclosed herewith this letter: (1) a formal introductory letter on the researcher and purpose of study, (2) a copy of the semi-structured interview questionnaire to be used in seeking information as requested in paragraph 3 of this letter, and (3) a copy of the structured questionnaire, derived from the Phase 1 survey among some other CCFs in Nigeria.

Please note that each questionnaire will take about 45 minutes to fill and is to be returned at the end of each day. Please be assured that anonymity of your firm and personnel as well as confidentiality of returned information will be maintained. A complimentary copy of a summary the study report will also be extended to your firm once completed.

Please endorse on the enclosed "Interest to participate" (ITP) in the case study form (ITP form).

For any further information on this study, please contact me via +2348098785556 or g0700347@nus.edu.sg. Thank you.

Yours sincerely,

Babatunde Oluwayomi Kayode
Ph.D. Candidate

cc.   Professor Low, Sui Pheng (Supervisor)   bdglowsp@nus.edu.sg

      Professor Ofori, George (Thesis Committee Member)   bdgofori@nus.edu.sg

      Assoc. Professor Ling, Yean Yng (Thesis Committee Member)   bdglyy@nus.edu.sg

ITP Form

Department of Building
National University of Singapore
4 Architecture Drive
Singapore 117566

Dear Mr. Babatunde,

Expression of Interest to participate in a case study on cross-cultural conflicts management on quality.

We received your letter with date dd/mm/yy on the above caption. We will/will not be able to participate in the survey.

If applicable:
Reason(s) for our inability to participate in the survey include(s):

_____
_____
_____
_____
_____

Thank you for the invitation.

_____
Name

_____
Designation

_____
Company

Nigeria High Commission
Singapore

NHS/CON.036/VOL.1

3rd September 2012

TO WHOM IT MAY CONCERN

This is to certify that, Mr. Babatunde Oluwayomi Kayode is a Nigerian, studying for his Phd at the School of Design and Environment of the National University of Singapore. As a part of the prerequisite for the award of the Degree, he is required to conduct a research work. Mr Kayode has chosen as his area of research issues relating to Cross Cultural Conflicts Management Relating to Quality by Chinese Construction Firms (CCFs) working in Nigeria.

In this regard, he would need to carry out a survey and interview some Chinese Companies registered in Nigeria that falls within the purview of the research work. In view of the above, kindly grant him the necessary assistance to enable him fulfill and complete the research project.

Michael. A. Fegbeboh
First Secretary
For High Commissioner

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Interview questionnaire on the perceptions of the influence of national culture on quality management.

1. The research is on cross-cultural conflicts management relating to quality by Chinese construction firms (CCFs) working in Nigeria. This is borne out of the debates over the quality of services of the CCFs in Nigeria.

2. The thesis for the study is that when CCFs are able to identify differences (conflicts) between them and the Nigerian construction practitioners (NCPs) of the significant influences of culture on quality, management of the differences could bear on the NCPs' perceptions of the delivery of quality services by the CCFs.

3. Your reputable firm has been selected as a case study for in-depth study of the fore goings.

a) Please tell us about your firm's operations (e.g. specialty, organizational structure, and entry into Nigeria).

_____

_____

_____

b) Please tell us about the specific project in Nigeria that best typify your firm's experience with regard to this research (e.g. type, procurement method, estimated contract value and period).

_____

_____

_____

c) Please tell us about some cross-cultural construction quality challenges you encountered and you resolved the challenges (e.g. design and construction documents, construction management and execution).

_____

_____

_____

Thank you.

Questionnaire on the Perceptions of the Influence of National Culture on Quality Management among Chinese Construction Practitioners.

Aim: To investigate the significant influences of the national cultural dimensions on the total quality management principles.

1) Based on the feedback on the perceived significance of the total quality management (TQM) principles as well as the national cultural dimensions (NCD) to quality management, the Matrix below presents the top-3 ranked TQM principles and the five NCDs (as ranked) along the column and row respectively. Please note that for the purpose of this study, focus in on the top-3 ranked TQM principles.

2) Similarly, based on the feedback on the degree of agreement of the perceived significance of the application of each of the attributes of the TQM principles and NCDs to achieving good quality, the top-2 ranked attributes of the TQM principles and NCDs mentioned in item 1 are also included in the Matrix.

3) On the Matrix, NCD 1/ TQM 1 corresponds to NCD/TQM perceived most significant to quality, while NCD 1.1/TQM 1.1 corresponds to NCD/TQM attribute perceived most significant to achieving good quality. Please also note that only the top-2 ranked TQM and NCD attributes have been included in the Matrix for further investigation in this second round of the Survey.

4) For each attribute under the TQM principles, please indicate **ONE** out of the two attributes under each NCD, which you perceive to be more significant to achieving good quality construction services in Nigeria when applied together with the TQM attribute in question. Please note that for each TQM attribute, you can only have maximum of **FIVE** NCD attributes (one from each pair). The same NCD attribute can be selected twice under a TQM principle if applicable to the two attributes of the TQM principle.

National cultural dimensions (NCDs)		Power distance (NCD 1)		Individualism versus collectivism (NCD 2)		Masculinity versus femininity (NCD 3)		Long-term versus short-term orientation (NCD 4)		Uncertainty avoidance (NCD 5)	
		NCD 1.1	NCD 1.2	NCD 2.1	NCD 2.2	NCD 3.1	NCD 3.2	NCD 4.1	NCD 4.2	NCD 5.1	NCD 5.2
Total quality management (TQM) principles		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	Adopting low-context communication i.e. explicit expressions against having to infer from circumstances around an idea.	Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	Being sparing with resources and practicing thrift such that money and other resources are carefully deployed.	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	Tolerance for uncertainty and poise/ confidence under such condition.
Leadership (TQM 1)	Establishing trust and eliminating fear. (TQM 1.1)										

1

National cultural dimensions (NCDs)		Power distance (NCD 1)		Individualism versus collectivism (NCD 2)		Masculinity versus femininity (NCD 3)		Long-term versus short-term orientation (NCD 4)		Uncertainty avoidance (NCD 5)	
		NCD 1.1	NCD 1.2	NCD 2.1	NCD 2.2	NCD 3.1	NCD 3.2	NCD 4.1	NCD 4.2	NCD 5.1	NCD 5.2
Total quality management (TQM) principles		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	Adopting low-context communication i.e. explicit expressions against having to infer from circumstances around an idea.	Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	Being sparing with resources and practicing thrift such that money and other resources are carefully deployed.	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	Tolerance for uncertainty and poise/ confidence under such condition.
	Creating and sustaining shared values, fairness and ethical role models at all levels of the organization. (TQM 1.2)										
People involvement (TQM 2)	People understanding the importance of their contribution and role in the organization. (NCD 2.1)										
	People actively										

2

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National cultural dimensions (NCDs)		Power distance (NCD 1)		Individualism versus collectivism (NCD 2)		Masculinity versus femininity (NCD 3)		Long-term versus short-term orientation (NCD 4)		Uncertainty avoidance (NCD 5)	
		NCD 1.1	NCD 1.2	NCD 2.1	NCD 2.2	NCD 3.1	NCD 3.2	NCD 4.1	NCD 4.2	NCD 5.1	NCD 5.2
Total quality management (TQM) principles		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	Adopting low-context communication i.e. explicit expressions against having to infer from circumstances around an idea.	Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	Being sparing with resources and practicing thrift such that money and other resources are carefully deployed.	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	Tolerance for uncertainty and poise/ confidence under such condition.
	seeking opportunities to enhance their competence, knowledge and experience. (TQM 2.2)										
Customer focus (TQM 3)	Researching and understanding customer's needs and expectations. (TQM 3.1)										
	Ensuring a balanced approach between satisfying the customers										

3

National cultural dimensions (NCDs)	Power distance (NCD 1)		Individualism versus collectivism (NCD 2)		Masculinity versus femininity (NCD 3)		Long-term versus short-term orientation (NCD 4)		Uncertainty avoidance (NCD 5)	
	NCD 1.1	NCD 1.2	NCD 2.1	NCD 2.2	NCD 3.1	NCD 3.2	NCD 4.1	NCD 4.2	NCD 5.1	NCD 5.2
Total quality management (TQM) principles	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	Adopting low-context communication i.e. explicit expressions against having to infer from circumstances around an idea.	Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	Being sparing with resources and practicing thrift such that money and other resources are carefully deployed.	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	Tolerance for uncertainty and poise/ confidence under such condition.
and other interested parties. (TQM 3.2)										

Thank you.

APPENDIX 11: INTERVIEW REQUEST FORM & QUESTIONNAIRE FOR TC1

CHINESE FIRMS

Interview questionnaire on the perceptions of the influence of national culture on quality management.

1. This research is on cross-cultural conflicts management relating to quality by Chinese construction firms (CCFs) working in Nigeria. This is borne out of the debates over the quality of services of the CCFs in Nigeria.

2. The thesis for this study is that when CCFs are able to identify differences (conflicts) between them and the Nigerian construction practitioners (NCPs) of the significant influences of culture on quality, management of the differences could bear on the NCPs' perceptions of the delivery of quality services by the CCFs.

3. Your reputable firm has been selected to test the quality management assessment matrix (QMAM), which was designed based on the findings from previous surveys and case studies among some CCFs in Nigeria to validate the fore goings.

4. Please refer to the enclosed QMAM for your endorsements in relation to the applicability of the different cases with respect to your experience in Nigeria (previous, current and future, where applicable). Please note that the QMAM is subject to further improvements based on your valuable feedback.

5. Thank you for your valuable time.

Testing of the quality management assessment matrix (QMAM) for the Chinese firms in Nigeria

National cultural dimensions (NCDs) / Total quality management (TQM) principles		Individualism versus collectivism	Power distance		Long-term versus short-term orientation	Masculinity versus femininity	Uncertainty avoidance
		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	Encourage inter-dependence to eliminate absolute reliance on or control by someone or a group for continued operation.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	Tolerance for uncertainty and poise/ confidence under such condition.
Customer focus	Researching and understanding customer's needs and expectations.						
People involvement	People actively seeking opportunities to enhance their competence, knowledge and experience.						
	People understanding the importance of their contribution and role in the organization.						

APPENDIX 12: DETAILED CHARACTERISTICS OF THE CHINESE RESPONDENTS

Chracteristics of Chinese Respondents

Respondents	Respondents' Characteristics											Reasons for non-ISO 9001 Certification	Code
	Age Group	Sex	Highest A.Q.	Overseas Ed	Co. Specialty	Co. Size	Profession	Designation	Experience	Pro.Associat	ISO Cert.		
C1	55-64	M	Bachelors	Y	Main con (D	>500	Arc.	Proj. Arc.	29	Y	Y		
C2	45-54	F	Bachelors	Y	Consultant (c	201-500	Urban Desig	Designer	25	Y	Y		
C3	35-44	M	Diploma (Hi	Y	Main con (El	>500	Civil Engr.	Technician	18	Y	N	Company has established health and safety and environmental (HSE) system to international sta	OT
C4	35-44	M	Masters	Y	Main con (pr	201-500	Mech. Engr.	Const. Mgr. (	15	Y	Y		
C5	45-54	F	Bachelors	Y	Developer (n	>500	Mech. Engr.	Dimensional	21	Y	N	Not given	NG
C6	55-64	M	Bachelors	Y	Main con (In	>500	Civil Engr.	Traffic Engr.	26	Y	Y		
C7	35-44	M	Bachelors	Y	Main con (ci	201-500	Civil Engr.	Resident Eng	13	N	Y		
C8	25-34	M	Bachelors	Y	Main con (bu	>500	Arc.	Arc. Coord.	10	Y	Y		
C9	35-44	M	Masters	Y	Consultant (f	>500	Elect. Engr.	Cost Engr.	7	N	Y		
C10	35-44	M	Masters	Y	Main con (G	>500	Civil Engr.	Construction	21	Y	Y		
C11	35-44	M	Bachelors	Y	Developer (I	>500	Elect. Engr.	Snr. Technici	16	Y	N	Company certified to other applicable ISO standards e.g. 14001, 26000	OT
C12	55-64	M	Masters	Y	Main con (bl	>500	Civil Engr.	Consulting E	22	Y	Y		
C13	35-44	M	Masters	Y	Main con (G	>500	Civil Engr.	Snr. Technica	19	Y	Y		
C14	25-34	F	Masters	Y	Consultant (p	201-500	Mech. Engr.	Mgr (supply	4	N	Y		
C15	45-54	M	Bachelors	Y	Consultant (p	201-500	Elect. Engr.	Snr. Engr.	18	Y	N	Don't know	IK
C16	55-64	F	Diploma (Hi	Y	Main con (G	>500	Mech. Engr.	Supervisor	26	Y	Y		
C17	25-34	M	Bachelors	Y	Main con (En	>500	QS	Asst. Contrac	5	Y	Y		
C18	25-34	M	Bachelors	Y	Main con (D	>500	Arc.	Proj. Arc.	8	N	Y		
C19	35-44	M	Masters	Y	Main con (co	>500	Civil Engr.	Proj. Director	17	Y	Y		
C20	35-44	M	Masters	Y	Main con (bl	>500	Civil Engr.	Chief Engr.	16	Y	N	Not sure	IK
C21	25-34	M	Bachelors	Y	Consultant (C	201-500	Arc.	Co-ordinator	6	N	Y		
C22	35-44	M	Bachelors	Y	Main con (bu	201-500	Elect. Engr.	Snr. Engr.	11	N	Y		
C23	35-44	F	Bachelors	Y	Main con (pr	>500	Civil Engr.	Chief Engr.	16	Y	Y		
C24	25-34	M	Bachelors	Y	Main con (ci	>500	Civil Engr.	Engr.	7	Y	Y		
C25	45-54	M	Bachelors	Y	Consultant (E	>500	Civil Engr.	Constr. Mgr.	24	Y	Y		
C26	35-44	M	Diploma (Hi	Y	Sub-con/Spec	201-500	Arc.	Proj. Co-ord.	15	Y	Y		
C27	25-34	M	Bachelors	Y	Main con (El	201-500	Civil Engr.	Engr.	6	N	Y		
C28	55-64	M	Masters	Y	Main con (in	>500	Civil Engr.	Exec. Dir.	29	Y	Y		
C29	25-34	M	Masters	Y	Main con (D	>500	Arc.	Proj. Arc.	4	Y	Y		
C30	35-44	M	Bachelors	Y	Consultant (C	>500	Civil Engr.	Proj. Engr.	21	Y	N	Not given	NG
C31	35-44	M	Masters	Y	Consultant (p	>500	QS	Contract Mgr	8	Y	Y		
C32	25-34	M	Masters	Y	Sub-con/Spec	>500	Arc.	Arc. (Snr. Mg	11	Y	Y		
C33	35-44	M	Masters	Y	Main Con (D	>500	Civil Engr.	Site Engr.	5	N	Y		
C34	35-44	M	Bachelors	Y	Consultant (E	>500	Civil Engr.	Supervision I	11	Y	N	Not given	NG
C35	25-34	F	Bachelors	Y	Consultant (p	>500	QS	Snr. QS	7	Y	Y		
C36	35-44	M	Bachelors	Y	Sub-con/Spec	201-500	QS	Principal QS	7	N	Y		
C37	45-54	M	Bachelors	Y	Main Con (p	>500	Arc.	Director	21	Y	Y		
C38	35-44	M	Bachelors	Y	Main Con (D	>500	Civil Engr.	PM	10	Y	Y		
C39	35-44	M	Masters	Y	Consultant (c	201-500	Elect. Engr.	PM	5	Y	Y		
C40	45-54	M	Masters	Y	Main Con (D	201-500	Civil Engr.	Snr Technicia	25	Y	Y		
C41	35-44	M	Diploma (Hi	Y	Sub-con/Spec	>500	Elect. Engr.	Supervisor	13	Y	Y	TL 9000 based on the ISO 9001 standard.	
C42	35-44	M	Bachelors	Y	Sub-con/Spec	>500	M&E Engr.	M&E Coord.	9	Y	Y		
C43	25-34	M	Diploma (Hi	Y	Main Con (D	>500	Arc.	Proj. Arc.	8	Y	Y		
C44	45-54	M	Bachelors	Y	Main Con (D	>500	Arc.	Arc. Coord.	15	Y	Y		
C45	35-44	M	Masters	Y	Developer (E	>500	Arc.	Resident Arc.	16	N	Y		
C46	35-44	M	Diploma (Hi	Y	Main Con (D	>500	Civil Engr.	Site Engr.	11	Y	Y		
C47	55-64	M	Masters	Y	Sub-con/Spec	201-500	Civil Engr.	BD Mgr.	30	Y	Y		
C48	35-44	M	Bachelors	Y	Developer (E	>500	Civil Engr.	PM	17	Y	Y		

