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Evaluating the influence of Culture and Human Factors on Project Management contributing to the success of managing Culturally Diverse Engineering Teams in a Global Environment

By
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Abstract

This Research Study focused primarily on evaluating the influence of Culture on Project Management. The study researched the latest Project Management methods in relation to three key influencing factors that contribute to the success of managing culturally diverse engineering teams within a global work environment.

The three influencing factors studied are Cultural Intelligence (CQ), Emotional-Social Intelligence (EQ & SQ) and Information Technology (IT). The first two factors relate to human interactions and relationships while the third factor serves to aid communication and planning in project management. Today's global work environment is taking into consideration the need to adapt to changes, requires the ability to use multi-intelligences to ensure adequate engineering management. Cultural Intelligence has become an important part of the multi-intelligence skills set needed to manage effectively engineering teams in a global work environment. This study measured the Cultural Intelligence and Emotional Intelligence capability of engineering project leaders and teams from around the world, and their awareness of Culture influences on project management. The study also evaluated if newer project management methods and information technology are being considered by culturally diverse engineering projects teams to enhance their effectiveness.

The study concluded that intercultural communication and differences in decision-making were two primary cultural factors influencing the success of managing culturally diverse engineering teams. Also, multi-tasking that is not correctly planned and executed can impact a project together with having too much work-in-progress (WIP). When people from various cultures need to communicate and make decisions together on a project, then multi-tasking and work-in-progress need to be well managed.

Part 1

1.1 Introduction

From research undertaken over the last two decades [1] [2] [3], it becomes evident that differences in culture have a direct influence on how people work successfully. Especially in a culturally diverse global work environment. Especially as globalization expands across borders, and people become more mobile to work outside of their home countries or with other countries while working in their home country. The influence of culture can, for this reason, impact on the success of engineering and project management [4]. Project management is on the one side about the process, techniques, and tools, but also on the other hand an art form that deals with the people doing the work [5]. In a mono-cultural environment, people tend to understand each other better than in a multi-cultural environment. As a result, project management within a multi-cultural team environment requires a focus on cultural influences [6] [7].

As more information became available from research on cultural [2] [8], it became apparent that cultural differences influence human work relationships, collaboration, communication, decision-making and productivity. Also, computer hardware and software technology together with the Internet became more advanced and useful for assisting in collaboration and communication across borders. These technological advances combined with the use of newer and more dynamic project management methods like Critical Chain Project Management (CCPM) [9], Success Driven Project Management (SDPM) and Lean Project Management (LPM) [10] [11] can have a substantial rewarding and positive impact project delivery. These more dynamic and flexible project management methods can be utilized together with inter-cultural and interpersonal skills to set up highly effective culturally diverse engineering teams. This may enable people to work not only in their home countries but also across borders or within virtual offshore team environments.

Engineering Projects have become more complex and more demanding to manage successfully not only within one country but across multiple countries [12]. If the influencing factors of technology on the one side and human cultural and emotional interactions, on the other hand, are not properly understood and taken into account during a project's lifecycle, it can lead to a negative impact on team relationships, productivity, time and cost. As a company's profit margins, success and client relationships are impacted, the efficiency and motivation of teams also get negatively influenced. This can lead to further lack of successful team collaboration, motivation, and productivity in future projects. Accusations as a result of cross-cultural

differences (as to who is to blame), may lead to the breakdown of trust. Trust is vitally important in cross-cultural relationships within Project Management [13] [14]. When trust is broken, it can lead to damaged team and stakeholder relationships and communication breakdowns. It is, for this reason, important for engineering management to identify and rectify the causes of these problems from the lessons learned from previous culturally diverse projects before new similar projects are undertaken.

Most employed people can interact socially well within a team environment that forms part of the daily work routine. At the individual level, each person has his or her unique personality type that can either contribute positively or negatively to the interactions of team members and their overall success. It is important to understand that to build highly effective teams, the academic qualifications of the individual team members' form only part of the contributing factors of the overall team success. Both introvert and extrovert personality types have different skill sets that can be utilized to contribute to the success of a team. It is, however, the underlying national cultural differences in culturally diverse groups that can play a significant role in team performance. It is therefore the Cultural Intelligence (CQ) [2] [15] [16] and Emotional and Social Intelligence (EQ-SQ) [17] capabilities of team members that may help to contribute positively to the successful delivery of a project.

This study will focus on the importance of Cultural, Emotional, and Social Intelligence skills together with efficient project management methods and information technology to collaborate and communicate [12]. This aims to improve the success of culturally diverse engineering teams. This study will research the three influencing factors (Cultural Intelligence, Emotional and Social Intelligence and Information Technology) in relation to project management.

1.2 Problem Definition

Many of today's more complex engineering projects do not complete on time and within budget. Even if the project management methodology has been adequately defined and followed [5], problems still arise during the project's lifecycle with adverse outcomes. The client, stakeholder, and team relationship can be impacted which then influence the success of engineering and project management companies.

The phenomenon of why engineering projects are failing, or underperforming has been studied by many with various publications available [4] [18]. This research study will evaluate if project engineering leaders and teams have an awareness and understanding of the underlying human interactions within the project management lifecycle. This requires inter-cultural awareness skills (Cultural Intelligence, CQ), inter-personal skills (Emotional & Social Intelligence, EQ-SQ) and the proper use of Information Technology (IT). All these factors, if understood and taken into account, can significantly enhance the success of managing engineering projects within culturally diverse teams in a global work environment. This can be further enhanced by implementing the latest and more dynamic project management methods that assist to monitor and streamline processes.

Another problem identified in project management today in addition to cultural influences [19] [20], is the extent to which team members (from various cultures) commit themselves to multitasking [9] [21]. Multitasking in today's technological advanced world seems logic and required, but it can have devastating impacts on people's productiveness. Multitasking can only work if proper pre-planning of tasks and a disciplined priority setting are followed. The constant shift between what is important and what is seen as urgent can result in unproductive multitasking. In many cases, this results in more time being spent than what was originally planned, with less efficiency. Together with the multitasking problem (which relates to project management task performance and time management), is the problem that teams may not focus on reducing their work-in-progress (WIP) [22] to a manageable level.

When team members neglect prioritizing tasks correctly which can result in random multitasking (between various tasks seen as important or urgent and originating sometimes across multiple projects), the work can remain "in progress" (not fully completed). This can result in the project's milestones and the final deadline overrun. To overcome the impact of multi-tasking and extensive work-in-progress, Information Technologies can be utilized to control and monitor the project tasks among team members. The study will not be focusing in depth on multi-tasking

and work-in-progress solutions, but reflects on the importance not to neglect the impact it has on project management together with dealing with the Cultural influences.

Figure 1 shows a visual diagram, to summarize, the Problem Definition's main components for this research study. For Project Management, Team efficiency can be influenced by various factors. This study will be focusing on three factors that influence a project team's performance and effectiveness.

These Influencing factors identified are:

1. Primary: The Cultural Intelligence skills of the team.
2. Secondary: the Emotional and Social Intelligence skills of the team, and;
3. Tertiary: The teams correct use of Information Technologies for communication, collaboration and the monitoring and control of tasks during the completion of a project.

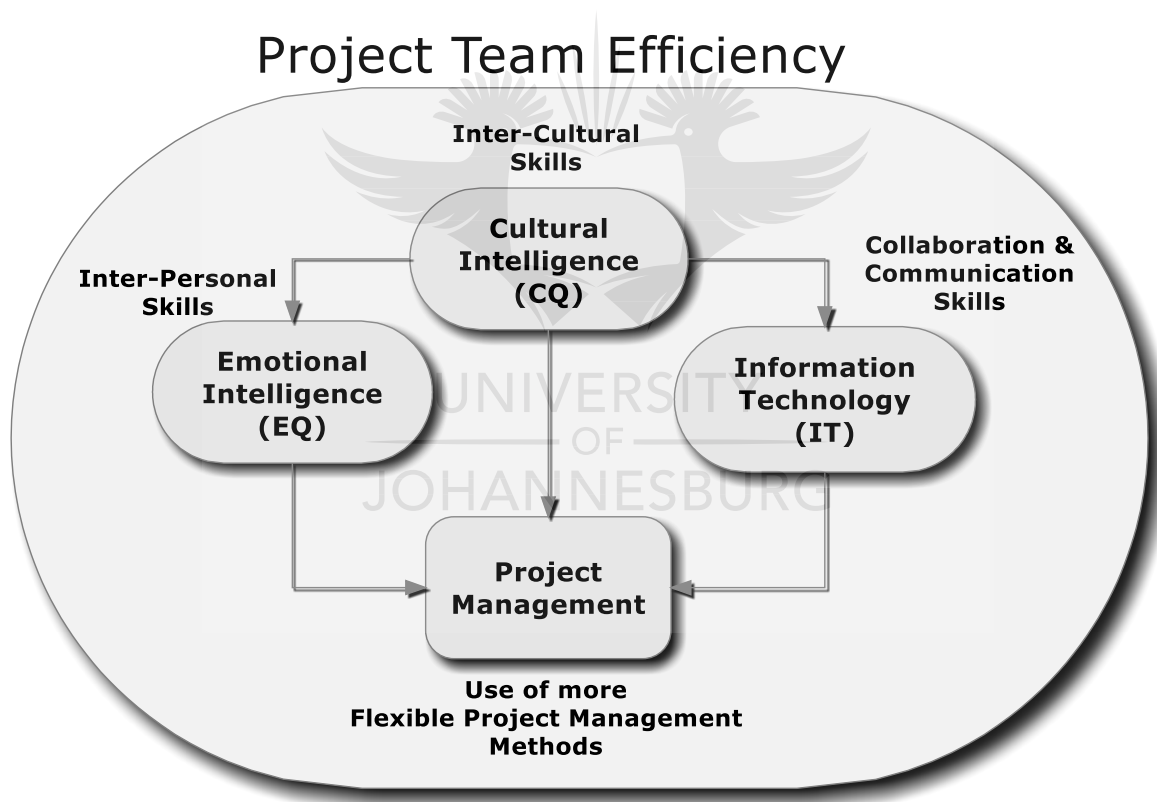


Figure 1: Factors influencing the Efficiency of Culturally Diverse Teams on Projects

The Research Study's primary focus will remain on the Cultural Influence (Cultural Intelligence) on Project Management. Emotional and Social Intelligence is the secondary focus of this study. It is required as part of understanding Cultural Intelligence that cannot be looked at in isolation. Information Technology will be forming the tertiary level focus. It is added to the study because of today's reality of the Information Age for which project management has become part of.

The first influencing factor that will be studied is the ability of team members, team leaders and project managers to be cultural sensitive between themselves during a project's lifecycle while managing the design work. The second influencing factor will explore the importance of the team members' Emotional and Social Intelligence skills that relate directly to Cultural Intelligence as the first influencing factor. Together with evaluating the cultural sensitivity (Cultural Intelligence) and emotional maturity of team members, team leaders and project managers, the study will research and verify if team leaders and project managers are focused on optimizing the influence of Information Technology (third factor) to improve productivity and communication both locally and across borders with onshore or offshore Virtual Teams.

The study will also verify if project managers and engineers are aware and willing to adopt more current dynamic Project Management Methods, especially Critical Chain Project Management instead of the traditional Critical Path Project Management Method. This study will include a literature study on Critical Chain Project Management [9] [10] [23] compared to the more Traditional Critical Path Project Management method [5] [24]. Traditional Critical Path Project Management tends to be a more rigid way of scheduling a project. This limits design change control and many times hide various constraints (resource, time, and cost constraints) which impact the design process and delivery.

In summary, the main focus will be to determine if Cultural Intelligence plays a key role in the efficiency and success of culturally diverse engineering teams. The research study aims to determine if engineering project failure may be as a result of the Cultural and Emotional/Social Intelligence skill level of engineering teams and managers (from culturally diverse engineering teams). The study will also evaluate if the proper use of Information Technology and newer dynamic Project Management Methods can enhance the effectiveness of engineering teams further.