APPENDIX 13: DETAILED CHARACTERISTICS OF THE NIGERIAN RESPONDENTS

Survey Responses for Nigerians

Respondents	Respondents' Characteristics											Reasons for non ISO 9001 Certification	Code
	Age Group	Sex	Highest A.Q.	Overseas Ed	Co. Specialty	Co. Size	Profession	Designation	Experience	Pro.Associat	ISO Cert.		
N1	45-54	M	Bachelors	N	Main Con	>500	Surveyor	Dimension C	15	Y	Y		
N2	25-34	M	Bachelors	Y	Main Con	>500	Geologist	Material Insp	1	Y	Y		
N3	25-34	F	Diploma (HN	N	Main Con	101-200	QS	Res./Proj.QS	6	Y	Y		
N4	25-34	F	Masters	Y	Consultant	51-100	Arc	PM	8	Y	Y		
N5	35-44	M	Masters	N	Main Con	0-50	Civil Engr	MD	16	Y	N	In view	IV
N6	25-34	M	Masters	N	Consultant	51-100	Arc	Proj. Arc	6	Y	Y		
N7	25-34	F	Masters	N	Consultant	0-50	Arc	Dir.	11	Y	N	Not required to practice in Nigeria	NR
N8	25-34	F	Bachelors	Y	Consultant	0-50	Arc	Grad. Arc	5	Y	N	I don't know the reason	IK
N9	35-44	M	Masters	Y	Main Con	0-50	Arc + PM	PM	11	Y	N	Management is yet to adopt, although few numbers of staff knows the importance of the ISO 900	OT
N10	45-54	M	Bachelors	N	Main Con	51-100	Civil Engr	Director	20	Y	N	Not given	NG
N11	35-44	M	Masters	N	Main Con	201-500	Civil Engr	PM	13	Y	Y		
N12	35-44	M	Bachelors	N	Consultant	0-50	Mech. Engr	Partner	12	Y	N	We are CISCO certified - work specific certification, and this ensures excellent professional servi	OT
N13	35-44	M	Masters	Y	Developer	0-50	Arc	PD	19	Y	N	In progress	IP
N14	0-24	M	Bachelors	N	Developer	0-50	Arc	Arc 1	3	N	Y		
N15	45-54	M	Masters	Y	Consultant	51-100	Civil Engr	Principal Par	24	Y	N	Not required	NR
N16	25-34	M	Masters	Y	Consultant	0-50	Arc	Proj. Arc	5	Y	Y		
N17	25-34	M	Bachelors	N	Consultant	0-50	Arc	Arc	11	N	N	Not applicable	NR
N18	35-44	M	Diploma (HN	N	Main Con	101-200	Civil Engr	Technical Di	18	Y	N	We comply with the standard, however, yet to be certified.	OT
N19	0-24	M	Bachelors	Y	Main Con	201-500	Civil Engr	Engr	2	Y	Y		
N20	55-64	M	Masters	N	Consultant	0-50	Civil Engr	Engr	27	Y	N	All works are carried out to internationally recognized standards in the respective fields of engine	OT
N21	45-54	M	Masters	Y	Main Con	101-200	Civil Engr	Exe. Dir.	20	Y	N	Not given	NG
N22	25-34	M	Masters	N	Consultant	0-50	Civil Engr	Asst. Dir.	5	Y	N	Not given	NG
N23	25-34	M	Masters	N	Main Con	51-100	Bldg Const.	Contract Mgr	7	Y	N	Company's operations are in accordance with the relevant laws and regulations currently in place	OT
N24	25-34	M	Masters	N	Consultant	0-50	Arc	Arc	7	Y	N	It's not a major requirement in the profession presently.	NR
N25	25-34	M	Bachelors	N	Consultant	0-50	Arc	Supervisor	7	Y	N	We are into construction and consultancy.	NA
N26	25-34	M	Masters	N	Consultant	0-50	Arc	Principal Par	8	Y	N	Quality management system still being put in place.	IP
N27	35-44	M	Bachelors	N	Main Con	0-50	Arc + Constr	Arc	7	Y	N	Not given	NG
N28	35-44	M	Masters	N	Main Con	0-50	Arc	CEO	10	Y	N	We know just little about ISO 9001.	IK
N29	0-24	M	Bachelors	N	Consultant	0-50	Mech. Engr	PM	4	Y	Y		
N30	35-44	M	Masters	N	Consultant	51-100	Elect. Engr	Assoc. Partne	14	Y	Y		
N31	0-24	M	Bachelors	N	Consultant	0-50	Civil Engr	Engr	3	Y	N	Our consultancy process follows a program which is in accordance with the provisions of ISO Co	OT
N32	25-34	M	Bachelors	N	Developer	0-50	QS	Assist. QS	3	Y	N	Management decision as company do[es] more of finance	NR
N33	35-44	M	Bachelors	N	Developer	0-50	Est. Sur & Va	Facility Mgr	8	Y	Y		
N34	35-44	M	PGD	N	Developer	0-50	Civil Engr	Engr 1	12	Y	Y		
N35	35-44	M	Bachelors	N	Developer	201-500	QS	QS1	10	Y	Y		
N36	45-54	M	Bachelors	N	Consultant	0-50	Civil Engr	Assoc. Partne	20	Y	N	Not given	NG
N37	25-34	M	PGD	N	Consultant	0-50	Civil Engr	PM	6	Y	N	Our systems, including processes for continual improvement conform to the customer and applica	OT
N38	35-44	M	Bachelors	Y	Main Con	>500	Inspection	Piping/weldi	13	Y	Y		
N39	35-44	M	Masters	Y	Main Con	>500	Geologist	QA/QC	11	Y	Y		
N40	45-54	M	Masters	N	Consultant	0-50	Civil Engr	Proj. Coord.	18	Y	N	Not given	NG
N41	35-44	M	Bachelors	N	Consultant	0-50	QS		13	Y	N	It is a consultancy firm.	NA
N42	55-64	M	Bachelors	Y	Consultant	0-50	Civil Engr	Principal Par	31	Y	N	Non awareness	IK
N43	35-44	M	Diploma (HN	N	Main Con	0-50	Civil Engr	Chief Engr.	14	Y	N	In view as company leadership believes in the principle of TQM, MBO and planning.	IV
N44	45-54	M	Bachelors	N	Main Con	201-500	Civil Engr	PD	25	Y	N	Company provides superior services to customers with strict adherence to the highest of standard	OT
N45	35-44	M	Masters	Y	Main Con	51-100	Civil Engr	Proj. Engr.	10	Y	Y		
N46	25-34	M	Bachelors	N	Developer	51-100	QS	QS	3	N	N	Not given	
N47	25-34	M	Masters	Y	Developer	51-100	Arc	Arc	11	Y	N	Management decision	OT
N48	25-34	F	Bachelors	N	Developer	51-100	QS	Banking offic	4	N	N	Not given	NG
N49	25-34	M	Bachelors	N	Consultant	0-50	Engrg	PM	4	Y	N	Still going through the process	IP
N50	25-34	M	Masters	N	Consultant	0-50	Elect. Engr	Design Mgr	8	Y	N	The organisation do not see it as a priority.	NP
N51	35-44	M	Bachelors	N	Consultant	0-50	Engrg	PM	7	Y	N	Still in the process	IP
N52	0-24	F	Bachelors	N	Consultant	0-50	Engrg	PM	3	Y	Y		
N53	45-54	M	Bachelors	N	Main Con	51-100	Bldg Const.	PM	17	Y	N	Company continues to focus on quality and on-time construction.	OT
N54	35-44	M	Masters	Y	sub-con/Spec	>500	Arc	Arc	11	Y	Y		

N55	25-34	M	Diploma (HN	N	sub-con/Spec	>500	Arc	Arc	2	N	N	Not given	
N56	25-34	M	Diploma (HN	Y	Main Con	>500	Mech. Engr	Engr	7	Y	N	We operate a management system for projects which instills optimum quality, time and cost value	OT
N57	35-44	M	Masters	N	Consultant	0-50	Arc	Principal Con	11	Y	N	ISO 9001 is perhaps not an immediate priority for the firm in view of its current size and profile.	NP
N58	35-44	M	Masters	N	Consultant	0-50	Arc	Partner	14	Y	N	Architecture practice[s] are seldom require[d] to so certify.	NR
N59	35-44	M	Bachelors	N	Consultant	0-50	Arc	Partner	15	Y	N	Not required	NR
N60	55-64	M	Bachelors	N	Main Con	51-100	Civil Engr	Principal Con	25	Y	N	Not given	NG
N61	25-34	M	Bachelors	N	Main Con	0-50	Arc	Res./Proj.Arc	2	N	Y		
N62	35-44	M	Masters	Y	Main Con	>500	Civil Engr	Proj. Engr.	10	Y	N	Company maintains good working relationships with the other certifying bodies e.g. contractors a	OT
N63	35-44	M	Masters	Y	Consultant	0-50	Arc	Arc	7	Y	N	Don't know	IK
N64	55-64	M	Masters	N	Consultant	0-50	Arc	Arc	30	Y	N	Not required to practice as an Architect	NR
N65	35-44	M	Masters	N	Others (Lect	0-50	Arc	Lecturer 2	6	Y	N	Not applicable	NA
N66	25-34	M	Bachelors	Y	Developer	0-50	PM	Chief Operat	9	Y	N	Not given	NG
N67	55-64	M	Masters	Y	Main Con	101-200	Civil Engr	Dir.	30	Y	Y		
N68	35-44	M	Bachelors	N	Consultant	0-50	Arc	Specifier	10	N	N	Not given	NG
N69	35-44	M	Masters	N	Consultant	0-50	Arc	Proj. Arc	11	Y	N	Lack of technical information as regards the process involved in getting cerified from standard or	IK
N70	35-44	F	Diploma (HN	N	Developer	0-50	Arc	Head (Archit	9	Y	N	In progress	IP
N71	25-34	M	Bachelors	Y	sub-con/Spec	101-200	Civil Engr	Mgmnt Rep	2	N	Y		
N72	35-44	M	PGD	Y	Consultant	0-50	Civil Engr	Snr. Engr.	9	Y	N	Company methods include high level of quality assurance and timely execution of high quality w	OT
N73	35-44	M	Masters	Y	Consultant	0-50	Arc + PM	PM	12	Y	Y		
N74	35-44	M	PGD	N	Main Con	>500	Civil Engr	Snr. PM	12	Y	N	In view	IV
N75	45-54	M	Masters	N	Consultant	0-50	Civil Engr	Snr. Partner	25	Y	N	We subject to PDCA cycle to ensure continuous improvement on services provided.	OT
N76	25-34	M	Bachelors	N	Consultant	0-50	Arc	Arc	5	N	Y		
N77	45-54	M	Masters	N	Developer	0-50	Arc	Director	21	Y	Y		
N78	35-44	M	Masters	Y	Consultant	0-50	Arc	Proj. Arc	12	Y	N	Qualification requirements	IK
N79	35-44	M	Diploma (HN	N	Main Con	0-50	Arc	PM	12	N	N	We are yet to apply for the certification.	IP
N80	25-34	F	Bachelors	N	Consultant	51-100	Civil Engr	PM	4	N	Y		

Appendix 14: Ranking of TQM principles to quality among the Chinese (n = 48)

The Chinese for self				The Chinese for the Nigerians			
Relative ranks & TQM principles	Signifi-cance ranks (a)	Freq. (b)	Total ranks (a x b)	**Relative ranks & TQM principles**	Signifi-cance ranks (a)	Freq. (b)	Total ranks (a x b)
1	1	13	13	**1**	1	13	13
	2	5	10		2	11	22
Leadership	3	6	18	Leadership	3	4	12
	4	5	20		4	2	8
	5	5	25		5	3	15
	6	5	30		6	3	18
	7	6	42		7	6	42
	8	3	18		8	6	48
			182				**178**
2	1	4	4	**2**	1	3	3
	2	8	16		2	6	12
Involvement of people	3	10	30	Involvement of people	3	10	30
	4	8	32		4	12	48
	5	6	30		5	8	40
	6	3	18		6	5	30
	7	7	49		7	1	7
	8	2	16		8	3	24
			195				**194**
3	1	12	12	**3**	1	13	13
	2	4	8		2	6	12
Customer focus	3	5	15	Customer focus	3	1	3
	4	5	20		4	2	8
	5	2	10		5	5	25
	6	9	54		6	9	54
	7	7	49		7	7	49
	8	4	32		8	5	40