1.3 Importance of the Research

From observations and lessons learnt from various design projects in the Middle East (UAE, Qatar, Bahrain, Oman) and South Africa over the last 10 years, it became clear that in a multicultural work environment the team's inter-personal and inter-cultural skills (specifically the way of communicating and making decisions), contribute to the success or failure of projects [4]. It is important that team leaders and project managers understand the cultural differences of the individual team members. This is then not only to pre-select the right team members that need to work together, but also to understand their strengths and weaknesses.

Part of the problem that has been identified over the last decade (specifically the Middle East projects), was the fact that many of the following aspects are not always properly focused on in project management:

- a) Assembling the correct team resources from various cultures and defining their roles and responsibilities correctly from the start of a project.
- b) Improving communication and collaboration by focusing on resolving any cross-cultural communication barriers.
- c) Innovative information technology methods to enhance team productivity and collaboration (social work networking) across borders.
- d) Create synergy between team members with different cultural backgrounds by creating a “third culture environment” (an acceptable organizational cultural environment) to work in.
- e) To define a team focused ‘Purpose’ to work towards, especially to keep the younger Millennials interested and energized while being connected to a social work network.
- f) A focus on effective time management together with limiting and controlling excessive multi-tasking and ‘work in progress’ (WIP).
- g) Taking into account the reality of constant design change requests from clients and various design constraints identified only during the development of a project.

In summary, the importance of this study is to evaluate Cultural influences in project management [4] [19] [20] [25] [26] to determine if improving Cultural Intelligence can enhance project management and team performance.

In Part 2 of the Literature Review, current literature and research on Cultural Intelligence will be studied together with the literature on more current Project Management Methods. This to understand the key influencing factors in Culture in Project Management. Moreover, to understand how current and newer Project Management methods can contribute to the success of international projects.

Part 2

2.1 Literature Review

2.1.1 Introduction to the Literature Review

The Literature Review covered studies undertaken by researchers in the fields of Cultural Intelligence [1] [3] [27], Emotional Intelligence [17] [28] [29], Virtual Team Work [30] [31] and new methods in Project Management [9] [10] [11] [32]. Various books, articles, web information, whitepapers and seminar training documents and videos have been utilized to formulate the basis of knowledge for this research study.

The Literature Review described in more detail below is divided into the three main factors that influence project management as discussed in Part 1. Influencing Factor 1 focuses on the literature review of Cultural Intelligence. A short review of Organizational Culture [33] has been added to understand the difference it has with National Culture. Influencing Factor 2 focuses on the review of the literature on Emotional and Social Intelligence [34] while Influencing Factor 3 reflects on the literature review of Information Technology. The last part of the literature review focuses on current Project Management methods that have originated from different countries (Israel, Russian and Japan) to improve on the traditional Critical Path Project Management Method. The main goal of the literature review was to obtain a background on Cultural Intelligence to be able to understand specifically the influence of Cultural Intelligence on Project Management [4] [6] [7] [20] [35] [36]. This will remain the focus of the research study.

2.1.2 The need to utilize multi-intelligences in project management

As a result of today's more complex engineering project environments, it is important to understand that multi-intelligences are required to be successful today. In the days of the Industrial Age, academically obtained skills (related to one's IQ) was the core ability to succeed (mostly in the western world). However, in today's interconnected, globalized and fast track multi-cultural work environment, more skills are required than just IQ.

Howard Gardner [37] [38] highlighted the importance of multi-intelligences. Nine main Multi-intelligences of people identified are summarized in Table 1:

Intelligence:	Relates to:
1. Musical–Rhythmic and harmonic	Creating Music
2. Visual–spatial	Arts, Engineering
3. Verbal–Linguistic	Language, Communication
4. Logical–Mathematical	Engineering, Project Management
5. Bodily–Kinesthetic	Sport, dancing, and physical activities
6. Interpersonal	Social and Cultural Intelligence
7. Intrapersonal	Emotional or Personal Intelligence
8. Naturalistic	Understanding nature
9. Existential	Spirituality, religion

Table 1: The nine main intelligences that people can have

From Table 1 the intelligences that relate to engineering, project management and also Emotional, Social and Cultural Intelligences are highlighted in bold in the table. The visual-spatial, verbal-linguistic, logical-mathematical Intelligences directly relate to one's IQ multi-intelligences that are required in engineering. The Interpersonal and Intrapersonal Intelligences relate to Cultural, Social, and Emotional Intelligences that deal with human interactions and relationships. These multi-intelligences directly relate to the human resource, communication, and stakeholder knowledge areas in project management [5] [24].

Shearer [39] also developed an unofficial Multiple Intelligence Development Assessment Scale (MIDAS) which can assist in providing a road map to enhance and motivate teamwork in engineering. In summary, in today's work environment both the multi-intelligences related to IQ and the multi-intelligences for dealing with human interactions and relationships (across country borders) are required to succeed. The following sections of the literature review will focus on Cultural Intelligence, Emotional-Social Intelligences as the two necessary intelligences needed to deal with human interactions and relationships.

2.1.3 Influencing *Factor 1*: Cultural Intelligence (CQ)

2.1.3.1 Introduction to Cultural Intelligence Literature Review

Cultural Intelligence (CQ) [40] has become one of the important skill sets in today's global work environment. However, people still do not always understand or focus on it, nor obtain any official training for it.

Within an engineering team, it will reflect on a person's ability to work successfully together with other culturally diverse team members. CQ has become in many projects more important than just applying normal intelligence (IQ). Research completed by Hofstede [1] [2], Soon Ang, Christopher Early and Linn v Dyne [3] [41], Richard Lewis [15] [16], David Livermore [27] [40] and Erin Meyer [42], mainly over the last decade indicated that one's ability to understand other's cultural differences (and how to deal with it), results in higher success than those that are not able to detect and adjust to the underlying cultural differences.

The literature review that follows on Cultural Intelligence aims to compare the work of various researchers in the field of Cultural Intelligence. The focus will be to see if there are similarities in their research findings. The literature review aims to see which of the research results are the most applicable to understand the influence of culture on project management.

2.1.3.2 What is Culture?

To understand Culture, one can refer to it as a multi-layered structure of knowledge obtained from one's birth onwards. It starts with the standard human skills and abilities (example what to eat and where to eat in one's environment) at the very basic underlying layer. This is followed by the top layer of knowledge which is one's individual personality developed over the years. Figure 2 illustrates these various layers of culture in a pyramid form.

Of importance is the middle part of the pyramid layers that are seen by Geert Hofstede [2], as the '*collective programming of the human mind*'. Similar to computer software, the human mind gets programmed from birth onwards with various layers of cultural knowledge obtained from one's cultural environment. It will become like a programmed computer operating system within a person's mind which influences many aspects of a person's daily work life routines. The way people interact and communicate with each other is part of this process and how they deal with conflict situations between each other. This "collective programming" is directly influenced by an individual's cultural environment that he or she has grown up in.

From Figure 2, it can also be seen that for the work environment of an engineering company, there will be various different layers of cultural knowledge between people from different groups. It starts with the National Cultures (above the common cultural layer) in which a company operates. Then the various regional, generational and social class identity group differences follow within the company. There are also the various gender oriented, professional and educational cultural differences in relation to the various national cultures. This all forms a very complicated structure of cultural knowledge with many variables that reflect the unique cultural differences between people in the same global company.

There is also a company's Organizational Culture [33]. This is sometimes referred to as the "Third Culture" wherein companies operate. Within the Organizational Culture, smaller functional group cultures can exist (the different departments, sections or branch offices). From these functional group cultures within an organization comes the various individual project team cultures, followed by the final layer of the team members own unique personal cultures that are shaped by each person's unique life experiences.

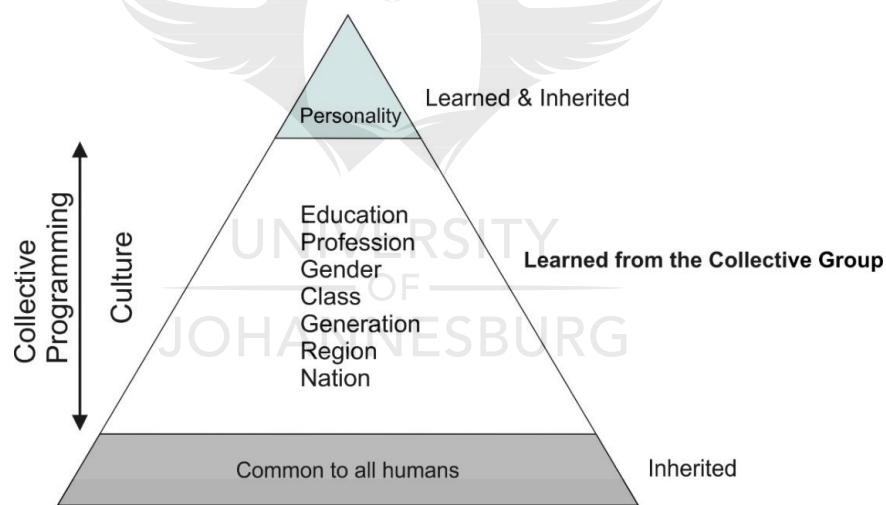


Figure 2: The Layers of Culture [2]

Culture can also be defined by another type of layered structure that can be seen as the layers of an onion (See Figure 3). At the inner core is the essential underlying cultural values that people from a collective group (nation, followed by region, class or team) see as most important to them. These cultural values can include the importance of a focus on the family relative to the importance of one's individual wellbeing. Alternatively, it can relate to the importance of a hierarchical leadership structure relative to a more open easy accessible and flexible leadership structure.

The study of cultural differences, for this reason, needs to focus on both the understanding of the various group cultures people function in and the underlying cultural values that are important to them. Understanding this fact that there are both collective group differences and also value interpretation differences among people from various national cultures, forms the core of Cultural Intelligence.

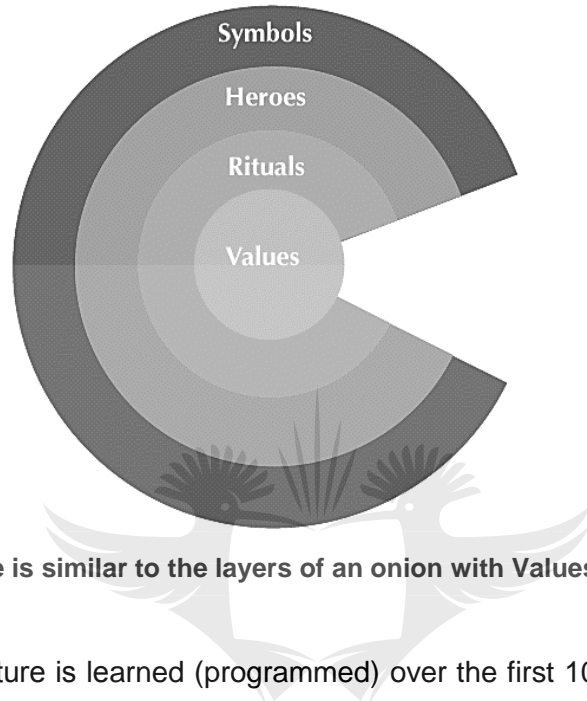


Figure 3: Culture is similar to the layers of an onion with Values at the core [2]

Much of a person's culture is learned (programmed) over the first 10 to 15 years of his or her life [1] [2]. The cultural learning of a person includes environmental factors, interpersonal relationships with family and friends and experiences that result according to Hofstede [2] in the '*collective programming of the human mind*'. This initial cultural programming in the early childhood years will for the rest of a person's life interact similarly to a computer's operating system, in the decision-making and interpersonal relationships of a person. Culture forms, therefore, the underlying layer of a person's personality (Refer to Figure 2). Personality is what makes people unique, but it is influenced by the underlying cultural factors that are unique to the group of people from the same nation.

The ability to understand the influence of culture as the underlying programming of the human mind forms the basis for understanding the personality of an individual better. Emotional and Social Intelligence relates more directly to a person's personality and, therefore, form part of the research study that focus on cultural differences. Cultural Intelligence needs to be studied together with Emotional and Social Intelligence to obtain a more detailed understanding of people.

In summary, it is important to point out that at the base or inner core of Cultural Intelligence is the ability to understand people's cultures value differences (their interpretation of values) as a priority. It is then followed by understanding the group differences. For example, having only the basic knowledge that Japanese businessman normally give their business cards in a unique, different way (compared for instance to Americans), does not reflect on the underlying value of how Japanese see their name and status presented on the cards. Which is a reflecting of themselves to others. For an American, a business card is given directly without any brief ceremonial handover, and it is only a piece of information to others. For the Japanese, the brief ceremonial handover of the card goes with the proudness value of their name and status.

2.1.3.3 Contributors to Cultural Intelligence (CQ) research

Introduction

The following section reflects on some of the various people that contributed to the research of Cultural Intelligence. As this field gained recognition, more people started researching to add more knowledge to this field. The aim of the literature review for this section was not only to gain the background knowledge on Cultural Intelligence, but also to evaluate the similarities and differences between the research studies done by others.

Edward T. Hall – First 2 Cultural Dimensions

Edward Hall (1950) [43] [44], has been called the father of Inter-Cultural Research by many. His main work was connected with the Foreign Service Institute (FSI) of the US Government (specifically between 1951 and 1955) while training US diplomats.

High-context Cultures	Low-context Cultures
<ul style="list-style-type: none"> • Only a few words can communicate a complex message very effectively. • People work easier together within groups 	<ul style="list-style-type: none"> • Communication is more explicit, and the value of a single word is less important. More is spoken/written to get the same message across. • People work more as individuals than in groups
Polychronic Cultures	Monochronic Cultures
<ul style="list-style-type: none"> • Ability to attend to multiple tasks simultaneously (multi-tasking). 	<ul style="list-style-type: none"> • Handle tasks only sequentially. One task at a time.

Table 2: E. Hall's first two Cultural Dimensions [43] [44]

Both these cultural dimensions (indicators) can help to understand how people communicate and handle tasks within project management. People from High-context cultures will communicate in a more indirect manner, and implicit meaning will be embedded in the communication style. Low-context cultures communicate more directly and rely on explicit information for interpreting the meaning of a message.

Time or chronemics can be classified as Monochronic cultures that emphasize promptness in doing tasks one by one and keeping to a schedule. Polychronic cultures will focus more on involving people and completing agreed transactions among each other, rather than focusing strictly on keeping to a fixed schedule.

Kluckhohn, Strodtbeck & Kohls – The Value Orientations Model

Florence Kluckhohn and Fred Strodtbeck (1961) [45] presented the Value Orientations Model, which has been used extensively in Inter-Cultural training and were perhaps one of the most well-known models in the field.

This Values Orientations Model reflects on basic types of problems which every society needs to take into account and resolve within their cultural setting. These problems include:

- Focus on time: the interpretation of past, present or future
- The relationship between humans and their natural environment. This includes either mastery over, submission to or harmony with one's natural environment.
- How individuals relate with others: hierarchical, equals or according to individual merit
- Prime motivation for behavior: to express one's self, to grow, or to achieve
- Human nature: good, bad or both

R. Kohls (1979) also included this in his best-selling book *Survival Kit for Overseas Living* [46]. His work was valuable in helping people understand how cultures differ at primary, deep value levels. Getting to this level of values is necessary in order to move people beyond the surface differences. This is moving from the tip of the iceberg to the hidden issues that drive the culture (or iceberg).

Geert Hofstede (Netherlands) – The 5 main Dimensions of National Cultural

Geert Hofstede (1983) [1] [2] is a social psychologist. He started his research on cross-cultural groups and organizations while working for IBM. He played a significant role in developing an organized method for assessing national cultural differences and organizational cultures. His

work included developing the *Cultural Dimensions Theory*, which consists of 5 main Cultural Dimensions (indicators) that helps to measure and compare the extent to which National Cultures differ from each other.

Hofstede's 5 Cultural Dimensions are as follows:

1. High-Low Power Distance
2. Individualism - Collectiveness
3. Gender Equality
4. High-Low Uncertainty Avoidance
5. Long-short term orientation

In 2013-2014, Hofstede made an update to the above Dimensions in his revised 3rd Edition of *Cultures and Organisations* [2] by adding the following two Dimensions changes:

Pragmatism (Pragmatic versus Normative) – this replaced the Long-short term Dimension:

- It reflects on the way people show a pragmatic or future-oriented view compared to a normative or short-term point of view.

Indulgence (Indulgence versus Restraint)

- It reflects on the way people try to control their desires and impulses. It shows if people have relatively weak control, called "Indulgence" or relatively strong control, called "Restraint".

Table 3 summarizes the 5 Cultural Dimensions as researched by Hofstede.

Power Distance (PDI)	
The extent to which the less powerful members of society accept that power is distributed unequally.	
Low <ul style="list-style-type: none"> • Low dependence needs • Inequality minimized • Hierarchy for convenience • Superiors accessible • All have equal rights 	High <ul style="list-style-type: none"> • High dependence needs • Inequality accepted • Hierarchy needed • Superiors often inaccessible • Power-holders have privileges
Austria, Denmark, Ireland, New Zealand	Malaysia, Slovakia, Philippines, Russia
Individualism (IDV)	
Individualism: People look after themselves and their immediate family only. Collectivism; People belong to in-groups (families or organizations) who take care of them in exchange for loyalty.	
Collectivistic	Individualistic

<ul style="list-style-type: none"> • "We" conscious • Relationships over tasks • Fulfill obligations to the group • Loss of "face", shame 	<ul style="list-style-type: none"> • "I" conscious • Private opinions • Fulfill obligations to self • Loss of self-respect, guilt
Indonesia, Pakistan, China	USA, Australia, UK, Canada
Gender Equality - Masculinity (MAS)	
Femininity: The dominant values in society are caring for others and quality of life. Masculinity: The dominant values in society are achievement and success	
Feminine <ul style="list-style-type: none"> • Quality of life - serving others • Striving for consensus • Work in order to live • Small and slow • Sympathy for the unfortunate • Intuition 	Masculine <ul style="list-style-type: none"> • Ambitious and need to excel • Tendency to polarize • Live in order to work • Big and fast • Admiration for the achiever • Decisiveness
Norway, Netherlands, Sweden	Slovakia, Japan, Hungary, Austria
Uncertainty Avoidance (UAI)	
The extent to which people feel threatened by uncertainty and ambiguity and try to avoid these situations.	
Low <ul style="list-style-type: none"> • Relaxed, lower stress • Hard work not a virtue per se • Emotions not shown • Conflict and competition accepted • Flexibility • There should be few rules 	High <ul style="list-style-type: none"> • Anxiety, higher stress • Inner urge to work hard • Showing emotions accepted • Conflict is threatening • Need for agreement • Need to avoid failure • Need for law and rules
Denmark, Singapore, China, Sweden	Belgium, Greece, Portugal
Long Term Orientation (LTO) - (Pragmatic versus Normative)	
The extent to which a society exhibits a pragmatic future-oriented perspective rather than a conventional historical or short-term point of view.	
Short term (Normative) <ul style="list-style-type: none"> • Absolute truth • Conventional/Traditional • Concern for stability • Quick results expected • Spending for today 	Long term (Pragmatic) <ul style="list-style-type: none"> • Many truths (time, context) • future orientated • Acceptance of change • Perseverance • Thrift for investment
UK, USA, Australia	China, Japan

Table 3: Hofstede's 5 Main National Cultural [2]

Table 3 also lists the five main Cultural Dimensions and the applicable countries it applies to mostly. The Individual/Collective and Power Distance Dimensions are important and need to be considered in project management. People from the West tend to be more individualistic and want to lead rather than being led by others all the time. People from the East are more collective family and group orientated and do not mind being led by a dominant leader.

There are some limitations with Hofstede’s research on cultural differences. The limitations include primarily the assumptions he made to conduct his research:

- Hofstede decided that for the sake of research and for the sake of avoiding duplication, he would use nationality as the main dividing factor in his work.
- He was assuming that people from one particular country would be shaped by mostly the same values and norms as their fellow countrymen.

These assumptions were helpful for his research and made it possible to focus mainly on *national level* patterns of behavior rooted in cultural values. This demonstrated that there were clear patterns of cultural differences between nations. However, his research does not go deeper into the individualistic culture of people within a particular country. For instance, his research has not differentiated much between the various sub-cultures in India or South Africa, for example. It only focuses on the overarching culture of a particular nation.

Itim – Power Distance Culture Cluster Regions

Itim Intercultural Management Training Consultancy, who is affiliated with the Hofstede Centre, developed the *Culture Clusters Regions* Model. This Model groups different countries into regions (or Clusters) that have similarities based on Geert Hofstede’s Power Distance Cultural Dimension as described in the previous pages.

The Power Distance Dimension is one of the important cultural indicators to consider in Project Management. It helps to understand the key competencies and decision-making differences that influence various cultural groups that work together. Table 4 shows the Low and High Power Distance Culture Clusters (regions) in the world. Table 5 indicates these key competencies, cultural context, and decision-making processes to consider in Project Management.

Low Power Distance Regions	High Power Distance Regions
<p>The ‘Contest’ Regions:</p> <ul style="list-style-type: none"> • UK, Ireland • USA, Canada 	<p>The ‘Pyramid’ Regions:</p> <ul style="list-style-type: none"> • South & Central America • Russia

<ul style="list-style-type: none"> • Australia, New Zealand 	<ul style="list-style-type: none"> • Africa • Middle East • South Italy • Greece • Thailand • Korea
<p>The 'Machine' Regions:</p> <ul style="list-style-type: none"> • Germany, • Switzerland (German) • Austria • Czech Rep, Hungary 	<p>The 'Solar' Regions:</p> <ul style="list-style-type: none"> • France, Belgium • Switzerland (French) • Northern Italy • Spain • Poland
<p>The 'Network' Regions:</p> <ul style="list-style-type: none"> • Netherlands • Denmark, Sweden • Norway, Finland 	<p>The 'Family' Regions:</p> <ul style="list-style-type: none"> • China, Hong Kong • India • Indonesia • Malaysia, Singapore • Philippines

Table 4: Culture Clusters Regions according to High-Low Power Distance (Itim) [47]

The differences between the various Cultural Clusters can be understood, by looking at the key competencies, the cultural context and decision-making processes related to a particular Cultural Cluster. Table 5 summarizes this.

Culture Cluster:	Key Competencies:	Cultural context:	Decision-making:
Contest			
UK, Ireland USA, Canada Australia, New Zealand	<ul style="list-style-type: none"> • Vision, action, and strategy orientated • Quick decision-making. • Competitive 	<ul style="list-style-type: none"> • Leader held accountable. • Team accepts that leader can ask for skills /tools to be successful. • Leader can demand "team" to follow. 	<ul style="list-style-type: none"> • Half the group + leader decide (democratic approach). • The minority accepts that the 'winner' (majority and leader) have the final say.
Well-oiled Machine			
Germany, Switzerland (German) Austria Czech Rep	<ul style="list-style-type: none"> • Focus on depth of knowledge. • Leader gets to top as Expert with academic titles. 	Approach work in a structured and procedural way. Focus on planning.	Experts have an important vote. Procedures are necessary. Decision-making process to be determined in advance.
Network			
	Supporting employees to manage autonomous groups/teams Focus on how to "influence" others	"Autonomy" is a critical motivation. The leader is a coordinator. Decision made by creating	Involve all stakeholders and making sure they all support the decision.

		shared interest among stakeholders.	
Solar			
	Strategic insight. Understanding latest 'philosophies' are critical. Focus on knowing famous players and how to influence them.	Decisions made at the top. Mandating downward. Mandates broader than in Pyramid system. The Leader has no "moral" obligations to employees. The Leader's is well-connected intellectual from the right schools.	Top person has the "privilege" for decision-making. He listens to the discussion. Message at the end: <i>"heard what you said: this is my decision"</i> .
Pyramid of people			
	Father/mother like leader behavior. In return for loyalty from employees, leader takes care of them, also outside business.	Top-down management. People look to the top management for decisions and detailed instructions. Moral obligation of leader is to reward loyalty. Promotion for performance and loyalty to the boss.	Top-down decision-making. Leader decides in a clear way. Subordinates must be sure leader is supportive/ committed before taking action.
Traditional family			
		Unlike the Pyramid system the organization has no dependence on rules, and it can adapt quickly. Easier to access higher level in the organization.	