The Chinese for self				The Chinese for the Nigerians			
Relative ranks & TQM principles	Significance ranks (a)	Freq. (b)	Total ranks (a x b)	**Relative ranks & TQM principles**	Significance ranks (a)	Freq. (b)	Total ranks (a x b)
			200				**204**
4	1	4	4	**6**	1	2	2
	2	11	22		2	5	10
Continual improvement	3	5	15	Continual improvement	3	5	15
	4	6	24		4	7	28
	5	5	25		5	9	45
	6	5	30		6	12	72
	7	5	35		7	5	35
	8	7	56		8	3	24
			211				**231**
5	1	7	7	**4**	1	7	7
	2	5	10		2	8	16
Factual approach	3	5	15	Factual approach	3	6	18
	4	5	20		4	3	12
	5	6	30		5	6	30
	6	6	36		6	3	18
	7	4	28		7	4	28
	8	10	80		8	11	88
			226				**217**
6	1	3	3	**7**	1	1	1
	2	4	8		2	4	8
System approach	3	5	15	System approach	3	7	21
	4	7	28		4	10	40
	5	12	60		5	7	35
	6	5	30		6	4	24
	7	8	56		7	12	84
	8	4	32		8	3	24

The Chinese for self				The Chinese for the Nigerians			
Relative ranks & TQM principles	Signifi-cance ranks (a)	Freq. (b)	Total ranks (a x b)	**Relative ranks & TQM principles**	Signifi-cance ranks (a)	Freq. (b)	Total ranks (a x b)
			232				**237**
7	1	2	2	**5**	1	5	5
	2	6	12		2	4	8
Process approach	3	5	15	Process approach	3	10	30
	4	5	20		4	5	20
	5	9	45		5	3	15
	6	9	54		6	8	48
	7	7	49		7	9	63
	8	5	40		8	4	32
			237				**221**
8	1	3	3	**8**	1	4	4
	2	5	10		2	4	8
Supplier relationship	3	7	21	Supplier relationship	3	5	15
	4	7	28		4	7	28
	5	3	15		5	7	35
	6	6	36		6	4	24
	7	4	28		7	4	28
	8	13	104		8	13	104
			245				**246**

Appendix 15: Ranking of TQM principles to quality among the Nigerians (n = 80)

The Nigerians for self				The Nigerians for the Chinese			
Relative ranks & TQM principles	Signifi-cance ranks (a)	Freq. (b)	Total ranks (a x b)	**Relative ranks & TQM principles**	Signifi-cance ranks (a)	Freq. (b)	Total ranks (a x b)
1	1	28	28	**2**	1	14	14
	2	8	16		2	16	32
Customer focus	3	6	18	Customer focus	3	6	18
	4	4	16		4	5	20
	5	6	30		5	13	65
	6	11	66		6	7	42
	7	8	56		7	8	56
	8	9	72		8	11	88
			302				**335**
2	1	26	26	**1**	1	20	20
	2	7	14		2	8	16
Leadership	3	3	9	Leadership	3	5	15
	4	11	44		4	9	36
	5	8	40		5	7	35
	6	6	36		6	17	102
	7	11	77		7	8	56
	8	8	64		8	6	48
			310				**328**
3	1	6	6	**5**	1	10	10
	2	16	32		2	9	18
Involvement of people	3	12	36	Involvement of people	3	8	24
	4	9	36		4	13	52
	5	17	85		5	13	65
	6	11	66		6	10	60
	7	6	42		7	11	77
	8	3	24		8	6	48

The Nigerians for self				The Nigerians for the Chinese			
Relative ranks & TQM principles	Signifi-cance ranks (a)	Freq. (b)	Total ranks (a x b)	**Relative ranks & TQM principles**	Signifi-cance ranks (a)	Freq. (b)	Total ranks (a x b)
			327				**354**
4	1	4	4	**3.5**	1	8	8
	2	13	26		2	8	16
Process approach	3	13	39	Process approach	3	16	48
	4	13	56		4	11	44
	5	11	50		5	16	80
	6	14	84		6	7	42
	7	11	77		7	7	49
	8	1	8		8	7	56
			344				**343**
5	1	5	5	**3.5**	1	8	8
	2	12	24		2	14	28
System approach	3	13	39	System approach	3	12	36
	4	12	48		4	11	44
	5	12	60		5	7	35
	6	10	60		6	12	72
	7	11	77		7	8	56
	8	5	40		8	8	64
			353				**343**
6	1	3	3	**7**	1	5	5
	2	11	22		2	12	24
Continual improvement	3	16	48	Continual improvement	3	8	24
	4	5	20		4	10	40
	5	15	75		5	7	35
	6	7	42		6	15	90
	7	7	49		7	11	77
	8	16	128		8	12	96

The Nigerians for self				The Nigerians for the Chinese			
Relative ranks & TQM principles	Signifi-cance ranks (a)	Freq. (b)	Total ranks (a x b)	**Relative ranks & TQM principles**	Signifi-cance ranks (a)	Freq. (b)	Total ranks (a x b)
			387				**391**
7	1	5	5	**6**	1	4	4
	2	8	16		2	8	16
Factual approach	3	8	24	Factual approach	3	17	51
	4	10	40		4	11	44
	5	7	35		5	11	55
	6	14	84		6	4	24
	7	9	63		7	13	91
	8	19	152		8	12	96
			419				**381**
8	1	3	3	**8**	1	11	11
	2	5	10		2	5	10
Supplier relationship	3	9	27	Supplier relationship	3	8	24
	4	15	60		4	10	40
	5	5	25		5	6	30
	6	7	42		6	8	48
	7	17	119		7	14	98
	8	19	152		8	18	144
			438				**405**

Appendix 16: Rating of TQM attributes to quality among the Chinese (n = 48)

TQM principles & attributes	Significance rating (5 and 1 being strongly agree and strongly disagree as significant to achieving good quality) & frequency					Mean rating
	5	**4**	**3**	**2**	**1**	
Leadership						
Establishing trust and eliminating fear.	32	11	5	0	0	4.5625
Creating and sustaining shared values, fairness and ethical role models at all levels of the organization.	34	6	8	0	0	4.5417
Inspiring, encouraging and recognizing people's contributions	29	12	7	0	0	4.4583
Considering the needs of all interested parties.	29	9	8	2	0	4.3542
Setting challenging goals and targets.	26	12	7	3	0	4.2708
Providing people with the required resources, training and freedom to act with responsibility and accountability.	25	10	13	0	0	4.2500
Establishing a clear vision of the organization's future.	24	10	11	3	0	4.1458
Involvement of people						
People understanding the importance of their contribution and role in the organization.	36	5	5	2	0	4.5625
People actively seeking opportunities to enhance their competence, knowledge and experience.	32	8	5	3	0	4.4375
People accepting ownership of problems and their responsibility for solving them.	28	11	9	0	0	4.3958
People identifying constraints to their performance.	26	11	9	2	0	4.2708
People freely sharing knowledge and experience.	26	10	8	4	0	4.2083
People evaluating their performance against their personal goals and objectives.	22	11	8	7	0	4.0000
Customer focus						
Researching and understanding customer's needs and expectations.	30	15	3	0	0	4.5625
Ensuring a balanced approach between satisfying the customers and other interested parties.	31	9	5	3	0	4.4167
Ensuring organization's objectives are linked to customer's needs and expectations.	26	10	12	0	0	4.2917

TQM principles & attributes	Significance rating (5 and 1 being strongly agree and strongly disagree as significant to achieving good quality) & frequency					Mean rating
	5	**4**	**3**	**2**	**1**	
Systematically managing customer relationships.	21	18	9	0	0	4.2500
Measuring customer's satisfaction and acting on the results.	17	16	15	0	0	4.0417
Communicating customer's needs and expectations throughout the organization.	18	12	15	3	0	3.9375
Continual improvement						
Employing a consistent organization-wide approach to continual improvement of the organization's performance.	33	11	4	0	0	4.6042
Recognizing and acknowledging improvements.	31	13	4	0	0	4.5625
Making continual improvement of products, processes and systems an objective for every individual in the organization.	27	12	9	0	0	4.3750
Establishing goals to guide, and measures to track, continual improvement.	24	13	11	0	0	4.2708
Providing people with training in the methods and tools of continual improvement.	20	18	8	2	0	4.1667
Factual approach						
Making decisions and taking action based on factual analysis, balanced with experience and intuition.	36	8	4	0	0	4.6667
Ensuring that data and information are sufficiently accurate and reliable.	25	11	12	0	0	4.2708
Analyzing data and information using valid methods.	26	8	14	0	0	4.2500
Making data accessible to those who need it.	26	9	11	2	0	4.0625
System approach						
Understanding organizational capabilities and establishing resource constraints prior to action.	37	8	3	0	0	4.7083
Structuring a system to achieve the organization's objectives in the most effective and efficient way.	32	9	7	0	0	4.5208
Structured approaches that harmonize and integrate processes.	31	10	7	0	0	4.5000
Targeting and defining how specific activities	30	11	7	0	0	4.4792

TQM principles & attributes	Significance rating (5 and 1 being strongly agree and strongly disagree as significant to achieving good quality) & frequency					Mean rating
	5	**4**	**3**	**2**	**1**	
within a system should operate.						
Continually improving the system through measurement and evaluation.	27	15	6	0	0	4.4375
Understanding the interdependencies between the processes of the system.	28	10	8	2	0	4.3333
Providing a better understanding of the roles and responsibilities necessary for achieving common objectives and thereby reducing cross-functional barriers.	28	11	6	3	0	4.3333
Process approach						
Focusing on the factors such as resources, methods and materials that will improve key activities of the organization.	35	9	4	0	0	4.6458
Systematically defining the activities necessary to obtain a desired result.	28	17	3	0	0	4.5208
Identifying the interfaces of key activities within and between the functions of the organization.	26	14	6	2	0	4.3333
Analyzing and measuring of the capability of key activities.	26	12	7	3	0	4.2708
Evaluating risks, consequences and impacts of activities on customers, suppliers and other interested parties.	21	17	10	0	0	4.2292
Establishing clear responsibility and accountability for managing key activities.	24	12	8	4	0	4.1667
Supplier relationship						
Pooling of expertise and resources with partners.	30	9	6	3	0	4.3750
Clear and open communication.	24	16	8	0	0	4.3333
Establishing joint development and improvement activities.	25	13	7	3	0	4.2500
Inspiring, encouraging and recognizing improvements and achievements by suppliers.	23	15	7	3	0	4.2083
Identifying and selecting key suppliers.	20	15	9	4	0	4.0625
Establishing relationships that balance short-term gains with long-term considerations.	18	15	8	7	0	3.9167
Sharing information and future plans.	18	10	13	5	2	3.7708

Appendix 17: Rating of TQM attributes to quality among the Nigerians (n = 80)

TQM principles & attributes	Significance rating (5 and 1 being strongly agree and strongly disagree as significant to achieving good quality) & frequency					Mean rating
	5	**4**	**3**	**2**	**1**	
Customer focus						
Researching and understanding customer's needs and expectations.	65	10	5	0	0	4.7500
Measuring customer's satisfaction and acting on the results.	54	26	0	0	0	4.6750
Ensuring organization's objectives are linked to customer's needs and expectations.	33	38	9	0	0	4.3000
Communicating customer's needs and expectations throughout the organization.	34	34	8	4	0	4.2250
Systematically managing customer relationships.	26	34	18	2	0	4.0500
Ensuring a balanced approach between satisfying the customers and other interested parties.	20	41	16	3	0	3.9750
Leadership						
Establishing a clear vision of the organization's future.	55	20	5	0	0	4.6250
Providing people with the required resources, training and freedom to act with responsibility and accountability.	44	28	5	3	0	4.4125
Setting challenging goals and targets.	36	32	10	2	0	4.2750
Inspiring, encouraging and recognizing people's contributions	26	44	8	2	0	4.1750
Establishing trust and eliminating fear.	38	24	13	3	2	4.1625
Creating and sustaining shared values, fairness and ethical role models at all levels of the organization.	29	39	5	7	0	4.1250
Considering the needs of all interested parties.	20	38	18	2	2	3.9000
Involvement of people						
People actively seeking opportunities to enhance their competence, knowledge and experience.	42	28	10	0	0	4.4000
People understanding the importance of their contribution and role in the organization.	44	18	15	3	0	4.2875
People freely sharing knowledge and experience.	36	33	8	3	0	4.2750

TQM principles & attributes	Significance rating (5 and 1 being strongly agree and strongly disagree as significant to achieving good quality) & frequency					Mean rating
	5	**4**	**3**	**2**	**1**	
People accepting ownership of problems and their responsibility for solving them.	26	37	15	2	0	4.0875
People identifying constraints to their performance.	25	34	13	8	0	3.9500
People evaluating their performance against their personal goals and objectives.	13	49	13	5	0	3.8750
Process approach						
Focusing on the factors such as resources, methods and materials that will improve key activities of the organization.	46	31	3	0	0	4.5375
Establishing clear responsibility and accountability for managing key activities.	39	38	3	0	0	4.4500
Systematically defining the activities necessary to obtain a desired result.	43	26	11	0	0	4.4000
Evaluating risks, consequences and impacts of activities on customers, suppliers and other interested parties.	39	28	10	3	0	4.2875
Analyzing and measuring of the capability of key activities.	29	41	10	0	0	4.2375
Identifying the interfaces of key activities within and between the functions of the organization.	28	37	13	2	0	4.1375
System approach						
Structuring a system to achieve the organization's objectives in the most effective and efficient way.	54	18	8	0	0	4.5750
Continually improving the system through measurement and evaluation.	39	39	2	0	0	4.4625
Providing a better understanding of the roles and responsibilities necessary for achieving common objectives and thereby reducing cross-functional barriers.	31	46	3	0	0	4.3500
Targeting and defining how specific activities within a system should operate.	25	42	11	2	0	4.1250
Understanding the interdependencies between the processes of the system.	24	33	21	2	0	3.9875
Structured approaches that harmonize and integrate processes.	16	49	13	2	0	3.9875

TQM principles & attributes	Significance rating (5 and 1 being strongly agree and strongly disagree as significant to achieving good quality) & frequency					Mean rating
	5	**4**	**3**	**2**	**1**	
Understanding organizational capabilities and establishing resource constraints prior to action.	20	42	15	3	0	3.9875
Continual improvement						
Making continual improvement of products, processes and systems an objective for every individual in the organization.	47	24	7	2	0	4.4500
Providing people with training in the methods and tools of continual improvement.	44	28	5	3	0	4.4125
Employing a consistent organization-wide approach to continual improvement of the organization's performance.	42	26	10	2	0	4.3500
Establishing goals to guide, and measures to track, continual improvement.	32	39	7	2	0	4.2625
Recognizing and acknowledging improvements.	23	49	6	2	0	4.1625
Factual approach						
Ensuring that data and information are sufficiently accurate and reliable.	42	36	2	0	0	4.5000
Making data accessible to those who need it.	39	23	13	5	0	4.2000
Making decisions and taking action based on factual analysis, balanced with experience and intuition.	33	31	13	3	0	4.1750
Analyzing data and information using valid methods.	29	34	15	2	0	4.1250
Supplier relationship						
Establishing relationships that balance short-term gains with long-term considerations.	25	39	16	0	0	4.1125
Clear and open communication.	26	36	16	2	0	4.0750
Inspiring, encouraging and recognizing improvements and achievements by suppliers.	22	41	13	2	2	3.9875
Sharing information and future plans.	21	39	15	5	0	3.9500
Pooling of expertise and resources with partners.	29	24	20	7	0	3.9375
Identifying and selecting key suppliers.	23	26	26	5	0	3.8375
Establishing joint development and improvement activities.	25	24	21	8	2	3.7750