Table 5: High PDI Cultural Clusters - Key competencies, cultural context, and decision-making (Itim) [47]

Soon Ang, Linn v Dyne, and David Livermore – Measuring Cultural Intelligence, developing a CQ Scale

The ability to measuring CQ was made possible by an academically validated and peer reviewed Assessment Scale developed by Linn Van Dyne and Soon Ang [3] [41] [48]. This CQ Scale consists of answering 20 questions that are rated using the Likert Bipolar Scaling Method across four main CQ Factors identified by the research.

David Livermore [27] [40] [49] developed the academic work done by Soon Ang and Linn Van Dyne further to provide more practical knowledge for the global work environment.

Ang, Van Dyne and David Livermore described 4 Cultural Intelligent (CQ) Factors or capabilities as follows:

- **Motivation (CQ-Drive)**

CQ-Drive reflects on a person's ability to work effectively in culturally diverse environments. It indicates a person's interest in other persons' different cultures and the confidence to deal with culturally diverse people. It also portrays an individual's enjoyment of multi-cultural experiences and the ability to learn from it rather than to see differences as a negative or conflict of interest.

- **Cognition (CQ-Knowledge)**

CQ-Knowledge reflects an individual's multi-cultural knowledge. It reflects on the ability to know how various cultures are similar and different to each other. This also includes the knowledge of the language, non-verbal communication, social, religious and economic differences. In other words, it is the ability to have sound knowledge and understand the underlying value base difference of other people's cultures.

- **Meta-cognition (CQ-Strategy)**

CQ-Strategy is a person's ability to make sense of culturally diverse experiences. It is the ability to strategize and includes:

- Awareness: existing cultural knowledge to beware of other's cultural differences in advance.
- Planning: The ability to plan and think ahead as to how to interact with people from other cultures before a meeting or event.
- Checking: checking one's assumptions made of other people's cultures and then to be able to adjust one's understanding and actions to become more in line with the other person or persons.

- **Behavior (CQ-Action)**

CQ-Action reflects the capability to adapt verbally (e.g., accent, tone) and nonverbal (e.g., gestures, facial expressions) behavior to make it appropriate to diverse cultures. It is a person's ability to be flexible in behavioral responses that will suit various situations.

David Livermore - 4 Step Development Cycle for improving CQ

David Livermore [27] expanded on the Cultural Intelligence Scale by developing from the Cultural Intelligence Scale as described above, a 4 Step Development Process (Cycle) for improving Cultural Intelligence. The 4 Step Development Cycle starts with a person's motivation to adapt and accept other cultures (CQ-Drive), and then develops as more Cultural Knowledge (CQ-Knowledge) is learned. The next phase in the development process is learning to utilize the Cultural Knowledge to make strategic decisions (CQ-Strategy). This is then followed by actively utilizing the Cultural knowledge and ability to make strategic decisions to become more adapted to one's new cultural environment and to take the correct and appropriate actions (CQ-Action).

This 4 Step Development Cycle then continues back into CQ-Drive (Motivation). A person, for this reason, gains more confidence and becomes more motivated to learn how to succeed in a different cultural environment. As cultural knowledge (CQ-Knowledge) increases further together with the ability to make more culturally sensitive strategic decisions (CQ-Strategy), the ability to adopt and act even more appropriately becomes possible (CQ-Action).

Figure 4 provides a schematic diagram of the 4 Step Development Cycle as described above. For this study the 4 Cultural Intelligence factors (capabilities): CQ-Drive, CQ-Knowledge, CQ-Strategy and CQ-Action, will be a measured across various nationalities involved in Project Management. The survey questionnaire results will be compared to the results of these measurements (4 Cultural Intelligent factors). The aim will be to evaluate people's ability to observe and notice cultural influences in Project Management.

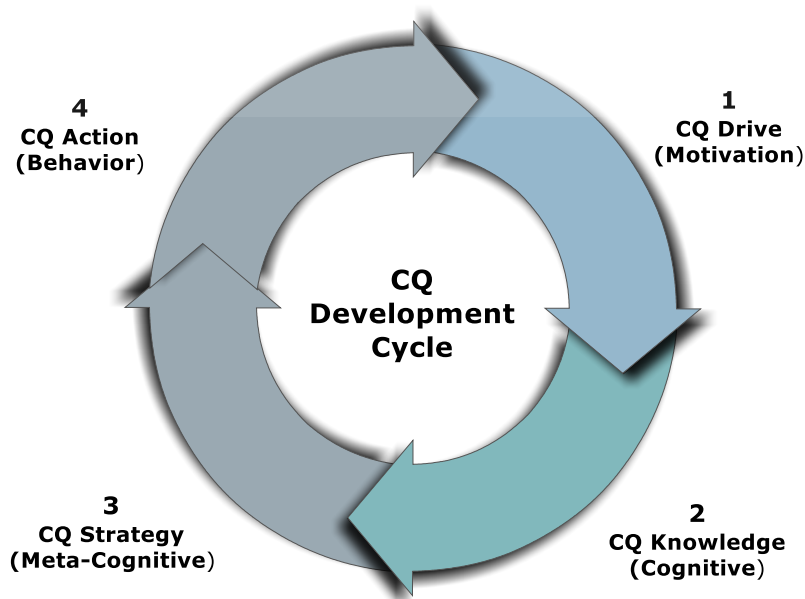


Figure 4: Step Development Cycle of Cultural Intelligence [27]

David Livermore [27] further developed the CQ Scale by combining the CQ results from the 20-question Cultural Intelligence Scale into three additional measures (outcomes) that reflect on a person's Cultural Intelligence level and efficiency. These three additional measures are a person's culturally sensitive Judgment and Decision Making abilities, their Task Performance and Cultural Adaption ability. These three additional measures are calculated using the combined scores of the 4 Cultural Intelligence Factors as follows:

- Cultural Judgment and Decision Making ability = CQ-Knowledge + CQ-Strategy
- Cultural sensitive Task Performance = CQ-Strategy + CQ-Action (Behavior)
- Cultural Adaption = CQ-Drive (Motivation) + CQ-Action (Behavior)

Task Performance is predicted by the combination of CQ-Strategy and CQ-Action (Behavior). People with high a Task Performance score have the capability to make sense of the intercultural world around them while performing their tasks. A person's Cultural Judgment and Decision Making ability are predicted by their CQ-Knowledge and CQ-Strategy score. This means they can make proper cross-cultural judgments about their thought processes and of those around them from other cultures. Their decision-making ability is therefore also of higher quality within a multicultural work environment. Because of their higher CQ-Knowledge and CQ-Strategy scores they can make strategic decisions (CQ-Strategy) within a multicultural environment based on their learned cultural knowledge (CQ-Knowledge).

By looking at Task Performance in more detail, it can be noticed that people with a high capability to adapt their verbal and nonverbal behaviors in a multicultural environment can enhance their Task Performance score via the CQ-Action score (which will be high in most cases). The high combined value for CQ-Strategy and high CQ-Action score will increase a person's Task Performance score, allowing them to have a more flexible range of behavioral responses in a multicultural environment.

It is possible to predict a to a certain extent a person's Cultural Adaption (or Adjustment) ability by the combined score of CQ-Drive (Motivation) and CQ-Action (Behavior).

People who are interested in other's cultures and enjoy experiencing it, normally have higher confidence in how they interact with people from other cultural backgrounds. This reflects on their CQ-Drive (Motivation) score. Together with the ability to have a broad range of verbal and nonverbal behavioral capabilities that increases their CQ-Action (Behavior) score, their overall ability to adapt or adjust (Cultural Adaption) in multicultural environment increases.

Individual Cultural Value Orientations of CQ

Soon Ang, Linn v Dyne, and David Livermore also identified Individual Cultural Value Orientations (Table 6). These Cultural Value Orientations further describes Cultural Differences together with the 4 Cultural Intelligence Factors that are closely related to Hofstede's Cultural Dimensions [2].

Most Western countries		Most Middle East and Asian countries	
Individualism	focus on "I", works alone and makes individual decisions	Collectivism	Focus on "We", work in a group or team, make collective decisions together
Low Power Distance	Focus on equal rights and challenge superiors	High Power Distance	Accepts the rule of superiors
Low Uncertainty Avoidance	Tolerate risk, prefer fewer rules and guidelines	High Uncertainty Avoidance	Avoid risks, accepts rules and guidelines. Avoid unpredictable situations
Competitive	Focus on the task and work accomplishments and career success	Cooperative	Values quality of relationships and family
Short Term Orientation	Focus on the past and current. Value traditions and consistency	Long Term Orientation	Focus on future opportunities, innovation, change and long-term planning
Low Context	Values direct communication.	High Context	Values indirect communication
'Doing' Orientation	Values efficiency and results	'Being' Orientation	Values quality of life

Table 6: Cultural Value Orientations [50]

CQ Scale used as part of the research online surveys

Because the CQ Scale of Soon Ang and Linn v Dyne has been adequately validated and placed under review both academically and in practice, it was decided to make use of the 20 question CQ Scale. This will form part of the Online Questionnaire Survey obtain part of the data for this study.

The online survey data, for this reason, reflected in the respondents CQ scores (from various cultures involved in project management). It also made it possible to measure the respondents' Cultural Judgment, Decision Making, Task Performance and Cultural Adaption (adjustment) capabilities based on David Livermore's research [27].

Fons Trompenaars & Charles Hampden-Turner - 7 Dimensions of National Culture

Trompenaars' model of national culture differences [8] [51] forms a framework for cross-cultural communication that can be applicable to general business and management. Trompenaars was the first to take the works of people like Hofstede into the workplace and corporate business world.

This model of national cultural differences has 7 Dimensions as indicated in Table 7. Again similarities are noticeable in both Hofstede's Cultural Dimensions and Soon Ang, Linn v Dyne and David Livermore's Cultural Value Orientations.

Most Western countries		Most Middle East and Asian countries	
Universalism	Rules are necessary	Particularism	Relationships are important
Individualism	Function as individuals	Collectivism	Function as a group
Neutral	Remain neutral, do not show emotions directly	Emotional	Displays emotions
Specific	Keep working, and private lives separate.	Diffuse	Mix working and private lives.
Achieve	Need to prove oneself to achieve Status	Ascribe	Family or superiors ascribe status
Sequential	Prefers to do things one at a time	Synchronic	Can do more than one thing at a time
Internal control	Environment controls	External control	Environment is controlled.

Table 7: The 7 Dimensions of National Culture (Fons Trompenaars & Charles Hampden-Turner) [8]

TMC Cultural Orientations Model (Berlitz) 10 Dimensions and 21 sub-dimensions

It is worthwhile to add to the literature study the research done by companies on Cultural Intelligence. The well-known international training company Berlitz, also created an online *Cultural Orientations Indicator (COI)* [52] assessment tool that forms part of their *Cultural Navigator* tool (web-based). It is a self-reporting tool designed to create better self-awareness and awareness of others to be able to learn to communicate effectively and collaborate in a global team environment. This online tool reflects 10 Dimensions and 21 Sub-dimensions of Culture and is comparable to the Cultural Dimensions developed by the other contributors in this field. It is clear from the online literature of Berlitz that much of the available cultural research

work have been combined and incorporated into their online assessment and training tool. Their 10 main Dimensions and 21 Sub-dimensions reflect most of the Cultural Dimensions identified by the other authors listed in the section. Companies that can afford this level of training can benefit from the outcome of these online assessments.