Appendix 18: Ranking of NCDs to quality among the Chinese (n = 48)

The Chinese for self				The Chinese for the Nigerians			
Relative ranks & NCDs	Signifi-cance ranks (a)	Freq. (b)	Total ranks (a x b)	**Relative ranks** & NCDs	Signifi-cance ranks (a)	Freq. (b)	Total ranks (a x b)
1	1	14	14	**2**	1	9	9
	2	8	16		2	9	18
Power distance	3	9	27	Power distance	3	14	42
	4	12	48		4	10	40
	5	5	25		5	6	30
			130				**139**
2	1	12	12	**1**	1	9	9
	2	11	22		2	16	32
Individualism versus collectivism	3	6	18	Individualism versus collectivism	3	8	24
	4	11	44		4	10	40
	5	8	40		5	5	25
			136				**130**
3	1	9	9	**3**	1	8	8
	2	8	16		2	10	20
Masculinity versus femininity	3	14	42	Masculinity versus femininity	3	10	30
	4	9	36		4	14	56
	5	8	40		5	6	30
			143				**144**
4	1	9	9	**4**	1	15	15
	2	11	22		2	5	10
Long-term versus short-term orientation	3	7	21	Long-term versus short-term orientation	3	4	12
	4	7	28		4	7	28
	5	14	70		5	17	85
			150				**150**
5	1	4	4	**5**	1	7	7
	2	10	20		2	8	16
Uncertainty avoidance	3	12	36	Uncertainty avoidance	3	12	36
	4	9	36		4	7	28
	5	13	65		5	14	70
			161				**157**

Appendix 19: Ranking of NCDs to quality among the Nigerians (n = 80)

The Nigerians for self				The Nigerians for the Chinese			
Relative ranks & NCDs	Signifi-cance ranks (a)	Freq. (b)	Total ranks (a x b)	**Relative ranks** & NCDs	Signifi-cance ranks (a)	Freq. (b)	Total ranks (a x b)
1	1	19	19	**2**	1	18	18
	2	18	36		2	18	36
Individualism versus collectivism	3	16	48	Individualism versus collectivism	3	15	45
	4	17	68		4	15	60
	5	10	50		5	14	70
			221				**178**
2	1	21	21	**1**	1	25	25
	2	10	20		2	12	24
Power distance	3	18	54	Power distance	3	14	42
	4	18	72		4	19	76
	5	13	65		5	10	50
			232				**217**
3	1	22	22	**3**	1	18	18
	2	11	22		2	14	28
Long-term versus short-term orientation	3	13	39	Long-term versus short-term orientation	3	20	60
	4	13	52		4	7	28
	5	21	105		5	21	105
			240				**239**
4	1	15	15	**5**	1	4	4
	2	13	26		2	23	46
Masculinity versus femininity	3	13	39	Masculinity versus femininity	3	18	54
	4	24	96		4	15	60
	5	15	75		5	20	100
			251				**264**
5	1	4	4	**4**	1	15	15
	2	23	46		2	13	26
Uncertainty avoidance	3	18	54	Uncertainty avoidance	3	13	39
	4	15	60		4	24	96
	5	20	100		5	15	75
			264				**251**

Appendix 20: Rating of NCD attributes to quality among the Chinese respondents (n = 48)

NCDs & attributes	Significance rating (5 and 1 being strongly agree and strongly disagree as significant to achieving good quality) & frequency					Mean rating
	5	**4**	**3**	**2**	**1**	
Power distance						
Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	34	7	4	3	0	4.5000
Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	25	15	5	3	0	4.2917
Minimize inequalities among people such that subordinates take own initiatives and challenge the superiors' opinions.	15	9	12	10	2	3.5208
Strict obedience to authority, superiors hold infallible truths and are excellent such that others' opinions do not necessarily count.	10	14	11	10	3	3.3751
Individualism versus collectivism						
Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	42	6	0	0	0	4.8750
Adopting low-context communication i.e. explicit expressions against having to infer from circumstances around an idea.	26	10	8	4	0	4.2083
Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share.	23	14	7	4	0	4.1667
Tolerance for direct confrontations in speaking one's mind, even if it means creating a temporary disharmony.	15	13	13	5	2	3.7083
Masculinity versus femininity						
Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	42	5	1	0	0	4.8542
Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	32	11	4	1	0	4.5417
Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority.	27	11	5	5	0	4.2500

NCDs & attributes	Significance rating (5 and 1 being strongly agree and strongly disagree as significant to achieving good quality) & frequency					Mean rating
	5	**4**	**3**	**2**	**1**	
Assertive, ambitious, and tough. Forceful personality and strong determination to explicitly express, believe, and succeed.	19	15	9	5	0	4.0000
Long-term versus short-term orientation						
Being sparing with resources and practicing thrift such that money and other resources are carefully deployed.	40	8	0	0	0	4.8333
Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	36	11	1	0	0	4.7292
Respect for circumstances such that a fact or condition connected with or relevant to an event or action is preserved or referred.	34	7	5	2	0	4.5208
Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses.	23	8	9	7	1	3.9375
Uncertainty avoidance						
Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	34	10	4	0	0	4.6250
Tolerance for uncertainty and poise/confidence under such condition.	33	10	4	1	0	4.5625
Not being stressed/anxious in uncertain situations such that there is no uncomfortable feeling of worry.	28	14	5	1	0	4.4376
Not showing emotion (positive or negative) in spite of one's circumstances, mood or relationships with others.	22	13	9	4	0	4.1042

Appendix 21: Rating of NCD attributes to quality among the Nigerians (n = 80)

NCDs & attributes	Significance rating (5 and 1 being strongly agree and strongly disagree as significant to achieving good quality) & frequency					Mean rating
	5	**4**	**3**	**2**	**1**	
Individualism versus collectivism						
Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	26	31	8	8	7	3.7625
Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share.	15	33	21	9	2	3.6250
Tolerance for direct confrontations in speaking one's mind, even if it means creating a temporary disharmony.	13	38	16	8	5	3.5750
Adopting low-context communication i.e. explicit expressions against having to infer from circumstances around an idea.	13	32	23	6	6	3.5000
Power distance						
Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	26	36	10	5	3	3.9625
Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	18	39	16	5	2	3.8250
Minimize inequalities among people such that subordinates take own initiatives and challenge the superiors' opinions.	18	29	21	5	7	3.5750
Strict obedience to authority, superiors hold infallible truths and are excellent such that others' opinions do not necessarily count.	20	18	8	26	8	3.2000
Long-term versus short-term orientation						
Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	36	31	5	3	5	4.1250
Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses.	21	42	15	2	0	4.0250
Respect for circumstances such that a fact or condition connected with or relevant to an event or action is preserved or referred.	20	40	18	2	0	3.9750
Being sparing with resources and practicing thrift such that money and other resources are carefully	20	42	13	5	0	3.9625

NCDs & attributes	Significance rating (5 and 1 being strongly agree and strongly disagree as significant to achieving good quality) & frequency					Mean rating
	5	**4**	**3**	**2**	**1**	
deployed.						
Masculinity versus femininity						
Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	34	28	13	5	0	4.1375
Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority.	24	38	13	5	0	4.0125
Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	23	38	11	8	0	3.9500
Assertive, ambitious, and tough. Forceful personality and strong determination to explicitly express, believe, and succeed.	16	40	16	5	3	3.7625
Uncertainty avoidance						
Not being stressed/anxious in uncertain situations such that there is no uncomfortable feeling of worry.	26	28	21	5	0	3.9375
Tolerance for uncertainty and poise/confidence under such condition.	19	33	19	7	2	3.7500
Not showing emotion (positive or negative) in spite of one's circumstances, mood or relationships with others.	18	33	20	6	3	3.7125
Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	15	32	15	10	8	3.4500

Appendix 22: Friedman test – TQM principles' influence on quality among the Chinese and the Nigerians

TQM principles	Chinese (n = 48)				Nigerians (n =80)			
	For self		For the Nigerians		For self		For the Chinese	
	Total rank (R)	R^2	Total rank (R)	R^2	Total rank (R)	R^2	Total rank (R)	R^2
Customer focus	200	40000	204	41616	302	91204	335	112225
Leadership	182	33124	178	31684	310	96100	328	107584
Involvement of People	195	38025	194	37636	327	106929	354	125316
Process approach	237	56169	221	48841	344	118336	343	117649
System approach	232	53824	237	56169	353	124609	343	117649
Continual improvement	211	44521	231	53361	387	149769	391	152881
Factual approach	226	51076	217	47089	419	175561	381	145161
Supplier relationship	245	60025	246	60516	438	191844	405	164025
$\sum R^2$	376764		376912		1054352		1042490	
n (Respondents)	48				80			
k (TQM principles)	8				8			
$12/nk\,(k + 1)$	0.003472222				0.002083333			
$3n\,(k + 1)$	1296				2160			
$F_r =$ $12/nk\,(k + 1)\sum R_j^2 - 3n\,(k + 1)$	**12.21**		**12.72**		**36.57**		**11.85**	
Critical value at α = 0.05, two-tailed	**14.07**				**14.07**			

Appendix 23: Friedman test – NCDs' influence on quality among the Chinese and the Nigerians

National cultural dimensions	Chinese (n = 48)				Nigerians (n =80)			
	For self		For the Nigerians		For self		For the Chinese	
	Total rank (R)	R^2	Total rank (R)	R^2	Total rank (R)	R^2	Total rank (R)	R^2
Individualism versus collectivism	136	18496	130	16900	221	48841	229	52441
Power distance	130	16900	139	19321	232	53824	217	47089
Long-term versus short-term orientation	150	22500	150	22500	240	57600	239	57121
Masculinity versus femininity	143	20449	144	20736	249	62001	264	69696
Uncertainty avoidance	161	25921	157	24649	258	66564	251	63001
$\sum R^2$	104266		104106		288830		289348	
n (Respondents)	48				80			
k (NCDs)	5				5			
$12/nk\,(k+1)$	0.008333333				0.005			
$3n\,(k+1)$	864				1440			
$F_r =$ $12/nk\,(k+1)\sum R_j^2 - 3n\,(k+1)$	**4.88**		**3.55**		**4.15**		**6.74**	
Critical value at α = 0.05, two-tailed	**9.49**				**9.49**			

Appendix 24: Wilcoxon rank sum test – Differences in TQM principles' influence on quality between the Chinese and Nigerians

TQM principles	Frequency of ranks 1 to 3		Order of frequency		Rank of frequency (Cross)	
	Chinese (for self)	Nigerians (for self)	Chinese (for self)	Nigerians (for self)	Chinese (for self)	Nigerians (for self)
Customer focus	21	42	12	17	1	4.5
Leadership	24	36	13	21	2	7.5
Involvement of People	22	34	15	30	3	12
Process approach	13	30	17	30	4.5	12
System approach	12	30	20	30	6	12
Continual improvement	20	30	21	34	7.5	14
Factual approach	17	21	22	36	9	15
Supplier relationship	15	17	24	42	10	16
Lower total rank = W	$n_A = 8$	$n_B = 8$			**43**	93
s	$s = \sqrt{n_A n_B (n_A + n_B + 1) / 12} = \mathbf{9.5219}$					
z	$((W - (n_A (n_A + n_B + 1)) / 2) / s = \mathbf{-2.63}$					
Critical value at $\alpha = 0.05$, two-tailed	**1.96**					

Appendix 25: Wilcoxon rank sum test – Differences in NCDs' influence on quality between the Chinese and Nigerians

National cultural dimensions	Frequency of ranks 1 to 3		Order of frequency		Rank of frequency (Cross)	
	Chinese (for self)	Nigerians (for self)	Chinese (for self)	Nigerians (for self)	Chinese (for self)	Nigerians (for self)
Individualism versus collectivism	29	53	26	42	1	6
Power distance	31	49	27	46	2	7
Long-term versus short-term orientation	27	46	29	49	3	8
Masculinity versus femininity	31	50	31	50	4.5	9
Uncertainty avoidance	26	42	31	53	4.5	10
Lower total rank = W	$n_A = 5$	$n_B = 5$			**15**	40
s	$s = \sqrt{n_A n_B (n_A + n_B + 1) / 12} = \textbf{4.7871}$					
z	$((W - (n_A (n_A + n_B + 1)) / 2) / s = \textbf{-2.61}$					
Critical value at $\alpha = 0.05$, two-tailed	**1.96**					

Appendix 26: Spearman correlation – China national culture's influence on quality perceptions among the Chinese.

National cultural dimensions	China's NCD scores (x)	Frequency of ranks 1 to 3 by the Chinese for self (y)	Rank of "x"	Rank of "y"	d = (x – y)	d^2
Individualism versus collectivism	20	29	5	3	2	4
Power distance	80	31	2	1.5	0.5	0.25
Long-term versus short-term orientation	118	27	1	4	-3	9
Masculinity versus femininity	66	31	3	1.5	1.5	2.25
Uncertainty avoidance	30	26	4	5	-1	1
Total						**16.5**
ρ	$\rho = 1 - 6\sum d^2 / n\,(n^2 - 1) = $ **0.175**
Critical value at α = 0.05, two-tailed	**1.000**

Appendix 27: Spearman correlation – China national culture's influence on quality perceptions of the Chinese for the Nigerians

National cultural dimensions	NCD scores (x)	Frequency of ranks 1 to 3 by the Chinese for the Nigerians (y)	x Rank of "x"	Rank of "y"	d = (x – y)	d²
Individualism versus collectivism	20	33	5	1	4	16
Power distance	80	32	2	2	0	0
Long-term versus short-term orientation	118	24	1	5	-4	16
Masculinity versus femininity	66	28	3	4	-1	1
Uncertainty avoidance	30	27	4	3	1	1
Total						**32**
ρ	$\rho = 1 - 6\sum d^2 / n (n^2 - 1) = $ **- 0.600**					
Critical value at α = 0.05, two-tailed	**1.000**					

Appendix 28: Spearman correlation – Nigeria national culture's influence on quality perceptions of the Nigerians

National cultural dimensions	NCD scores (x)	Frequency of ranks 1 to 3 by the Chinese for the Nigerians (y)	Rank of "x"	Rank of "y"	d = (x – y)	d²
Individualism versus collectivism	30	53	4	1	3	9
Power distance	80	49	1	3	-2	4
Long-term versus short-term orientation	16	46	5	4	1	1
Masculinity versus femininity	60	50	2	2	0	0
Uncertainty avoidance	55	42	3	5	-2	4
Total						**18**
ρ	$\rho = 1 - 6\sum d^2 / n\,(n^2 - 1) = \mathbf{0.100}$					
Critical value at α = 0.05, two-tailed	**1.000**					

Appendix 29: Spearman correlation – Nigeria national culture's influence on quality perceptions of the Nigerians for the Chinese

National cultural dimensions	NCD scores (x)	Frequency of ranks 1 to 3 by the Chinese for the Nigerians (y)	Rank of "x"	Rank of "y"	d = (x − y)	d²
Individualism versus collectivism	30	51	4	2.5	1.5	2.25
Power distance	80	51	1	2.5	-1.5	2.25
Long-term versus short-term orientation	16	52	5	1	4	16
Masculinity versus femininity	60	45	2	4	-2	4
Uncertainty avoidance	55	41	3	5	-2	4
Total						**28.5**
ρ	$\rho = 1 - 6\sum d^2 / n\,(n^2 - 1) =$ **- 0.425**
Critical value at α = 0.05, two-tailed	**1.000**

Appendix 30: Spearman correlation – Association between the Chinese and the Nigerians' rankings of NCDs on quality in their own firms

National cultural dimensions	Relative ranking of NCDs among the Chinese (x)	Relative ranking of NCDs among the Nigerians (y)	d = (x – y)	d^2
Individualism versus collectivism	2	1	1	1
Power distance	1	2	-1	1
Long-term versus short-term orientation	4	3	1	1
Masculinity versus femininity	3	4	-1	1
Uncertainty avoidance	5	5	0	0
Total				**4**
ρ	$\rho = 1 - 6\sum d^2 / n\,(n^2 - 1) = \mathbf{0.800}$
Critical value at α = 0.05, two-tailed.	**1.000**

Appendix 31: Spearman correlation – Association between the Chinese and the Nigerians' rankings of NCDs on quality for each other

National cultural dimensions	Relative ranking of NCDs among the Chinese (x)	Relative ranking of NCDs among the Nigerians (y)	$d = (x - y)$	d^2
Individualism versus collectivism	1	2	-1	1
Power distance	2	1	1	1
Long-term versus short-term orientation	4	3	1	1
Masculinity versus femininity	3	5	-2	4
Uncertainty avoidance	5	4	1	1
Total				**8**
ρ	$\rho = 1 - 6\sum d^2 / n\,(n^2 - 1) = \mathbf{0.600}$			
Critical value at $\alpha = 0.05$, two-tailed.	**1.000**			

Appendix 32: Profile of the Delphi experts

No.	Delphi experts (DE)	Characteristics
1	**DE1**	CEO and Management Expert with experiences spanning comparative development, leadership and strategic operations. Published articles on the operations of the Chinese firms in Nigeria.
2	**DE2**	CEO and Management Expert with track record of services spanning more than five countries including China and Nigeria. Published articles on the operations of the Chinese firms in Nigeria.
3	DE3	Representative from the Federation of Construction Industry: A body that represents Nigeria's construction industry in multilateral agencies such as the Employer's Consultants Association and Labor Advisory Council.
4	DE4	Representative from the Standards Organization of Nigeria: A body that is vested with the authority for standards elaboration, specifications, quality assurance system of commodities, and manufactured industrial and imported products and services.
5	*DE5*	Construction manager (EPC projects) with over ten years of working experience in Nigeria spanning dealings with the local, state, and federal regulations; skilled and unskilled labor; contractors and sub-contractors; main consultants, and the owner/developer.
6	*DE6*	Chinese Director of a Chinese firm that specializes in EPC and D&B projects in Nigeria. Possesses over 10 years of working experience in Nigeria spanning business developments, project management, and specialist consultancy.
7	*DE7*	Chinese Senior-level Officer with over five years of working relationship with the Nigerian government officials. Tasks include strategic management and creating platforms for Chinese and non-Chinese scholars to exchange ideas on improving bilateral relations.
8	DE8	Representative from Bureau of Public Procurement: A regulatory authority that professionalizes the process of procurement to ensure transparency efficiency, competition, integrity and value for money to support national growth and development.
9	DE9	Fellow Member of the Association of Consulting Architects Nigeria: A professional body that represents the Architects Registration Council of Nigeria's (ARCON) registered private practice consulting architects' firms in Nigeria.
10	DE10	Fellow Member of the Association of Consulting Engineers Nigeria: A professional body with the objective of developing consulting engineering practice in Nigeria, by mobilizing the private sector engineering consultants to advance the profession.
11	DE11	Principal Consultant with over five years of sustained working relationship with most of the competitive Chinese firms in Nigeria. Provides specialist consultancy services for design and construction.
12	DE12	Principal Consultant of own consulting firm and an Entrepreneur with prior working experience with some Chinese firms in Nigeria. A council member of a Chapter of the Nigerian Institute of Architects.

Note: **Neutral DE (non-Chinese and non-Nigerian);** Nigerian DE; *Chinese DE*

Appendix 33: Fleiss' kappa – Experts' agreement on TQM principles' influence on quality among the Chinese ($n = 12$ experts, $N = 8$ cases, and $k = 8$ ranking categories).

TQM principles ($N = 8$ cases)	Categories ($k = 8$)								$P_i = 1 / n (n - 1)$ $(1^2 + 2^2 \ldots + 8^2 - n)$
	1	2	3	4	5	6	7	8	
Leadership	12	0	0	0	0	0	0	0	1.003
Customer focus	0	12	0	0	0	0	0	0	1.003
System approach	0	0	9	0	3	0	0	0	0.593
Process approach	0	0	3	9	0	0	0	0	0.593
People involvement	0	0	0	3	9	0	0	0	0.593
Factual approach	0	0	0	0	0	10	2	0	0.699
Continual improvement	0	0	0	0	0	2	10	0	0.699
Supplier relationship	0	0	0	0	0	0	0	12	1.003
Total (T)	12	12	12	12	12	12	12	12	$6.186 = \sum P_i$
$p_j = T / S$, where $S = 96$ ($N \times n$)	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	
p_j^2	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	
$P_e = \sum p_j^2$	0.125								
$P_0 = 1/N (\sum P_i)$	0.773								
$K = P_0 - P_e / 1 - P_e$	**0.523**								
$z = K / SE_{k0}$	$K / (\sqrt{P_e / k (1 - P_e)}) = \textbf{3.914}$								
Critical value at $\alpha = 0.05$, one-tailed.	**1.96**								

Appendix 34: Fleiss' kappa – Experts' agreement on TQM principles' influence on quality among the Nigerians ($n = 12$ experts, $N = 8$ cases, and $k = 8$ ranking categories).

TQM principles ($N = 8$ cases)	Categories ($k = 8$)								$P_i = 1 / n (n - 1)$ $(1^2 + 2^2 ...+ 8^2 - n)$
	1	2	3	4	5	6	7	8	
Customer focus	11	1	0	0	0	0	0	0	0.836
Leadership	1	11	0	0	0	0	0	0	0.836
People involvement	0	0	12	0	0	0	0	0	1.003
Process approach	0	0	0	11	1	0	0	0	0.836
System approach	0	0	0	1	11	0	0	0	0.836
Continual improvement	0	0	0	0	0	12	0	0	1.003
Supplier relationship	0	0	0	0	0	0	9	3	0.593
Factual approach	0	0	0	0	0	0	3	9	0.593
Total (T)	12	12	12	12	12	12	12	12	$6.536 = \sum P_i$
$p_j = T / S$, where $S = 96$ (N x n)	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	
p_j^2	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	
$P_e = \sum p_j^2$	0.125								
$P_0 = 1/N (\sum P_i)$	0.817								
$K =$ $P_0 - P_e / 1 - P_e$	**0.567**								
$z = K / SE_{k0}$	$K / (\sqrt{P_e / k (1 - P_e)}) =$ **4.243**								
Critical value at $\alpha = 0.05$, one-tailed.	**1.96**								

Appendix 35: Fleiss' kappa – Experts' agreement on NCDs' influence on quality among the Chinese ($n = 12$ experts, $N = 5$ cases, and $k = 5$ ranking categories).

TQM principles ($N = 5$ cases)	Categories ($k = 5$)					$P_i = 1 / n (n - 1) (1^2 + 2^2 \ldots + 8^2 - n)$
	1	2	3	4	5	
Power distance	12	0	0	0	0	1.003
Individualism versus collectivism	0	12	0	0	0	1.003
Long-term versus short-term orientation	0	0	12	0	0	1.003
Masculinity versus femininity	0	0	0	12	0	1.003
Uncertainty avoidance	0	0	0	0	12	1.003
Total (T)	12	12	12	12	12	$5.016 = \sum P_i$
$p_j = T / S$, where S = 60 (N x n)	0.200	0.200	0.200	0.200	0.200	
p_j^2	0.040	0.040	0.040	0.040	0.040	
$P_e = \sum p_j^2$	0.200					
$P_0 = 1/N (\sum P_i)$	1.003					
$K = P_0 - P_e / 1 - P_e$	**0.603**					
$z = K / SE_{k0}$	$K / (\sqrt{P_e / k (1 - P_e)}) = $ **2.697**					
Critical value at $\alpha = 0.05$, one-tailed.	**1.96**					

Appendix 36: Fleiss' kappa – Experts' agreement NCDs' influence on quality among the Nigerians ($n = 12$ experts, $N = 5$ cases, and $k = 5$ ranking categories).

TQM principles ($N = 5$ cases)	Categories ($k = 5$)					$P_i = 1 / n (n - 1) (1^2 + 2^2 ...+ 8^2 - n)$
	1	2	3	4	5	
Individualism versus collectivism	12	0	0	0	0	1.003
Power distance	0	12	0	0	0	1.003
Long-term versus short-term orientation	0	0	12	0	0	1.003
Masculinity versus femininity	0	0	0	12	0	1.003
Uncertainty avoidance	0	0	0	0	12	1.003
Total (T)	12	12	12	12	12	$5.016 = \sum P_i$
$p_j = T / S$, where $S = 60$ (N x n)	0.200	0.200	0.200	0.200	0.200	
p_j^2	0.040	0.040	0.040	0.040	0.040	
$P_e = \sum p_j^2$	0.200					
$P_0 = 1/N (\sum P_i)$	1.003					
$K = P_0 - P_e / 1 - P_e$	**0.603**					
$z = K / SE_{k0}$	$K / (\sqrt{P_e / k (1 - P_e)}) = $ **2.697**					
Critical value at $\alpha = 0.05$, one-tailed.	**1.96**					

Appendix 37: Presentation of the ratings for Matrix 1 and Matrix 2

Pairs	Matrix 1 (Chinese, n = 48)			Matrix 2 (Nigerians, n = 80)		
	Paired important attributes for achieving good quality		No of respondents that supported the pair.	Paired important attributes for achieving good quality		No of respondents that supported the pair.
	TQM principles & attributes	**NCDs** & attributes		**TQM principles** & attributes	**NCDs** & attributes	
1	**LEADER-SHIP (ranked 1st).** Establishing trust and eliminating fear (rated 1st).	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. **(PDI)**	31☑	**CUSTOMER FOCUS (ranked 1st).** Researching and understanding customer's needs and expectations. (rated 1st).	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**	36
2		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. **(PDI)**	17		Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share. **(IDV)**	44 ☑
3		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**	33 ☑		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. **(PDI)**	30
4		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea. **(IDV)**	15		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. **(PDI)**	50 ☑
5		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo. **(MAS)**	27 ☑		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. **(LTO)**	43 ☑
6		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. **(MAS)**	21		Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses. **(LTO)**	37
7		Being sparing with resources and practicing	19		Allow competitive spirit by nurturing strong	31

Pairs	Matrix 1 (Chinese, n = 48)			Matrix 2 (Nigerians, n = 80)		
	Paired important attributes for achieving good quality		No of respondents that supported the pair.	Paired important attributes for achieving good quality		No of respondents that supported the pair.
	TQM principles & attributes	**NCDs** & attributes		**TQM principles** & attributes	**NCDs** & attributes	
		thrift such that money and other resources are carefully deployed. **(LTO)**			desire to be as good or to do better than others in an activity of comparable nature. **(MAS)**	
8		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. **(LTO)**	29 ☑		Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority. **(MAS)**	49 ☑
9		Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities. **(UAI)**	27 ☑		Not being stressed/ anxious in uncertain situations such that there is no uncomfortable feeling of worry. **(UAI)**	37
10		Tolerance for uncertainty and poise/ confidence under such condition. **(UAI)**	21		Tolerance for uncertainty and poise/ confidence under such condition. **(UAI)**	43 ☑
11	**LEADER-SHIP (ranked 1st).** Creating and sustaining shared values, fairness and ethical role models at all levels of the organization. (rated 2nd).	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. **(PDI)**	31 ☑	**CUSTOMER FOCUS (ranked 1st).** Measuring customer's satisfaction and acting on the results. (rated 2nd).	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**	49 ☑
12		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. **(PDI)**	17		Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share. **(IDV)**	31
13		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**	25 ☑		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. **(PDI)**	31
14		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea. **(IDV)**	23		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	49 ☑

Pairs	Matrix 1 (Chinese, n = 48)		No of respondents that supported the pair.	Matrix 2 (Nigerians, n = 80)		No of respondents that supported the pair.
	Paired important attributes for achieving good quality			Paired important attributes for achieving good quality		
	TQM principles & attributes	NCDs & attributes		TQM principles & attributes	NCDs & attributes	
					(PDI)	
15		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo. (MAS)	30 ☑		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. (LTO)	51 ☑
16		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. (MAS)	18		Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses. (LTO)	29
17		Being sparing with resources and practicing thrift such that money and other resources are carefully deployed. (LTO)	19		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. (MAS)	47 ☑
18		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. (LTO)	29 ☑		Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority. (MAS)	33
19		Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities. (UAI)	22		Not being stressed/ anxious in uncertain situations such that there is no uncomfortable feeling of worry. (UAI)	46 ☑
20		Tolerance for uncertainty and poise/ confidence under such condition. (UAI)	26 ☑		Tolerance for uncertainty and poise/ confidence under such condition. (UAI)	34
21	PEOPLE INVOLVE-MENT (ranked 2nd).	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. (PDI)	21	LEADER-SHIP (ranked 2nd). Establishing a	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. (IDV)	38