1 - Environment	5 - Space
Control	Private / Public
Harmony	6 - Power
Constraint	Hierarchy / Equality
2 - Time	7 - Individualism
Single-Focus/ Multi-Focus	Individualistic /Collectivism
Fixed / Fluid	Universalistic /Particularistic
Past / Present / Future	8 - Competitiveness
3 - Action	Competitive /Cooperative
Being / Doing	9 - Structure
4 - Communication	Order /Flexibility
High Context / Low Context	10 - Thinking
Formal / Informal	Deductive / Inductive
	Linear / Systemic

Table 8: The TMC Cultural Orientations Model (Berlitz) [52]

Richard Lewis - 3 Cultural Norms

Richard Lewis [15] [16] is a cross-cultural communication consultant. He helped to found the Berlitz School of Languages in Finland in 1955 and opened others in Norway and Portugal. He created the Lewis Model of Cross-Cultural Communication. This model classifies cultural norms into three categories: Linear-Active, Multi-Active, and Re-Active. This Model is explained visually in Figure 5 and 6.

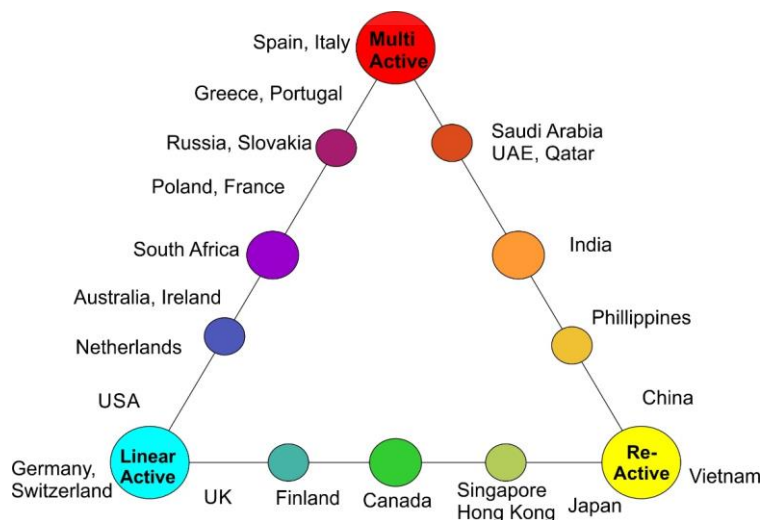


Figure 5: Countries' position in the Richard Lewis 3 Cultural Norms Model [15]

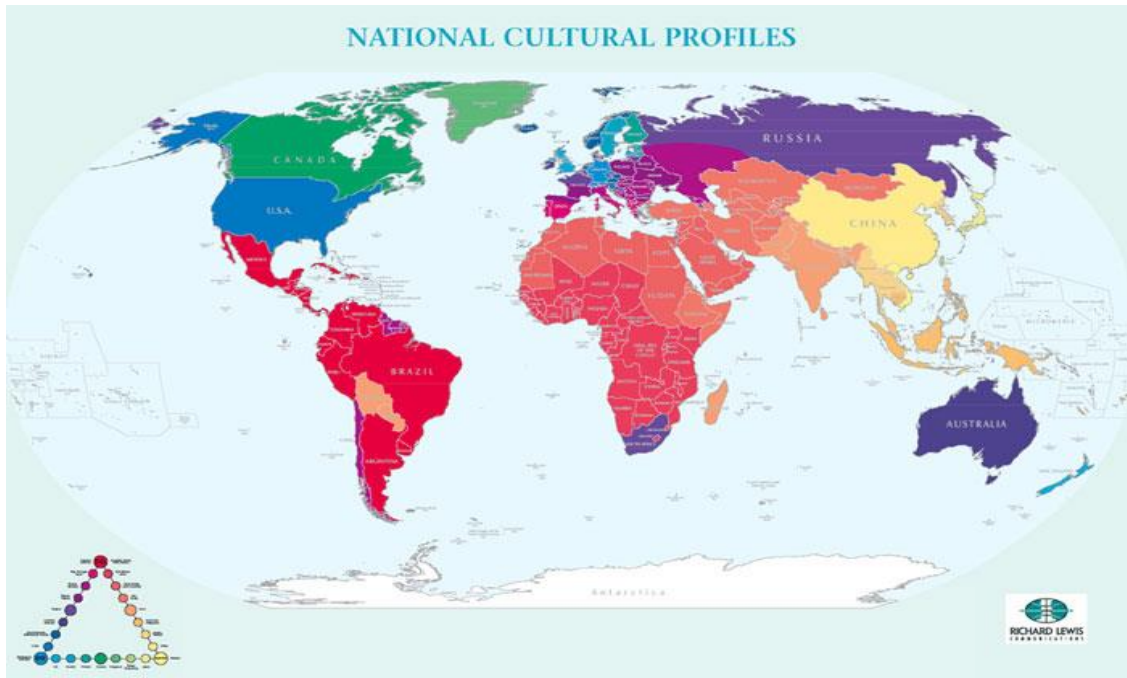


Figure 6: World map indicating different countries Cultural Norms according to the Richard Lewis Model [15]

Table 9 reflects the main characteristics of these three cultural norms that were identified by Lewis in his research.

Multi-active key features:	
Hierarchy	Talks most of the time Do several things at once Plans grand outline only Often interrupts
Emotion	Display emotions and feelings Confronts emotionally
Persuasion	Feelings before facts Have good excuses
Family Relationships	People-oriented
Loyalty	Flexible truth
Reactive key features:	
Intuition Courtesy	Listens most of the time Doesn't interrupt Reacts to partner's action Never confronts Polite and indirect
Collective Harmony Networking	Conceals feelings Looks at general principles Very people-oriented
Losing Face	Cannot lose face
Joint Obligations	Statements are "promises" Diplomacy comes before Truth

Linear-active key features:	
Facts	Talks half the time Rarely interrupts Sticks to facts
Planning Time-lines	Plans ahead step by step Does one thing at a time
Word / Deed Correlation	Polite but direct Partly conceals feelings Confronts with logic
Losing Face	Dislikes losing face
Institutions Law	Truth before diplomacy

Table 9: The main Characteristics of the 3 Cultural Norms identified by Richard Lewis [15]

Richard Lewis Cultural Norm Model - Hybrid Types and Style Variations

Richard Lewis also identified hybrid types and style variations in his 3 Cultural Norms Model. Figure 7 illustrates how countries differ from each other. A deeper perspective into the three Cultural Norms that Richard Lewis identified in his research is added.

For example:

- People from the UK and the USA falls under the Linear-Active Cultural Norm identified by Richard Lewis and will be typically decisive with good planning skills.
- People from South Africa, which falls between the Linear-Active and Multi-Active Cultural Norms, will be more humorous, persistent and broad-minded.
- People from Spain, which falls under the Multi-Active Cultural Norm, will be more emotional warm in their behavior.

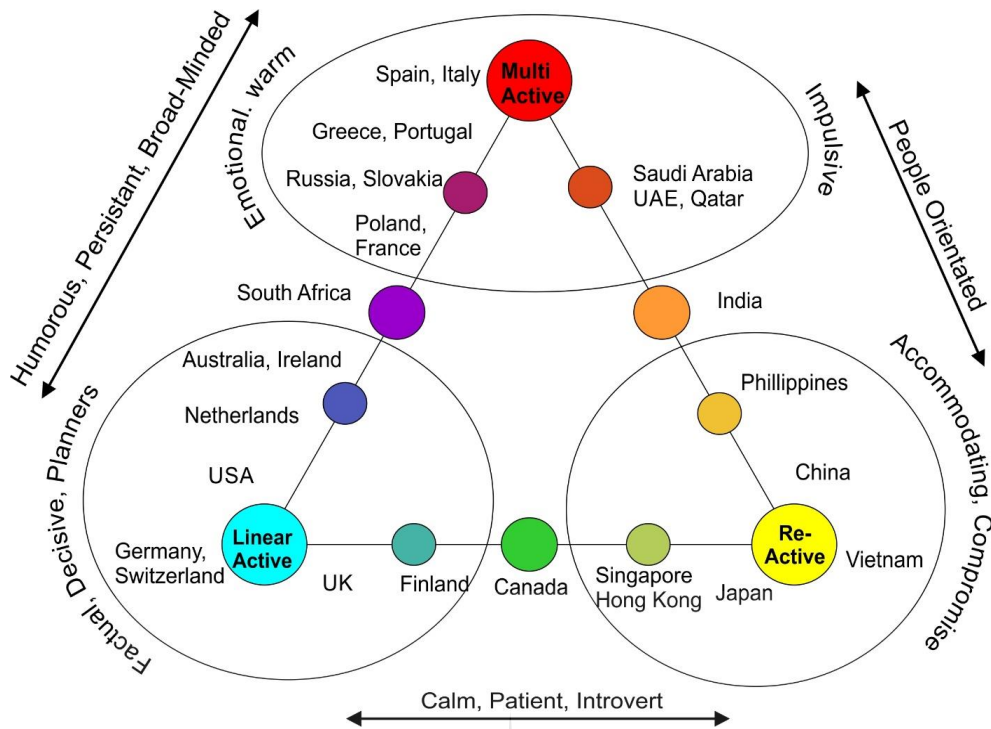


Figure 7: Richard Lewis Cultural Norms Model - Hybrid Types and Style Variations [15]

Marco Blankenburg - KnowledgeWorkx (Middle East) 12 Dimensions of Individual Culture

Based in Dubai, Marco Blankenburg helped to form the company KnowledgeWorkx more than a decade ago in the UAE. KnowledgeWorkx provides Inter-Cultural Intelligence (ICI) training and workplace team assessments (DiSC) that relates to Emotional Intelligence.

KnowledgeWorkx focuses on training people to be able to anticipate the behavior of others and correctly interpret it using Inter-Cultural Intelligence, (ICI Cultural Mapping and Navigation assessment tools). KnowledgeWorkx also focuses on analyzing cultural preferences on a personal level and then on a group/national level. The aim is, therefore, to be working with a “self-cultural analysis” as the starting point rather than the national culture only.

KnowledgeWorkx has developed a 12 Cultural Dimensions Model that is more focused on the individual’s personalized culture instead of only the specific national culture that the person is from. The cultural assessment for the 12 Cultural Dimensions has been customized for multi-cultural workplaces like Dubai, UAE, and the Middle East. The Inter-Cultural Intelligence [53] training for this 12 Cultural Dimensions Model also includes a Cultural Discovery Model with three main cultural indicators, called the *Three Colors of Worldview*.

These three Cultural indicators (*Three Colors of Worldview*) reflect the following primary motivators or drivers within various cultures:

- Innocence /Guilt
- Honor/Shame
- Power/Fear

All of the three indicators are present in each culture but in variable intensity. By identifying first the intensity of the three indicators, the 12 Cultural Dimensions can be assessed further for each team member. The aim of this cultural dimension model is to help create a “Third Cultural” environment among multi-cultural teams where team members can be working together in harmony after their individual cultural differences were identified. The team assessments provide a better understanding of how to communicate and work together.

This cultural model adds to the other researcher’s models, the ability to focus on an individual’s personal, cultural abilities within a multicultural work environment. The Three Colors of Worldview is a quick assessment tool that can indicate the major differences in various team members’ cultural backgrounds. These cultural indicators closely resemble the cultural dimensions identified by Hofstede [2] as well as the Cultural Orientation Values from Soon Ang, Linn v Dyne [41].

The Global Leadership and Organizational Behavior Effectiveness (GLOBE) Research Project

This Research Project [54] [55] [56] [57] was undertaken to measure culture in different countries, industries, and organizations by exploring both current practices and values. Data from approximately 17,300 middle managers from 951 organizations was collected. It included various organizations in the food processing, financial services, and telecommunications service industries in 58 countries.