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Pairs	Matrix 1 (Chinese, n = 48)		No of respondents that supported the pair.	Matrix 2 (Nigerians, n = 80)		No of respondents that supported the pair.
	Paired important attributes for achieving good quality			Paired important attributes for achieving good quality		
	TQM principles & attributes	NCDs & attributes		TQM principles & attributes	NCDs & attributes	
22	People understanding the importance of their contribution and role in the organization. (rated 1st).	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. (PDI)	27 ☑	clear vision of the organization's future. (rated 1st).	Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share. (IDV)	42 ☑
23		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. (IDV)	21		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. (PDI)	47 ☑
24		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea. (IDV)	27 ☑		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. (PDI)	33
25		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo. (MAS)	19		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. (LTO)	30
26		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. (MAS)	29 ☑		Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses. (LTO)	50 ☑
27		Being sparing with resources and practicing thrift such that money and other resources are carefully deployed. (LTO)	28 ☑		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. (MAS)	38
28		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. (LTO)	20		Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority. (MAS)	42 ☑

Pairs	Matrix 1 (Chinese, n = 48)			Matrix 2 (Nigerians, n = 80)		
	Paired important attributes for achieving good quality		No of respondents that supported the pair.	Paired important attributes for achieving good quality		No of respondents that supported the pair.
	TQM principles & attributes	NCDs & attributes		TQM principles & attributes	NCDs & attributes	
29		Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities. (UAI)	29 ☑		Not being stressed/ anxious in uncertain situations such that there is no uncomfortable feeling of worry. (UAI)	44 ☑
30		Tolerance for uncertainty and poise/ confidence under such condition. (UAI)	19		Tolerance for uncertainty and poise/ confidence under such condition. (UAI)	36
31	PEOPLE INVOLVE-MENT (ranked 2nd). People actively seeking opportunities to enhance their competence, knowledge and experience. (rated 2nd).	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. (PDI)	15	LEADER-SHIP (ranked 2nd). Providing people with the required resources, training and freedom to act with responsibility and accountability. (rated 2nd).	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. (IDV)	45 ☑
32		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. (PDI)	33 ☑		Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share. (IDV)	35
33		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. (IDV)	29 ☑		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. (PDI)	31
34		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea. (IDV)	19		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. (PDI)	49 ☑
35		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo. (MAS)	22		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. (LTO)	41 ☑

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Pairs	Matrix 1 (Chinese, n = 48)		No of respondents that supported the pair.	Matrix 2 (Nigerians, n = 80)		No of respondents that supported the pair.
	Paired important attributes for achieving good quality			Paired important attributes for achieving good quality		
	TQM principles & attributes	**NCDs** & attributes		**TQM principles** & attributes	**NCDs** & attributes	
36		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. (**MAS**)	26 ☑		Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses. (**LTO**)	39
37		Being sparing with resources and practicing thrift such that money and other resources are carefully deployed. (**LTO**)	18		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. (**MAS**)	46 ☑
38		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. (**LTO**)	30 ☑		Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority. (**MAS**)	34
39		Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities. (**UAI**)	24		Not being stressed/ anxious in uncertain situations such that there is no uncomfortable feeling of worry. (**UAI**)	33
40		Tolerance for uncertainty and poise/ confidence under such condition. (**UAI**)	24 ☑		Tolerance for uncertainty and poise/ confidence under such condition. (**UAI**)	47 ☑
41	**CUSTOMER FOCUS (ranked 3rd).** Researching and understanding customer's needs and expectations.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. (**PDI**)	29 ☑	**PEOPLE INVOLVE-MENT (ranked 3rd).** People actively seeking opportunities to enhance	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. (**IDV**)	43 ☑
42		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. (**PDI**)	19		Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share. (**IDV**)	37
43		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride,	23		Encourage interdependence to eliminate absolute reliance on or control by someone or	46 ☑

Pairs	Matrix 1 (Chinese, n = 48)		No of respondents that supported the pair.	Matrix 2 (Nigerians, n = 80)		No of respondents that supported the pair.
	Paired important attributes for achieving good quality			Paired important attributes for achieving good quality		
	TQM principles & attributes	NCDs & attributes		TQM principles & attributes	NCDs & attributes	
	(rated 1st).	confidence, and positive thoughts. (IDV)		their competence, knowledge and experience. (rated 1st).	a group for continued operation. (PDI)	
44		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea. (IDV)	25 ☑		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. (PDI)	34
45		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo. (MAS)	31 ☑		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. (LTO)	44 ☑
46		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. (MAS)	17		Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses. (LTO)	36
47		Being sparing with resources and practicing thrift such that money and other resources are carefully deployed. (LTO)	19		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. (MAS)	33
48		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. (LTO)	29 ☑		Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority. (MAS)	47 ☑
49		Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities. (UAI)	24		Not being stressed/ anxious in uncertain situations such that there is no uncomfortable feeling of worry. (UAI)	37
50		Tolerance for uncertainty and poise/ confidence under such condition. (UAI)	24 ☑		Tolerance for uncertainty and poise/ confidence under such condition. (UAI)	43 ☑

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Pairs	Matrix 1 (Chinese, n = 48)			Matrix 2 (Nigerians, n = 80)		
	Paired important attributes for achieving good quality		No of respondents that supported the pair.	Paired important attributes for achieving good quality		No of respondents that supported the pair.
	TQM principles & attributes	**NCDs** & attributes		**TQM principles** & attributes	**NCDs** & attributes	
51	**CUSTOMER FOCUS (ranked 3rd).** Ensuring a balanced approach between satisfying the customers and other interested parties. (rated 2nd).	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. **(PDI)**	26 ☑	**PEOPLE INVOLVE-MENT (ranked 3rd).** People understanding the importance of their contribution and role in the organization. (rated 2nd).	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**	31
52		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. **(PDI)**	22		Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share. **(IDV)**	49 ☑
53		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**	19		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. **(PDI)**	44 ☑
54		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea. **(IDV)**	29 ☑		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. **(PDI)**	36
55		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo. **(MAS)**	32 ☑		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. **(LTO)**	36
56		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. **(MAS)**	16		Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses. **(LTO)**	44 ☑
57		Being sparing with resources and practicing thrift such that money and other resources are carefully deployed. **(LTO)**	29 ☑		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. **(MAS)**	42 ☑

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Pairs	Matrix 1 (Chinese, n = 48)			Matrix 2 (Nigerians, n = 80)		
	Paired important attributes for achieving good quality		No of respondents that supported the pair.	Paired important attributes for achieving good quality		No of respondents that supported the pair.
	TQM principles & attributes	**NCDs** & attributes		**TQM principles** & attributes	**NCDs** & attributes	
58		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. **(LTO)**	19		Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority. **(MAS)**	38
59		Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities. **(UAI)**	23		Not being stressed/ anxious in uncertain situations such that there is no uncomfortable feeling of worry. **(UAI)**	38
60		Tolerance for uncertainty and poise/ confidence under such condition. **(UAI)**	25 ☑		Tolerance for uncertainty and poise/ confidence under such condition. **(UAI)**	42 ☑

S/No.	Paired important attributes for achieving good quality		Importance rankings
	TQM & attributes	**NCD** & attributes	
1		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. **(PDI)**	2
2		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**	2
3	**LEADERSHIP** Establishing trust and eliminating fear.	Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo. **(MAS)**	2
4		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. **(LTO)**	2
5		Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities. **(UAI)**	2
6		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. **(PDI)**	2
7	**LEADERSHIP** Creating and sustaining shared values, fairness and ethical role models at all levels of the organization.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**	2
8		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo. **(MAS)**	2
9		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. **(LTO)**	2
10		Tolerance for uncertainty and poise/ confidence under such condition. **(UAI)**	2
11	**PEOPLE INVOLVEMENT** People understanding the importance of their contribution and role in the organization.	**Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. (PDI)**	2
12		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea. **(IDV)**	2
13		**Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. (MAS)**	2
14		Being sparing with resources and practicing thrift such that money and other resources are carefully deployed. **(LTO)**	2

S/No.	Paired important attributes for achieving good quality		Importance rankings
	TQM & attributes	**NCD** & attributes	
15		Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities. **(UAI)**	2
16		**Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. (PDI)**	2
17	**PEOPLE INVOLVEMENT** People actively seeking opportunities to enhance their competence, knowledge and experience.	**Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. (IDV)**	2
18		*Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.* **(MAS)**	2
19		**Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. (LTO)**	2
20		*Tolerance for uncertainty and poise/ confidence under such condition.* **(UAI)**	0
21	**CUSTOMER FOCUS** Researching and understanding customer's needs and expectations.	**Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. (PDI)**	2
22		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea. **(IDV)**	2
23		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo. **(MAS)**	2
24		**Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. (LTO)**	2
25		*Tolerance for uncertainty and poise/ confidence under such condition.* **(UAI)**	0
26	**CUSTOMER FOCUS** Ensuring a balanced approach between satisfying the customers and other interested parties.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. **(PDI)**	2
27		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea. **(IDV)**	2
28		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo. **(MAS)**	2
29		Being sparing with resources and practicing thrift such that money and other resources are carefully deployed. **(LTO)**	2
30		Tolerance for uncertainty and poise/ confidence under such	2

S/No.	Paired important attributes for achieving good quality		Importance rankings
	TQM & attributes	**NCD** & attributes	
		condition. **(UAI)**	

[1] **Bold pair:** A common and equally ranked pair between the Chinese and the Nigerians.

[2] *Italicized pair*: A common but differently ranked pair between the Chinese and the Nigerians.

Appendix 39: Important 30 pairs of TQM and NCD attributes among the Nigerians (Matrix 2A)

S/No.	Paired important attributes for achieving good quality		Importance rankings
	TQM	NCD	
1	**CUSTOMER FOCUS** Researching and understanding customer's needs and expectations.	Nurturing well-bonded in-groups with members who share interests that people outside the group do not share. **(IDV)**	2
2		**Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. (PDI)**	2
3		**Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. (LTO)**	2
4		Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority. **(MAS)**	2
5		*Tolerance for uncertainty and poise/ confidence under such condition.* **(UAI)**	2
6	**CUSTOMER FOCUS** Measuring customer's satisfaction and acting on the results.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**	2
7		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. **(PDI)**	2
8		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. **(LTO)**	2
9		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. **(MAS)**	2
10		Not being stressed/ anxious in uncertain situations such that there is no uncomfortable feeling of worry. **(UAI)**	2
11	**LEADERSHIP** Establishing a clear vision of the organization's future.	Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share. **(IDV)**	2
12		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. **(PDI)**	2
13		Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses. **(LTO)**	2
14		Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority. **(MAS)**	2
15		Not being stressed/ anxious in uncertain situations such that	2

S/No.	Paired important attributes for achieving good quality		Importance rankings
	TQM	NCD	
		there is no uncomfortable feeling of worry. **(UAI)**	
16	**LEADERSHIP** Providing people with the required resources, training and freedom to act with responsibility and accountability	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**	2
17		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. **(PDI)**	2
18		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. **(LTO)**	2
19		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. **(MAS)**	2
20		Tolerance for uncertainty and poise/ confidence under such condition. **(UAI)**	2
21		**Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. (IDV)**	2
22	**PEOPLE INVOLVEMENT** People actively seeking opportunities to enhance their competence, knowledge and experience.	**Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. (PDI)**	2
23		**Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. (LTO)**	2
24		Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority. **(MAS)**	2
25		*Tolerance for uncertainty and poise/ confidence under such condition.* **(UAI)**	2
26		Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share. **(IDV)**	2
27	**PEOPLE INVOLVEMENT** People understanding the importance of their contribution and role in the organization.	**Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. (PDI)**	2
28		Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses. **(LTO)**	2
29		**Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. (MAS)**	2
30		*Tolerance for uncertainty and poise/ confidence under such*	2

S/No.	Paired important attributes for achieving good quality		Importance rankings
	TQM	NCD	
		condition. **(UAI)**	

[1] **Bold pair:** A common and equally ranked pair between the Chinese and the Nigerians.

[2] *Italicized pair*: A common but differently ranked pair between the Chinese and the Nigerians.

Appendix 40: Developing Matrix 3 from Matrices 1A and 2A

Pairs	Matrix 2 (Nigerians, n = 80)		No of respondents that supported the pair.	Matrix 1 (Chinese, n = 48)		No of respondents that supported the pair.
	Paired important attributes for achieving good quality			Paired important attributes for achieving good quality		
	TQM principles & attributes	NCDs & attributes		TQM principles & attributes	NCDs & attributes	
1	CUSTOMER FOCUS (ranked 1st). Researching and understanding customer's needs and expectations. (ranked 1st).	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. (**IDV**)	36	CUSTOMER FOCUS (ranked 3rd). Researching and understanding customer's needs and expectations. (ranked 1st).	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. (**PDI**)	29 ☑
2		Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share. (**IDV**)	44 ☑		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. (**PDI**)	19
3		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. (**PDI**)	30		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. (**IDV**)	23
4		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. (**PDI**)	50 ☑		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea. (**IDV**)	25 ☑
5		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. (**LTO**)	43 ☑		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo. (**MAS**)	31 ☑
6		Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses. (**LTO**)	37		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. (**MAS**)	17
7		Allow competitive spirit by nurturing strong desire to be as good or to do better than others	31		Being sparing with resources and practicing thrift such that money and other resources are	19

Pairs	Matrix 2 (Nigerians, n = 80)			Matrix 1 (Chinese, n = 48)		
	Paired important attributes for achieving good quality		No of respondents that supported the pair.	Paired important attributes for achieving good quality		No of respondents that supported the pair.
	TQM principles & attributes	**NCDs** & attributes		**TQM principles** & attributes	**NCDs** & attributes	
		in an activity of comparable nature. **(MAS)**			carefully deployed. **(LTO)**	
8		Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority. **(MAS)**	49 ☑		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. **(LTO)**	29 ☑
9		Not being stressed/ anxious in uncertain situations such that there is no uncomfortable feeling of worry. **(UAI)**	37		Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities. **(UAI)**	24
10		Tolerance for uncertainty and poise/ confidence under such condition. **(UAI)**	43 ☑		Tolerance for uncertainty and poise/ confidence under such condition. **(UAI)**	24 ☑
41	**PEOPLE INVOLVE-MENT (ranked 3rd).** People actively seeking opportunities to enhance their competence, knowledge and experience.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**	43 ☑	**PEOPLE INVOLVE-MENT (ranked 2nd).** People actively seeking opportunities to enhance their competence, knowledge and experience.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. **(PDI)**	15
42		Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share. **(IDV)**	37		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. **(PDI)**	33 ☑
43		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. **(PDI)**	46 ☑		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**	29 ☑
44		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	34		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea. **(IDV)**	19

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Pairs	Matrix 2 (Nigerians, n = 80)		No of respondents that supported the pair.	Matrix 1 (Chinese, n = 48)		No of respondents that supported the pair.
	Paired important attributes for achieving good quality			Paired important attributes for achieving good quality		
	TQM principles & attributes	**NCDs** & attributes		**TQM principles** & attributes	**NCDs** & attributes	
	(ranked 1st).	**(PDI)**		(ranked 2nd).		
45		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. **(LTO)**	44 ☑		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo. **(MAS)**	22
46		Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses. **(LTO)**	36		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. **(MAS)**	26 ☑
47		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. **(MAS)**	33		Being sparing with resources and practicing thrift such that money and other resources are carefully deployed. **(LTO)**	18
48		Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority. **(MAS)**	47 ☑		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. **(LTO)**	30 ☑
49		Not being stressed/ anxious in uncertain situations such that there is no uncomfortable feeling of worry. **(UAI)**	37		Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities. **(UAI)**	24
50		Tolerance for uncertainty and poise/ confidence under such condition. **(UAI)**	43 ☑		Tolerance for uncertainty and poise/ confidence under such condition. **(UAI)**	24 ☑
51	**PEOPLE INVOLVE-MENT (ranked 3rd).**	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. **(IDV)**	31	**PEOPLE INVOLVE-MENT (ranked 2nd).**	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. **(PDI)**	21

Pairs	Matrix 2 (Nigerians, n = 80)		No of respondents that supported the pair.	Matrix 1 (Chinese, n = 48)		No of respondents that supported the pair.
	Paired important attributes for achieving good quality			Paired important attributes for achieving good quality		
	TQM principles & attributes	**NCDs** & attributes		**TQM principles** & attributes	**NCDs** & attributes	
52	People understanding the importance of their contribution and role in the organization. (ranked 2nd).	Nurturing well-bonded in-groups, with members who share interests that people outside the group do not share. (**IDV**)	49 ☑	People understanding the importance of their contribution and role in the organization. (ranked 1st).	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. (**PDI**)	27 ☑
53		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation. (**PDI**)	44 ☑		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts. (**IDV**)	21
54		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained. (**PDI**)	36		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea. (**IDV**)	27 ☑
55		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. (**LTO**)	36		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo. (**MAS**)	19
56		Favor stability over personal adaptiveness, which aims to adjust to different conditions or uses. (**LTO**)	44 ☑		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. (**MAS**)	29 ☑
57		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature. (**MAS**)	42 ☑		Being sparing with resources and practicing thrift such that money and other resources are carefully deployed. (**LTO**)	28 ☑
58		Emphasis on challenge, recognition, and advancement. Encourage participating in a competitive situation for superiority. (**MAS**)	38		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming. (**LTO**)	20

Pairs	Matrix 2 (Nigerians, n = 80)		No of respondents that supported the pair.	Matrix 1 (Chinese, n = 48)		No of respondents that supported the pair.
	Paired important attributes for achieving good quality			Paired important attributes for achieving good quality		
	TQM principles & attributes	**NCDs** & attributes		**TQM principles** & attributes	**NCDs** & attributes	
59		Not being stressed/ anxious in uncertain situations such that there is no uncomfortable feeling of worry. **(UAI)**	38		Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities. **(UAI)**	29 ☑
60		Tolerance for uncertainty and poise/ confidence under such condition. **(UAI)**	42 ☑		Tolerance for uncertainty and poise/ confidence under such condition. **(UAI)**	19

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Appendix 41: Matrix 3 – Percentage agreement and Cohen's kappa for the Chinese and the Nigerians

A. Percentage agreement

Pairs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Chinese	D	D	A	A	D	D	A	A	D	A	A	D	D	A	D	D	A	D
Nigerians	D	D	A	A	D	A	A	A	D	A	D	A	D	A	D	D	A	A

More of the respondents agree = A; More of the respondents disagree = D. **Percentage agreement** = $A+D$ / N x 100 = 7+7/18 x 100 = 77.78%

B. Confusion matrix

		Nigerians		
		A	D	Total (Chinese)
Chinese	A	7	1	8 = B1
	D	3	7	10 = B2
	Total (Nigerians)	10 = A1	8 = A2	18 = N

C. Cohen's kappa

$P_0 = A+D$ / N	0.777
$P_e = (A1 / N) (B1 / N) + (A2 / N) (B2 / N)$	0.494
$K = P_0 – P_e$ / 1 - P_e	**0.559**
z = K / SE_{k0} , where $SE_{k0} = \sqrt{P_e / k (1 – P_e)}$ and $k = 18$	**2.410**
Critical value at $\alpha = 0.05$, one-tailed	**1.96**

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Appendix 42: Matrix 1A – Fleiss' kappa of the agreement among the experts ($n = 12$ experts, $N = 30$ cases, and $k = 5$ rating categories).

Important pairs	Categories ($k = 5$)					$P_i = 1 / n (n - 1) (1^2 + 2^2 ... + 5^2 - n)$
	1	2	3	4	5	
1	6	6	0	0	0	0.456
2	5	4	3	0	0	0.289
3	0	5	5	1	1	0.304
4	0	4	2	2	4	0.213
5	0	5	4	0	3	0.289
6	0	7	1	1	3	0.365
7	0	1	1	1	9	0.547
8	0	2	4	1	5	0.258
9	0	5	2	0	5	0.319
10	3	4	5	0	0	0.289
11	0	0	0	11	1	0.836
12	5	4	1	0	2	0.258
13	0	0	0	10	2	0.699
14	0	0	9	1	2	0.562
15	0	4	3	2	3	0.918
16	0	0	0	10	2	0.699
17	0	0	0	10	2	0.699
18	0	0	0	1	11	0.836
19	0	0	0	10	2	0.699
20	5	2	2	0	3	0.228
21	0	0	0	5	7	0.471
22	10	1	1	0	0	0.684
23	9	1	0	1	1	0.547
24	0	0	3	1	8	0.471
25	6	1	1	1	3	0.274
26	4	5	1	1	1	0.243
27	9	1	1	1	0	0.547

Important pairs	Categories ($k = 5$)					$P_i = 1 / n \, (n - 1) \, (1^2 + 2^2 \ldots + 5^2 - n)$
	1	2	3	4	5	
28	0	0	10	1	1	0.684
29	0	2	10	0	0	0.699
30	5	5	2	0	0	0.319
Total (T)	67	69	71	72	81	$13.984 = \sum P_i$
$p_j = T / S$, where $S = 360 \, (N \times n)$	0.186	0.192	0.197	0.200	0.225	
p_j^2	0.035	0.037	0.039	0.040	0.051	
$P_e = \sum p_j^2$	0.201					
$P_0 = 1/N \, (\sum P_i)$	0.466					
$K = P_0 - P_e \, / \, 1 - P_e$	**0.064**					
$z = K / SE_{k0}$	$K / (\sqrt{P_e / k \, (1 - P_e)}) = \textbf{0.287}$					
Critical value at $\alpha = 0.05$, one-tailed.	**1.96**					

Appendix 43: Matrix 2A – Fleiss' kappa for the experts' agreement ($n = 12$ experts, $N = 30$ cases, and $k = 5$ rating categories).

Important pairs	Categories ($k = 5$)					$P_i = 1 / n (n - 1) (1^2 + 2^2 \ldots + 5^2 - n)$
	1	2	3	4	5	
1	0	9	1	1	1	0.547
2	0	0	0	8	4	0.517
3	0	0	2	5	5	0.319
4	4	8	0	0	0	0.517
5	0	0	0	1	11	0.836
6	0	0	10	1	1	0.684
7	1	1	2	7	1	0.334
8	8	4	0	0	0	0.517
9	3	3	2	2	2	0.137
10	6	6	0	0	0	0.456
11	6	4	2	0	0	0.334
12	2	2	2	2	4	0.152
13	1	1	10	0	0	0.684
14	1	1	1	1	8	0.426
15	2	5	5	0	0	0.319
16	2	2	8	0	0	0.456
17	2	4	4	2	0	0.213
18	2	4	6	0	0	0.334
19	6	2	2	1	1	0.258
20	2	2	2	3	3	0.137
21	0	1	1	1	9	0.547
22	0	0	0	2	10	0.699
23	0	0	0	3	9	0.593
24	0	0	7	5	0	0.471
25	0	0	0	11	1	0.836
26	6	3	3	0	0	0.319
27	0	0	2	4	6	0.334

Important pairs	Categories ($k = 5$)					$P_i = 1 / n (n - 1) (1^2 + 2^2 \ldots + 5^2 - n)$
	1	2	3	4	5	
28	8	4	0	0	0	0.517
29	0	0	0	7	5	0.471
30	0	0	0	10	2	0.699
Total (T)	62	66	72	77	83	$13.665 = \sum P_i$
$p_j = T / S$, where $S = 360$ (N x n)	0.172	0.183	0.200	0.214	0.231	
p_j^2	0.030	0.034	0.040	0.046	0.053	
$P_e = \sum p_j^2$	0.202					
$P_0 = 1/N (\sum P_i)$	0.455					
$K = P_0 - P_e / 1 - P_e$	**0.051**					
$z = K / SE_{k0}$	$K / (\sqrt{P_e / k (1 - P_e)}) =$ **0.227**					
Critical value at $\alpha = 0.05$, one-tailed.	**1.96**					

Appendix 44: Matrix 3 – Fleiss' kappa for the experts' agreement ($n = 12$ experts, $N = 18$ cases, and $k = 5$ rating categories).

Important pairs	Categories ($k = 5$)					$P_i = 1 / n\,(n - 1)\,(1^2 + 2^2 \ldots + 5^2 - n)$
	1	2	3	4	5	
1	0	12	0	0	0	1.003
2	12	0	0	0	0	1.003
3	0	0	0	0	12	1.003
4	0	0	0	0	12	1.003
5	6	6	0	0	0	0.456
6	0	0	12	0	0	1.003
7	0	0	0	12	0	1.003
8	0	0	0	0	12	1.003
9	12	0	0	0	0	1.003
10	0	0	0	12	0	1.003
11	0	0	0	0	12	1.003
12	0	0	0	12	0	1.003
13	0	0	12	0	0	1.003
14	0	0	0	0	12	1.003
15	0	12	0	0	0	1.003
16	0	0	12	0	0	1.003
17	0	0	0	12	0	1.003
18	0	0	12	0	0	1.003
Total (T)	30	30	48	48	60	$17.510 = \sum P_i$
p_j = T / S, where S = 216 (N x n)	0.139	0.139	0.222	0.222	0.278	
p_j^2	0.019	0.019	0.049	0.049	0.077	
$P_e = \sum p_j^2$	0.215					
$P_0 = 1/N\,(\sum P_i)$	0.973					
$K = P_0 - P_e / 1 - P_e$	**0.544**					
$z = K / SE_{k0}$	$K / (\sqrt{P_e / k\,(1 - P_e)}) = $ **2.327**					
Critical value at $\alpha = 0.05$, one-tailed.	**1.96**					

Appendix 45: Matrix 1A – Case study 1's ranking (Matrix B1)

Pairs	Paired important attributes for achieving good quality		Importance rankings	
	TQM	NCD	Survey (Chinese)	Case study 1
1	Establishing trust and eliminating fear.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	2	2
2		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	2	1
3		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	2	2
4		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	2
5		Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	2	1
6	Creating and sustaining shared values, fairness and ethical role models at all levels of the organization.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	2	2
7		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	2	2
8		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	2	2
9		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	2
10		Tolerance for uncertainty and poise/ confidence under such condition.	2	2
11	People understanding the importance of their contribution and role in the organization.	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	2	2
12		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea.	2	2
13		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	2	2
14		Being sparing with resources and practicing thrift such	2	1

Pairs	Paired important attributes for achieving good quality		Importance rankings	
	TQM	NCD	Survey (Chinese)	Case study 1
		that money and other resources are carefully deployed.		
15		Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	2	1
16	People actively seeking opportunities to enhance their competence, knowledge and experience.	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	2	2
17		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	2	1
18		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	2	2
19		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	1
20		Tolerance for uncertainty and poise/ confidence under such condition.	0	1
21	Researching and understanding customer's needs and expectations.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	2	2
22		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea.	2	2
23		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	2	1
24		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	1
25		Tolerance for uncertainty and poise/ confidence under such condition.	0	1
26	Ensuring a balanced approach between satisfying the customers and other interested	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	2	1
27		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea.	2	2
28		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or	2	2

Pairs	Paired important attributes for achieving good quality		Importance rankings	
	TQM	NCD	Survey (Chinese)	Case study 1
	parties.	the status quo.		
29		Being sparing with resources and practicing thrift such that money and other resources are carefully deployed.	2	1
30		Tolerance for uncertainty and poise/ confidence under such condition.	2	2
Percent agreement with the Chinese			**60.00**	

Notes: 0 = Tied on the importance of a pair as being important to achieving good quality. 1 = More agreed as being less important to achieving good quality. 2 = More agreed as being more important to achieving good quality.