GLOBE also measured cultural differences in the characteristics of prominent leaders. It helped to provide the biggest information database for cross-cultural leadership to date. The results can be used to compare cultures in terms of their values and practices. It also reflects on the leadership styles that are different between cultures.

The GLOBE findings provide practical advice for cross-cultural business and leadership. For example, the GLOBE found that some aspects of leadership are culturally dependent while charismatic and team-oriented leadership are universally desirable styles and should, therefore, be considered In multi-cultural team environments.

2.1.4 Summary and Conclusions from Literature review on Cultural Intelligence

Many of the Cultural Intelligence research contributors listed in the Literature Review come up with similarities in assessing Cultural Intelligence. Some have added more detailed sub-dimensions or capabilities [56] and more specific definitions of cultural values. Most refer to a Cultural Dimension system to determine and refer to people's Cultural Intelligence levels and understanding. Hofstede [1] [2] and Hall's [43] [44] work have formed a theoretical as well as a practical basis on which many other researchers expanded the field of Cultural Intelligence.

For this study the works of Hofstede [1] [2], Soon Ang, Linn van Dyne [41] and David Livermore [27] [40] are seen as primary sources of knowledge to evaluate Cultural Influences on Project Management. The works of Richard Lewis [15] [16], Trompenaars & Hampden-Turner [8], and Marco Blankenburg [53] enhanced the literature review study by adding more in-depth knowledge of the underlying dimensions of Culture.

The work of Marco Blankenburg (KnowledgeWorkx) [53] is of importance because it highlights the need to focus on a person's individual culture and not only the national culture that may result in stereotyping to some extent. This study will however not focus in depth on the 12 Dimensions identified by KnowledgeWorkx that are especially helpful for the multi-cultural work environments in the Middle East. However, the Cultural Discovery Model called the Three Colors of Worldview with its three indicators (Innocence/Guilt, Honor/Shame and Power/Fear) will be used in conjunction with Hofstede's Cultural Dimensions (Power Distance, Masculinity, Individuality and Uncertainty Avoidance) and Hall's 2 Dimensions (High/Low Context and Monochronic/ Polychronic).

The research study will explicitly make use of Soon Ang, Linn v Dyne [41] and David Livermore's [27] 20 Questionnaire Cultural Intelligence Scale as part of the online surveys to measure the survey respondents' Cultural Intelligence Scale across various countries. This will be evaluated in conjunction with the respondents' cultural awareness ability within Project Management.

It can be concluded from the literature review that the main differences of Culture are between Western Countries and Eastern Countries. The Western Countries tend to be more individualistic, competitive, and Goal orientated. The Eastern Countries are more Collective and hierarchical in their leadership, and people need to be guided and managed more directly. These main differences between East and West can lead to misunderstanding and miscommunications across cultures. This can have a negative impact on Project Management.

2.1.5 Understanding Organizational Culture vs National Culture

It is also important to understand that national cultural differences are different from a company's Organizational culture. National culture also differs from each person's unique individual culture that is shaped by a person's personality as it developed over the years. To be able successfully to create a company organizational culture that can improve business and the work environment, one will need to understand the underlying national cultural differences of the individuals in the company [58]. The Organizational Culture needs to become the "third cultural" environment in which people from different national cultures can work together efficiently. This research study will not include an in-depth analysis of corporate Organizational Cultures. However, the goal is to understand how to create a functional "third culture" for people to work in.

Organizational Culture is of importance when defining a corporate "Third Cultural space" within a company where people from various national cultural backgrounds can work together with a predefined corporate vision, etiquette, rules, behaviors, and processes. The Organizational Culture creates to some extent the common ground where people can work together from different parts of the world.

One of the pioneers in organizational culture is Edgar Schein [33], and his work will be taken as part of the research study.

Edgar Schein - 3 Levels in Organizational Cultures

Edgar Schein's model of organizational culture originated in the 1980s. Schein [33] identified three distinct levels in organizational cultures:

- **Artifacts** (processes, office architecture, furniture, dress code, office jokes, etc.)
- **Values** (an organization's stated values and rules of behavior, examples will be employee professionalism or a "family first" policy, goals and strategies)
- **Assumptions** (unconscious and deeply embedded behaviors within a company that defines the values, this can be internal briefs, perceptions, thoughts and feelings of the main board of directors and shareholders)

Geert Hofstede – 6 Dimensions of Organisational Culture

Means-oriented <ul style="list-style-type: none"> Indicates the way in which work has to be carried out; people identify with the 'how' Risks are to be avoided. Focused on limiting effort 	Goal-oriented <ul style="list-style-type: none"> Aims to achieve specific internal goals or results, people, identify with the 'what.' Will take on substantial risks
Internally driven <ul style="list-style-type: none"> Business ethics and honesty matters Focus on knowing best what is good for the customer and the world at large 	Externally driven <ul style="list-style-type: none"> Focus on meeting the customers' requirements; Results are most important, and a pragmatic attitude prevails rather than an ethical attitude
Easygoing work discipline <ul style="list-style-type: none"> Loose internal structure, a lack of predictability, Little control and discipline; Much improvisation and surprises occur 	Strict work discipline <ul style="list-style-type: none"> cost-conscious, punctual and serious
Local <ul style="list-style-type: none"> Can identify with the boss and/or the unit Very short-term directed Internally focused, and there is strong social control to be like everybody else 	Professional <ul style="list-style-type: none"> Identity of an employee is determined by profession and/or the content of the job External focused and social control is not to be like everybody else
Open system <ul style="list-style-type: none"> Newcomers are made immediately welcome Open to both insiders and outsiders 	Closed system <ul style="list-style-type: none"> Newcomers are not immediately included in the organization. Organisation is open to insiders and selected outsiders
Employee-oriented <ul style="list-style-type: none"> Personal problems are taken into account Organisation takes responsibility for the welfare of its employees 	Work-oriented <ul style="list-style-type: none"> High pressure is placed on employees to perform their tasks even if this is at the expense of the employees

Table 10: Hofstede's 6 Dimensions of Organisational (Corporate) Culture [59]

Table 10 can assist to determine what the acceptability is of companies' Organisational (Corporate) Culture and Leadership style to the employees. Of importance is that a company creates the Organisational (Corporate) Culture in a way that it will serve as a "Third Cultural Space" in which people from various cultures can work together effectively. For this research study, Organisational (Corporate) Culture will not be researched or evaluated further. Hofstede's 6 Dimensions of Organisational Culture as tabled above remains important to consider when evaluating culturally diverse teams because it reflects on the dimensions that influence how people from different cultures will react to the Organisational (Corporate) Cultural if it is not in line with their cultural background.

2.1.6 Influencing *Factor 2*: Emotional Intelligence (EQ) & Social Intelligence (SQ)

To obtain a deeper understanding of Cultural Intelligence one also need to study and understand people's Emotional Intelligence and Social Intelligence capabilities. These two additional intelligences reflect on an individual's ability to understand his or her emotions and social relationships.

Emotional Intelligence (EQ) [28] can be seen as a person's capability to sense and understand his or her own and other people's emotions. It is also the ability to differentiate between various emotions and understand how to deal with it to guide one's thinking and behavior.

Social Intelligence (SQ) [34] follows from Emotional Intelligence and can be seen as a person's capability effectively to negotiate complex social relationships and social group environments. Emotional Intelligence, therefore, relates to the individual and the understanding of direct interpersonal emotions between individuals. Social Intelligence focuses on the individual within a social group or team environment where multiple relationships are involved, not just a person to person environment.

Both Emotional and Social Intelligence are closely related to Cultural Intelligence. D S Elenkov and J R C Pimental in [41] studied this integrated perspective of utilizing multiple intelligences and also researched by H Gardner [37]. With Cultural Intelligence the dimension of the larger social group of people (national level) are being added to the abilities of Emotional Intelligence (self and person to person level) and Social Intelligence (group or team level).

For this research study, the focus on Emotional and Social Intelligence will be limited to avoid expanding the research field too far within the field of psychology. It remains, however, necessary to take into account the importance of these multi-intelligences required to understand fully and deal with the complex levels of human interaction and behavior within culturally diverse teams.

For Emotional Intelligence, the work of Daniel Coleman in [17] [28] [29] has been studied as part of the research. Coleman outlines five main Emotional Intelligence aspects:

1. Self-awareness

- The ability to know one's emotions, weaknesses, and strengths. It also relates to a person's ability to set goals and form value based decisions.

- It affects one's control over current and future Work / Life Balance. It relates to one's focus on safety & future progress.
- It also relates to a person's acceptance of other team members, position, status, and the management.

2. Self-regulation

- This includes a person's ability to adapt.
- Also, the ability to control disruptive emotions

3. Social Awareness

- Social Intelligence relates to this. It is a person's ability to manage people relationships to move people (teams) in the desired direction.

4. Self-Motivation

- A person's ability to be driven to achieve goals within his or her career.

5. Empathy (Relationship Management)

- A person's ability to sense and take into consideration other people's feelings when decisions are being made.

As part of the online surveys, an Emotional Intelligence Self-Assessment Questionnaire [60] was utilized to obtain data to compare with the Cultural Intelligence Self-Assessment questionnaire data. Because Emotional Intelligence can be seen as the skill set that contributes to a person's ability to interact with other individuals, it was decided to evaluate the results against the Cultural Intelligence data to see if a relationship can be seen.

Furthermore, according to John D Mayer [61], Personal Intelligence goes beyond Emotional Intelligence. He states "personal intelligence includes reasoning about emotional states but also encompasses reasoning about ourselves and others, including our values, plans, and goals."

Personal Intelligence, Emotional Intelligence, Social Intelligence and Cultural Intelligence which are all interrelated with each other, all form part of the Multi-Intelligences people require adapting socially within a group or team to function effectively. Reference is also made to the work of Gardner and Shearer [37] [38] [39] who reflect on the need to have multi-intelligence skills in today's more complex multi-cultural work environment.

2.1.7 Influencing *Factor 3*: Information Technology

In today's Global Workplace, the need has arrived to make use of offshore Virtual Teams that may be located in different locations other than the geographical location where the project will be completed or constructed. The effectiveness of Virtual Teamwork is in many cases influenced by the Information Technologies utilized to communicate and transfer data (Integrated Project Management Systems, IPMS) and knowledge between team members located at various locations around the world.

Virtual Team Work [31] [30] [62] and the use of Information Technologies (IT) form an important part of managing today's global projects. Within the Virtual Teamwork environment, communication differs from normal face-to-face interpersonal communication. In the virtual environmental communication is mostly based on Information Technology. This can hide cultural differences and emotions much more than in the normal person to person communication.

Figure 8 schematically illustrates the importance of teams to be Task-Relationship focused rather than just only Task-focused [63]. Communication and trust between multi-cultural virtual team members are important to build Task-Relationship Focused Teams. The use of proper collaboration software over the internet can assist with the tasks to be completed and the communication between team members. Furthermore, having an understanding of cultural differences (Cultural Intelligence) between people can assist to focus on building the trust between team members and enable them to communicate more efficiently with each other across cultural boundaries.

Understanding Millennials preference to use social networking to collaborate

It is also important to understand the needs of the younger generation (Millennials, age 21 to 35). This generation has grown up in the new Technology- Information Age [64] of the internet and social media and networking. It is, therefore, important to utilize online social networking and collaboration tools as part of project management. It is also important to define and create a joint purpose or common goal for the project. This way the interest of the younger generation of team members on a project can be maintained better. Together with defining a joint purpose or common goal for the team, the proper use of social networking and collaborative IT tools, can enhance the work environment across culturally diverse local and offshore (Virtual) teams which allows to build Task-Relationship Focused teams.