Appendix 46: Matrix 3 – Case study 1's ranking

Pairs	Paired important attributes for achieving good quality		Importance rankings		
	TQM	NCD	More of the Nigerians	More of the Chinese	Case study 1
1	Researching and understanding customer's needs and expectations.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	1	1	2
2		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	1	1	2
3		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	2	2	1
4		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	2	2
5		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	1	1	2
6		Tolerance for uncertainty and poise/ confidence under such condition.	2	0	1
7	People actively seeking opportunities to enhance their competence, knowledge and experience.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	2	2	1
8		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	2	2	2
9		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	1	1	1
10		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	2	2
11		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	1	2	2

Pairs	Paired important attributes for achieving good quality		Importance rankings		
	TQM	NCD	More of the Nigerians	More of the Chinese	Case study 1
12		Tolerance for uncertainty and poise/ confidence under such condition.	2	0	1
13		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	1	1	1
14		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	2	2	2
15	People understanding the importance of their contribution and role in the organization.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	1	1	1
16		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	1	1	2
17		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	2	2	1
18		Tolerance for uncertainty and poise/ confidence under such condition.	2	1	2
Percent agreement with the Nigerians			**44.44**		**CS1**
Percent agreement with the Chinese				44.44	

Appendix 47: Matrix 1A – Case study 2's ranking (Matrix B2)

Pairs	Paired important attributes for achieving good quality		Importance rankings	
	TQM	NCD	Survey (Chinese)	Case study 2
1	Establishing trust and eliminating fear.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	2	2
2		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	2	1
3		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	2	1
4		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	1
5		Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	2	1
6	Creating and sustaining shared values, fairness and ethical role models at all levels of the organization.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	2	1
7		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	2	2
8		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	2	2
9		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	1
10		Tolerance for uncertainty and poise/ confidence under such condition.	2	2
11	People understanding the importance of their contribution and role in the organization.	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	2	1
12		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea.	2	2
13		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	2	1
14		Being sparing with resources and practicing thrift such	2	2

Pairs	Paired important attributes for achieving good quality		Importance rankings	
	TQM	NCD	Survey (Chinese)	Case study 2
		that money and other resources are carefully deployed.		
15		Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	2	1
16	People actively seeking opportunities to enhance their competence, knowledge and experience.	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	2	2
17		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	2	2
18		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	2	1
19		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	2
20		Tolerance for uncertainty and poise/ confidence under such condition.	0	2
21	Researching and understanding customer's needs and expectations.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	2	1
22		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea.	2	1
23		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	2	1
24		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	1
25		Tolerance for uncertainty and poise/ confidence under such condition.	0	2
26	Ensuring a balanced approach between satisfying the customers and other interested	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	2	2
27		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea.	2	1
28		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or	2	2

Pairs	Paired important attributes for achieving good quality		Importance rankings	
	TQM	NCD	Survey (Chinese)	Case study 2
	parties.	the status quo.		
29		Being sparing with resources and practicing thrift such that money and other resources are carefully deployed.	2	2
30		Tolerance for uncertainty and poise/ confidence under such condition.	2	2
Percent agreement with the Chinese			**43.33**	

Appendix 48: Matrix 3 – Case study 2's ranking

Pairs	Paired important attributes for achieving good quality		Importance rankings		
	TQM	NCD	More of the Nigerians	More of the Chinese	Case study 2
1	Researching and understanding customer's needs and expectations.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	1	1	2
2		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	1	1	1
3		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	2	2	2
4		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	2	1
5		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	1	1	2
6		Tolerance for uncertainty and poise/confidence under such condition.	2	0	2
7	People actively seeking opportunities to enhance their competence, knowledge and experience.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	2	2	2
8		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	2	2	2
9		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	1	1	1
10		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	2	2
11		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	1	2	1

Pairs	Paired important attributes for achieving good quality		Importance rankings		
	TQM	NCD	More of the Nigerians	More of the Chinese	Case study 2
12		Tolerance for uncertainty and poise/ confidence under such condition.	2	0	1
13		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	1	1	1
14		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	2	2	1
15	People understanding the importance of their contribution and role in the organization.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	1	1	2
16		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	1	1	1
17		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	2	2	1
18		Tolerance for uncertainty and poise/ confidence under such condition.	2	1	2
Percent agreement with the Nigerians			**61.11**		**CS2**
Percent agreement with the Chinese				**44.44**	

Appendix 49: Matrix 1A – Case study 3's ranking (Matrix B3)

Pairs	Paired important attributes for achieving good quality		Importance rankings	
	TQM	NCD	Survey (Chinese)	Case study 3
1	Establishing trust and eliminating fear.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	2	1
2		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	2	1
3		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	2	2
4		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	1
5		Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	2	2
6	Creating and sustaining shared values, fairness and ethical role models at all levels of the organization.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	2	1
7		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	2	1
8		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	2	2
9		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	1
10		Tolerance for uncertainty and poise/ confidence under such condition.	2	1
11	People understanding the importance of their contribution and role in the organization.	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	2	1
12		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea.	2	2
13		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	2	1
14		Being sparing with resources and practicing thrift such	2	2

Pairs	Paired important attributes for achieving good quality		Importance rankings	
	TQM	NCD	Survey (Chinese)	Case study 3
		that money and other resources are carefully deployed.		
15		Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	2	1
16	People actively seeking opportunities to enhance their competence, knowledge and experience.	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	2	1
17		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	2	1
18		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	2	1
19		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	1
20		Tolerance for uncertainty and poise/ confidence under such condition.	0	1
21	Researching and understanding customer's needs and expectations.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	2	1
22		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea.	2	2
23		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	2	1
24		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	1
25		Tolerance for uncertainty and poise/ confidence under such condition.	0	2
26	Ensuring a balanced approach between satisfying the customers and other interested	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	2	2
27		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea.	2	1
28		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or	2	1

Pairs	Paired important attributes for achieving good quality		Importance rankings	
	TQM	NCD	Survey (Chinese)	Case study 3
	parties.	the status quo.		
29		Being sparing with resources and practicing thrift such that money and other resources are carefully deployed.	2	2
30		Tolerance for uncertainty and poise/ confidence under such condition.	2	1
Percent agreement with the Chinese			**26.67**	

Appendix 50: Matrix 3 – Case study 3's ranking

Pairs	Paired important attributes for achieving good quality		Importance rankings		
	TQM	NCD	More of the Nigerians	More of the Chinese	Case study 3
1	Researching and understanding customer's needs and expectations.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	1	1	1
2		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	1	1	1
3		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	2	2	2
4		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	2	1
5		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	1	1	2
6		Tolerance for uncertainty and poise/ confidence under such condition.	2	0	2
7	People actively seeking opportunities to enhance their competence, knowledge and experience.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	2	2	1
8		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	2	2	1
9		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	1	1	2
10		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	2	1
11		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	1	2	1

Pairs	Paired important attributes for achieving good quality		Importance rankings		
	TQM	NCD	More of the Nigerians	More of the Chinese	Case study 3
12		Tolerance for uncertainty and poise/ confidence under such condition.	2	0	2
13		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	1	1	1
14		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	2	2	1
15	People understanding the importance of their contribution and role in the organization.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	1	1	2
16		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	1	1	1
17		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	2	2	1
18		Tolerance for uncertainty and poise/ confidence under such condition.	2	1	2
Percent agreement with the Nigerians			**50.00**		**CS3**
Percent agreement with the Chinese				**27.77**	

Appendix 51: Matrix 1A – Case study 4's ranking (Matrix B4)

Pairs	Paired important attributes for achieving good quality		Importance rankings	
	TQM	NCD	Survey (Chinese)	Case study 4
1	Establishing trust and eliminating fear.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	2	2
2		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	2	2
3		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	2	2
4		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	2
5		Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	2	1
6	Creating and sustaining shared values, fairness and ethical role models at all levels of the organization.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	2	2
7		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	2	2
8		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	2	2
9		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	2
10		Tolerance for uncertainty and poise/ confidence under such condition.	2	2
11	People understanding the importance of their contribution and role in the organization.	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	2	1
12		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea.	2	1
13		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	2	2
14		Being sparing with resources and practicing thrift such	2	2

Pairs	Paired important attributes for achieving good quality		Importance rankings	
	TQM	NCD	Survey (Chinese)	Case study 4
		that money and other resources are carefully deployed.		
15		Not being too curious and cautious about what is different. Ignore perceived danger in favor of latent opportunities.	2	2
16	People actively seeking opportunities to enhance their competence, knowledge and experience.	Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	2	2
17		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	2	2
18		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	2	1
19		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	1
20		Tolerance for uncertainty and poise/ confidence under such condition.	0	2
21	Researching and understanding customer's needs and expectations.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	2	1
22		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea.	2	1
23		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or the status quo.	2	1
24		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	2
25		Tolerance for uncertainty and poise/ confidence under such condition.	0	2
26	Ensuring a balanced approach between satisfying the customers and other interested	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	2	1
27		Adopting low-context communication, that is, explicit expressions against having to infer from circumstances around an idea.	2	1
28		Facts and feelings: willingness to try out new ways of doing things as against adopting something proven or	2	2

Pairs	Paired important attributes for achieving good quality		Importance rankings	
	TQM	NCD	Survey (Chinese)	Case study 4
	parties.	the status quo.		
29		Being sparing with resources and practicing thrift such that money and other resources are carefully deployed.	2	2
30		Tolerance for uncertainty and poise/ confidence under such condition.	2	1
Percent agreement with the Chinese			**56.67**	

Appendix 52: Matrix 3 – Case study 4's ranking

Pairs	Paired important attributes for achieving good quality		Importance rankings		
	TQM	NCD	More of the Nigerians	More of the Chinese	Case study 4
1	Researching and understanding customer's needs and expectations.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	1	1	2
2		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	1	1	1
3		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	2	2	2
4		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	2	2
5		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	1	1	1
6		Tolerance for uncertainty and poise/ confidence under such condition.	2	0	2
7	People actively seeking opportunities to enhance their competence, knowledge and experience.	Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	2	2	2
8		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	2	2	2
9		Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	1	1	1
10		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	2	2	1
11		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	1	2	1

Pairs	Paired important attributes for achieving good quality		Importance rankings		
	TQM	NCD	More of the Nigerians	More of the Chinese	Case study 4
12		Tolerance for uncertainty and poise/ confidence under such condition.	2	0	1
13		Upholding self-respect by avoiding shame and loss of face for self and group. Ensuring pride, confidence, and positive thoughts.	1	1	2
14		Encourage interdependence to eliminate absolute reliance on or control by someone or a group for continued operation.	2	2	1
15	People understanding the importance of their contribution and role in the organization.	Handle status with care such that relative position, which also determines rights and responsibilities are protected or maintained.	1	1	2
16		Persist in doing something, in a determined way, despite difficulty or delay in achieving success or results seem not forthcoming.	1	1	1
17		Allow competitive spirit by nurturing strong desire to be as good or to do better than others in an activity of comparable nature.	2	2	2
18		Tolerance for uncertainty and poise/ confidence under such condition.	2	1	1
Percent agreement with the Nigerians			**61.11**		**CS4**
Percent agreement with the Chinese				**55.56**	

Appendix 53: Matrix 1A – Percentage agreement of Matrices B1 to B4 using the survey result of the Chinese as the base

Pairs	*Importance rankings				
	Survey result (Chinese)	Good quality firms		Poor quality firms	
		Case study 1	Case study 2	Case study 3	Case study 4
1	2	2	2	1	2
2	2	2	1	1	2
3	2	1	1	2	2
4	2	2	1	1	2
5	2	2	1	2	1
6	2	1	1	1	2
7	2	2	2	1	2
8	2	2	2	2	2
9	2	2	1	1	2
10	2	2	2	1	2
11	2	2	1	1	1
12	2	2	2	2	1
13	2	1	1	1	2
14	2	1	2	2	2
15	2	1	1	1	2
16	2	2	2	1	2
17	2	1	2	1	2
18	2	2	1	1	1
19	2	2	2	1	1
20	0	2	2	1	2
21	2	2	1	1	1
22	2	1	1	2	1
23	2	1	1	1	2
24	2	2	1	1	2
25	0	1	2	2	2
26	2	2	2	2	1

Pairs	*Importance rankings				
	Survey result (Chinese)	Good quality firms		Poor quality firms	
		Case study 1	Case study 2	Case study 3	Case study 4
27	2	1	1	1	1
28	2	1	2	1	2
29	2	2	2	2	2
30	2	2	2	1	1
Percentage agreement with the Chinese survey results		**60.00**	**43.33**	**26.67**	**60.00**

Appendix 54: Matrix 3 – Percentage agreement of Matrices B1 to B4 with respect to the survey (the Chinese and the Nigerians) and the Delphi results

Pairs	Survey results (importance rankings)		Delphi results (ratings): 1 (not important) to 5 (very important)	Case study results (importance rankings)			
	Nigerians	Chinese		Good quality firms		Nigerians	
				Case study 1	Case study 2	Case study 3	Case study 4
1	1	1	2	2	2	**1**	2
2	1	1	1	**2**	1	1	1
3	2	2	5	**1**	2	2	2
4	2	2	5	2	1	1	2
5	1	1	1 & 2	2	2	2	1
6	2	0	3	**1**	2	2	2
7	2	2	4	1	2	1	2
8	2	2	5	2	2	1	2
9	1	1	1	1	1	2	1
10	2	2	4	2	2	1	1
11	1	2	5	2	1	1	1
12	2	0	4	1	1	2	1
13	1	1	3	1	1	1	2
14	2	2	5	2	1	1	1
15	1	1	2	1	2	2	2
16	1	1	3	2	1	1	1
17	2	2	4	1	1	1	2
18	2	1	3	2	2	2	1
Percentage agreements with the Nigerians				**44.44**	**61.11**	**50.00**	**61.11**
Percentage agreements with the Chinese				**44.44**	**44.44**	**27.77**	**55.56**
Percentage agreement with the Delphi				**55.56**	**50.00**	**44.44**	**66.67**

Appendix 55: Matrix 1A – Cohen's kappa for agreement between CS1 and CS2 and CS1 and CS4

Agreement between CS1 and CS2			Agreement between CS1 and CS4		
Pairs	CS1	CS2	Pairs	CS1	CS4
1	2	2	1	2	2
2	2	1	2	2	2
3	1	1	3	1	2
4	2	1	4	2	2
5	2	1	5	2	1
6	1	1	6	1	2
7	2	2	7	2	2
8	2	2	8	2	2
9	2	1	9	2	2
10	2	2	10	2	2
11	2	1	11	2	1
12	2	2	12	2	1
13	1	1	13	1	2
14	1	2	14	1	2
15	1	1	15	1	2
16	2	2	16	2	2
17	1	2	17	1	2
18	2	1	18	2	1
19	2	2	19	2	1
20	2	2	20	2	2
21	2	1	21	2	1
22	1	1	22	1	1
23	1	1	23	1	2
24	2	1	24	2	2
25	1	2	25	1	2
26	2	2	26	2	1
27	1	1	27	1	1

Agreement between CS1 and CS2			Agreement between CS1 and CS4		
Pairs	CS1	CS2	Pairs	CS1	CS4
28	1	2	28	1	2
29	2	2	29	2	2
30	2	2	30	2	1

Confusion matrix — Agreement between CS1 and CS2

		CS2		
		2 or A	*1 or D*	Total
CS1	*2 or A*	11	8	19
	1 or D	4	7	11
	Total	15	15	30

Confusion matrix — Agreement between CS1 and CS4

		CS4		
		2 or A	*1 or D*	Total
CS1	*2 or A*	11	8	19
	1 or D	9	2	11
	Total	20	10	30

Cohen's kappa

CS1 and CS2	value	value	CS1 and CS4
$P_0 = A+D / N$	0.600	0.433	$P_0 = A+D / N$
$P_e = (A1 / N)(B1 / N) + (A2 / N)(B2 / N)$	0.500	0.540	$P_e = (A1 / N)(B1 / N) + (A2 / N)(B2 / N)$
$K = P_0 - P_e / 1 - P_e$	**0.200**	**-0.239**	$K = P_0 - P_e / 1 - P_e$
$z = K / SE_{k0}$, where $SE_{k0} = \sqrt{P_e / k (1 - P_e)}$ and $k = 30$	**1.095**	**-6.108**	$z = K / SE_{k0}$, where $SE_{k0} = \sqrt{P_e / k (1 - P_e)}$ and $k = 18$
Critical value at $\alpha = 0.05$, one-tailed	**1.96**	**1.96**	Critical value at $\alpha = 0.05$, one-tailed