Figure 8 Task-Only Focused Teams versus Task-Relationship Focused Teams [63]

Collaboration and Information Technology Software that increases the efficiency of teams

- **Proper Document Control Systems:**
 - Use of software like SharePoint, Aconex, ProjectWise, etc. is important. The correct decision needs to be made as to what software will work best before a project starts. The limitations of these document control systems need to be compared in a project case by case basis to enable the correct selection of the Document Control System.
 - Document control guidelines and training of the staff have to be done at an early stage before team members get lost in all the incoming correspondence and documents submitted and received.
- **IT Communication software:**
 - This can include the following well-known options: WebEx, Lync, Skype, Intranet portals.
 - Similar to the document control setup at the beginning of a project, the team members need to be informed what of these tools will be used in conjunction with standard emails.
 - The correct hardware (video conferencing cameras and microphones with proper sized LED/LCD screens) need to be put in place for meetings that will

not involve only one-on-one (PC to PC) conversations or small group conversations that can be done from individual PC's.

▪ **Online Collaborative Project Manager Software**

- It provides more options to collaborate the work and tasks to be done.
- Teams and project managers can jointly provide inputs and status updates of tasks to be completed or reassigned.
- It can be much more cost effective than the Primavera or MS Project versions.

▪ **Use of Kanban Boards**

- Kanban Boards [65] [66] can be used to control impacts of multi-tasking and unnecessary Work in Progress (WIP) [22]. It helps to visualize team tasks in relation to the schedule and can be a valuable project management tool that helps to set priorities for each team member in a clear logical way that is transparent to all team members.
- Kanban Boards' advantage is that it can be setup via Excel, Online or on a standard whiteboard using easily available post-it notes to represent each team member's task.
- Kanban Boards normally have three basic columns to represent:
 - The tasks still to be initiated
 - The tasks in progress
 - The tasks completed
- From the columns that list tasks in the various stages to completion, each Team member can easily see the tasks allocated and the rest of the team's tasks that may interact with the tasks being completed.

Cross Cultural Communication in a Virtual Team Environment

Cross cultural communication methods that include the use of email, internet chat portals, social media platforms and telephones are part of today's multi-cultural team environment. These communication methods closely relate to an understanding of team members' communication styles that are part of their cultural backgrounds [67]. Team members need to have Cultural Intelligence to be sensitive enough to their communication style and methods used to avoid conflict and misunderstanding.

Edward T Hall [43] stated: "Communication is not about speaking the right words; communication is about triggering the right response".

Hall [43] [44] also indicated that high-context cultures communicate in a more indirect manner, and implicit meaning is embedded in the context. In contrast, low-context cultures will focus on

explicit information to understand the meaning of a message. Time or chronemics according to Hall, refers to the notion that cultures can be classified as monochronic or polychronic. Monochronic cultures place emphasis on promptness. Polychronic focus more on the involvement of people and to complete agreements and transactions with each other, rather than only to focus on following the current scheduling only.

Intercultural communication has two main challenges that need to be kept in mind. The first challenge is that the majority of people who work in an intercultural environment will have to communicate in a language that is not their first language. The second challenge is the amount of energy to be invested in intercultural communication.

There are different levels of listening (or reading) and contributing when speaking (or writing). Listening (reading) and speaking (writing) comprise five levels. Each of the levels requires the persons (both the speaker/writer and the listener/reader) to invest a certain amount of energy to make the cross-cultural communication a success.

It is important also to take into account both Nonverbal and Verbal communication. In a monocultural setting, there are many assumptions that are made about communication, most of which do not pose problems until other cultures are introduced. One of the assumptions is that only one valid communication style exists, when, in fact, there are more. There are many cultures where the communication style is spatial or global, and good communication is considered to be the creative combination of different concepts. Monocultural communication styles in an intercultural environment can end up resulting in a disastrous outcome.

The following aspects of electronic email communication need to be taken into account in the workplace to limit miscommunication:

- Clear and precise email subject headers and tracking of replies
- Priority setting for email responses
- Clear, concise and brief email responses
- Third person responses (as mentioned, sensitivity to the reader's cultural orientation and communication style).
- Selection and filtering of words to suit the recipient/reader of the email.
- Avoiding insult, unfounded assumptions, accusations, unclear instructions or actions that are not defined by roles and responsibilities given to the recipients/readers.
- Taking into account world time zone differences, weekends, and public holidays.
- The potential use of international time zones between global branch offices can provide the advantage of having more than just a single 8-hour work day shift. More

work hours can be coordinated into a 24-hour day by shifting work from one time zone to the other.

- Importance of design review checks and quality control and quality insurance between design offices working on various design phases or tasks simultaneously to ensure wrong information is not passed on from one office location in the world to another where it may be assumed as correct.

Predetermining the complexity of communication between people on a project

Another important aspect to take into account to limit communication issues across cultures is to limit the number of possible communication channels that may occur between various groups of people from different cultures. It is best to determine in advance the magnitude (complexity) of the number of communication channels that will be involved in a project. Together with the various cultures and their individual communication styles that will be involved the Communication Management Plan should be set up to ensure the correct people remain in contact in a controlled way. This can limit uncontrolled communication channels between people that can lead to misunderstanding and even conflict. As the number of communication channels increases between people from various cultures, the complexity of the project increases with higher risk of miscommunication and conflict.

By using the PMI PMBOK equation (Section 10.1.2.1, Communication Requirements Analysis) [5] to determine the number of communication channels, a project manager can understand the complexity of the communication between people that will be involved. This equation is:

$$\text{Number of Communication Channels} = \frac{N(N-1)}{2}$$

With N = Number of Stakeholders (people)

Example:

N = 100 Stakeholders or people

$$\text{Number of Communication Channels} = \frac{100(100 - 1)}{2} = 4950 \text{ potential communication channels}$$

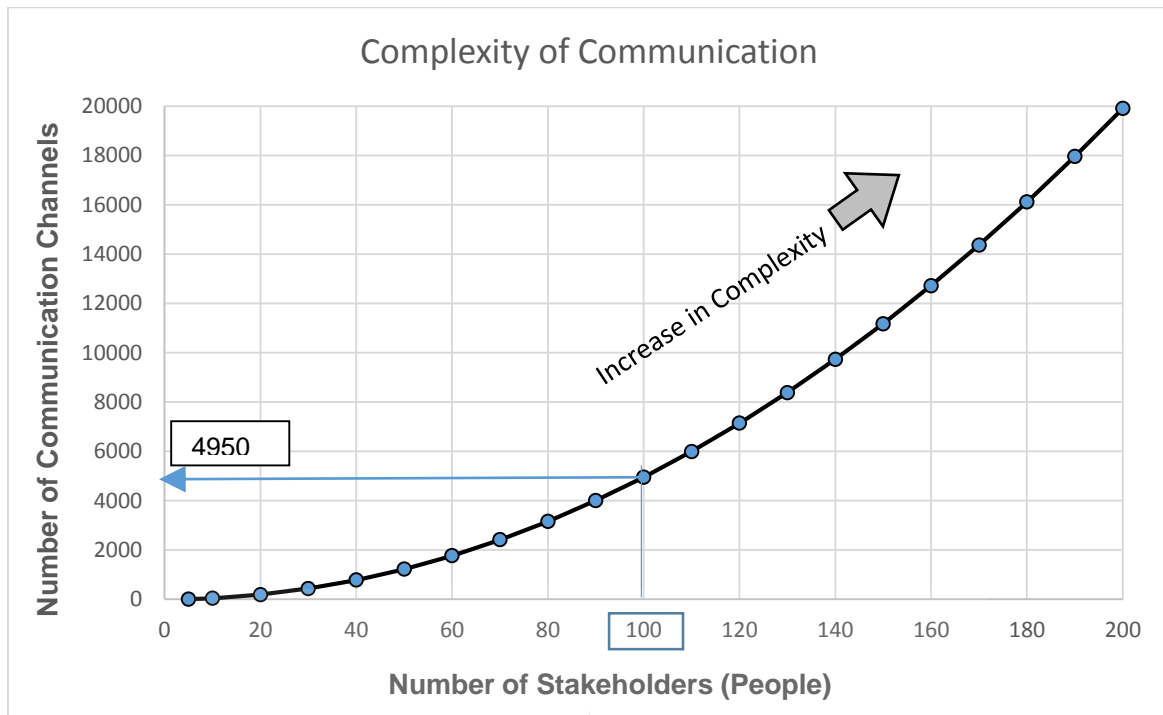


Figure 9: Complexity of Communication between people using the equation to calculate the number of communication channels [5]

By determining the number of overall communication channels on a project, a project manager can decide if some stakeholders and people will be required not to interface and communicate with each other to avoid increasing the overall complexity of the project's communication. From Figure 9 the graph shows that the number of communication channels increases dramatically as more people get involved.

In the example of 100 people in Figure 9, the project manager may decide to split the way people communicate into predefined groups to lower the 4950 potential communication channels between people. This can be part of setting up a communication plan for a project that defines the communication channels and roles of people and those what will form the point of contact between groups. Instead of having 100 people all communicating potentially with each other in an uncontrolled way, smaller groups or teams can be identified that will communicate with each other. This way each group of people will have internally and externally a lower level of complexity in communication.

The example above with 100 people on a project can be split into 5 to 10 groups, each group has for instance 10 to 20 people. By identifying the key contacts between the groups, the complexity of communication between groups is reduced and also internally within the groups. If 10 groups are identified, for example, only 10 key contact people need to be communicating with each other. This reduces the number of communication channels between groups (teams) to only 45. Each group's internal number of communication channels will also then be 45.

2.2 Literature review of new dynamic Project Management methods

Together with the influence of culture, the project management method that is being used can influence the outcome of a project. Traditional project management method uses the critical path method mostly. This will be compared to more dynamic or flexible project management methods that do not only focus on reflecting a critical path. The Critical Chain Project Management method that was developed from the Theory of Constraints will be studied. This Critical Chain Project Management Method utilizes what is called the resource and project buffers together with resource leveling. This results in more benefits to time and cost than the more static traditional Critical Path Project Management.

With today's projects constantly impacted by fast track design change requests from clients or other constraints, this makes traditional project management methods like Critical Path less effective. Projects tend to overrun both time, and budget and teams are left discouraged with project managers under stress to deliver and correct.

The 3 Influencing factors of Cultural, Emotional and Social Intelligence and Information Technologies (that relates to Virtual Team Work) will be evaluated against the latest project management methods.

The following aspects in project management need to be taken into account when working with culturally diverse teams:

- Time Management and Cultural Time Orientation. People deal with time in different ways in different cultures
- Importance of setting up the overall Project Calendar at the beginning of the project:
 - Weekends and public holidays for each team location around the world
 - Resource leave schedules (to reflect resource time constraints)
- The importance of using resource leveling to ensure a proper spread in the workload and to monitor overworked and/or under-utilized resources.

The following section will discuss Traditional Critical Path Project Management, Critical Chain Project Management, Success Driven Project Management and Lean Sigma Six. The purpose is to reflect briefly on the main differences and the need to understand how more modern project management methods differ from the traditional method. This can help to enhance the performance a project while dealing with human resource issues (cultural influences).

2.2.1 Critical Path Project Management - Traditional Method

For the study of the Traditional Project Management method reference will be made to the well know Project Management Body of Knowledge (PMBOK 5th Edition) [5]. The work of Harold Kerzner [24] will also be used as the basis to compare to newer project management methods like Critical Chain.

The Project Management Institute (PMI) defines in the guide to the Project Management Body of Knowledge (PMBOK, 5th Edition) a project as “a temporary endeavor undertaken to create a unique product, service or result”. To complete projects, the PMI addresses processes and knowledge areas. PMI groups the processes according to the general workflow of a single project. Below are the process groups and knowledge areas as listed in the PMBOK, 5th Edition [5]:

The 5 Process Groups are:

1. Initiating
2. Planning
3. Executing
4. Monitoring and controlling
5. Closing

And the 10 Knowledge Areas are:

1. Integration
2. Scope
3. **Time** (*relates to CQ, people's time perspectives*)
4. Cost
5. Quality
6. **Human Resource** (*relates to CQ, EQ, Human interactions, and behavior*)
7. **Communication** (*relates to CQ, EQ, IT and Virtual Team Management*)
8. **Risk** (*relates to CQ, specifically the Uncertainty Avoidance - Hofstede*)
9. Procurement
10. **Stakeholder** (*relates to CQ – client/stakeholder cultural understanding*)

- In total, there are 47 logical grouped project management processes coming from the above 5 process groups and 10 Knowledge areas.

- The Knowledge Areas highlighted in bold above can be influenced by Cultural differences. These highlighted Knowledge Areas need to be focused on to limit the influence of culture on Project Management.

In Project Management, there also remains a balance between various competing project constraints. These project constraints include:

1. Project Scope
2. Quality
3. **Schedule**
4. Budget
5. **Resources**
6. **Risks.**

Cultural differences can affect the Schedule, Human Resources, and Risks constraints. How people from various cultures see time and risk, need to be considered by the project manager. Traditional Project Management tend to be more Task-Focused rather than also Resource, and Human Relationship focused [5] [24] [68]. The human resource soft skills (that relates to Cultural, Emotional, and Social Intelligence) have become much more important than in the past Industrial Age at which time the Traditional Project Management methods were developed. It is, therefore, important for a Project Manager to have proper interpersonal skills that include Cultural, Emotional, and Social Multi-Intelligences.

The cultural differences in teams add to the complexity of inter-human relationships that form part of the project management cycle in today's Information Age which involve global workplaces. There is also the new reality that a newer young generation of human resources became part of the global workforce that need to be properly understood and whose different needs have to be taken into account. Today's digital age Y-Generation (Millennials) grew up in a technological advanced social network environment and will expect the workplace to provide the same. This younger generation is more connected than the previous generations and collaboration using the latest technologies is part of their daily work and life and should not be ignored but rather utilized and motivated [64].

Keeping to traditional (static) project management methods in a more dynamic fast track global project environment where stress results due to constant project design changes and time and budget constraints can cause project delivery failure. Adding the lack of cultural sensitivity and focus on inter-human relationships and communication

differences from both the project manager and team members can cause project teams to break up, resign or become unproductive and stagnant.

2.2.2 Critical Chain Project Management - Theory of Constraints - Israel

The Critical Chain Project Management (CCPM) [9] utilizes the Theory of Constraints (TOC) as developed by Israeli-born Eliyahu M. Goldratt [32] [69]. It originated with Goldratt's 1984 novel *The Goal* which aimed to assist organizations in achieving their goals through the process of ongoing improvement. Goldratt later also wrote the novel *Critical Chain* (1997) which reflected more on the new Critical Chain Project Management Method.

To understand Critical Chain Project Management one needs first to look at the Theory of Constraints. It focuses on finding and removing bottlenecks in the project processes that constrain or limit the throughput of a project's deliverables. It also focuses on improving the project's processes.

The Theory of Constraints is based on five steps that focus on creating improvement [70]:

1. Identify a project's main constraint(s).
2. Decide how to exploit the project's constraint(s). The aim here is to determine where the capacity or limit is reached. This can, for example, include the maximum work a particular resource will be able to undertake.
3. Subordinate everything else to the above decision on how to exploit the constraint(s).
4. Elevate then the project's constraint(s) after everything was subordinated to the constraint(s).
5. If, in the previous steps, the constraint (bottleneck) has been adequately evaluated to determine cause and effect and then fixed, go back to step 1.

The goal will be not to allow a lack of change to cause more project constraints already identified and resolved. This results in a continuous cycle of finding and resolving constraints and improving the processes.

The project's constraints are, therefore, that parts of the project that limit (constrain) the objective of completing the project. In project planning terms, the project's primary constraint is acting like a "bottleneck" which impacts on the overall task to be completed on time.

According to this TOC approach, a project's failure can in many cases relate to the inability to recognize that a project is a "network of dependent tasks". The moment a main constraint results in a bottleneck, the other dependent tasks get compromised. In real life, each of these dependent tasks have a degree of uncertainty linked to it. The time to do each task of a project typically gets overestimated in the project schedule to allow for this uncertainty. However, in many cases projects still fail to complete on time after having extra time included to compensate for the uncertainty of how long it will take to complete.

The main reasons for this failure of projects using traditional project management include the following:

1. The impact of Multi-Tasking

A project's resources usually have to work on more than one task concurrently. Project managers and admin staff may be dedicated, but the designers and engineers, often need to split their time between several projects that they are assigned to that overlap with the same time frames for completion. If this multi-tasking impact is not recognized and managed, it can result in overloading of the available resources that need to deliver the project [9] [21].

As a basic example, if an inexperienced project manager assigns one resource to do 3 tasks that will take 1 week each to complete on different independent projects and then also mistakenly schedules all these tasks to be completed in only 2 weeks, the schedule will be overrun with more than a week. The reason it will overrun with more than just one week is because time will be lost when a resource needs to be shifting from one task to the other between different projects. So instead of having the 3 tasks completed in 2 weeks the resource may end up taking a full month (4 weeks) to complete the 3 tasks between the projects (not just only 3 weeks).

2. The Student Syndrome

When a project begins many people, do not always initiated an early productive work effort to complete tasks until their deadlines become in the sight. In the

beginning, people tend to get themselves 'ready' and 'organized' for the tasks ahead. This can easily result in unnoticed loss of time. The resources know that the scheduled tasks have some slack in it, so they tend to take advantage of it at the beginning of a project by being less productive and focused on other tasks than the major tasks. If the resources are left by themselves with project managers doing the same, the project can run out of time at a late stage. People also tend to leave the more undesirable and difficult tasks to the end. This normally ends up in a typical "firefighting" situation where tasks are later rushed, and quality control gets also neglected. Design flaws or other mistakes can easily result and redoing work adds to the time needed to complete. Projects can, therefore, overrun the budget and schedule even if the time estimates of tasks were all over conservative at the planning and initiating phase of the project management cycle.

3. The Parkinson Law (Failing Schedule Syndrome)

The Parkinson Law (Failing Schedule Syndrome) [71] [72] is best defined with the well-known statement: "*Work expands so as to fill the time available for its completion*". This reflects the reality that there is no direct incentive for most employees to finish the work early if they know there is still much time available. People tend to use the time allocated to the tasks given to complete. This is especially true for the more demanding and less enjoyable work tasks. Potential time savings on tasks, therefore, get lost because people "stretch" their work out over the time given to do these tasks. The incentive to rather try and complete tasks as early as possible is not a standard behavior pattern found in most employees.

Critical Chain Project Management is a method to limit the abovementioned 3 problems. It is a method of planning and managing projects that focus on the resource constraints. The aim of this project management method is to ensure that the resource leveling (workload) is properly done and monitored. Resources should be flexible in the start times of tasks and be able to switch between 'task chains' when needed to keep the project on schedule.

With Traditional Project Management, much time gets lost when resources' time is consumed by wasteful techniques that include the above three problems of multitasking, student syndrome, and schedule syndrome. It also accounts for problems like inbox (email) overload and lack of prioritization.

The critical chain has become an alternative to the traditional critical path analysis. It differs from the Critical Path in the following:

- It uses resource dependencies.
- It avoids searching for an optimum solution. The focus is rather on finding a "good enough" solution instead of spending unnecessary time to analyze what may not add value or extra benefit.
- It involves identifying and inserting *buffers* in the schedule; this includes:
 - A Project buffer
 - Feeding buffers and;
 - Resource buffers

Project progress and health are monitored by checking the consumption rate of these buffers rather than individual task performance within the schedule.

CCPM planning places the *safety time* (time added for the unknowns and unpredictable) for tasks within a project into the *buffers* — this helps to protect the due-date performance and avoid wasting this safety time through bad multitasking, student and schedule syndrome, and poorly synchronized integration.

Critical Chain Project Management uses, therefore, a buffer (time) management method instead of an earned value management method to assess the performance of a project. Some project managers feel that the earned value management technique can be misleading because it does not distinguish progress on the project's constraint(s).

This research study will assess the importance of using the CCPM method as an alternative to the more Traditional CPPM method that have become less effective in today's project management environment. The study also aims to determine how willing or reluctant project managers may be to adopt this method.

Israeli cultural influence on project management

By looking at Hofstede's [2] main Cultural Dimensions for Israel, it can be noticed that one Cultural Dimension index rates high. Uncertainty Avoidance rates at 81 in Figure 10. By looking at the Israeli culture, it is notice that they have a need for rules to apply to avoid uncertainty. For them, time is money, and one needs to be hard-working and focused on detail and punctuality. By looking at the Critical Chain Project Management Method, the focus on time and resource management is, therefore, noticed. Also with the Individualism Index at 54, it reflects a balance between individualism and collectivism. Israel is, therefore, focused on either the individual or the group or team.

The Masculinity index is also balanced at 47. The Israeli culture is neither dominant masculine nor feminine. There is, however, a need for performance. Management is expected to be decisive and assertive. The very low score of Power Distance score of 13 reflects on Israel's equal rights policy and the accessibility to leadership. Power is decentralized in Israel and managers will count on their teams' experience and efficiency. This can also be seen as a reflection on the main aspects of the Critical Chain Project Management Method in terms of resource management and efficiency, including proper time management with a focus on 'time is money'.

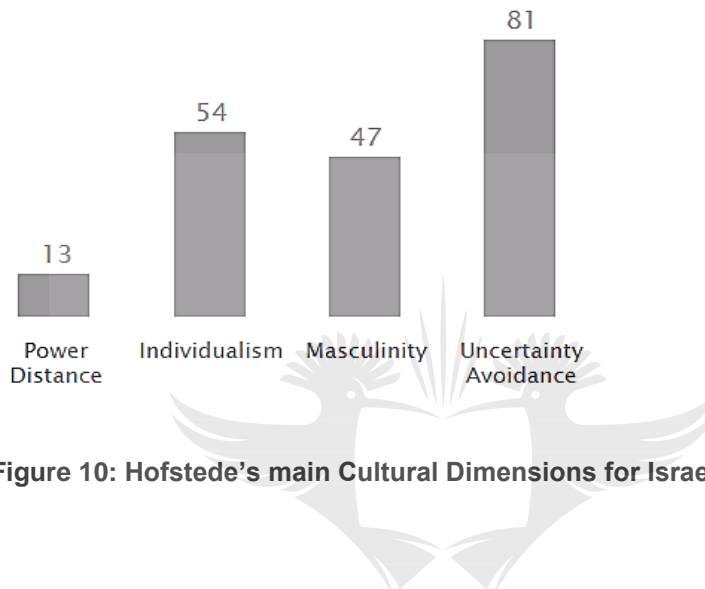


Figure 10: Hofstede's main Cultural Dimensions for Israel [2] [73]

2.2.3 Lean Project Management and Lean Six Sigma - Japan

Lean Project Management [10] [11] takes Critical Chain Project Management [9] one step further and combines it with the Lean Concepts developed out of the Six Sigma Methodology as developed by Motorola in Japan. The Lean Methodology (Lean Six Sigma) and Six Sigma originated from Quality Control and Statistical Process Control. The main principle of Lean Project Management is delivering more value with less waste (eliminating tasks not needed and cutting wastes in time & cost) in a project context [74]. Focus is, therefore, placed on improving quality, reducing lead time and total cost of a project.

With Lean Project Management, a project is seen as a set of processes (work packages) that should be managed as a *Value Stream*. Weak links and bottlenecks that result in waste (time & cost) in this Values Stream should be identified and eliminated. This Project Management method shifts the focus from just aiming to meet deadlines to monitoring project task dependencies better. A Lean Project Manager needs to review constantly and monitor the way that work tasks and activities in a project pass between team members. Lean Project Management involves, therefore, standardizing work

processes and removing non-value-adding tasks and activities from the work processes. There is also a focus on improving processes constantly.

During the Project Management Planning Phase, the Work Breakdown Structure (WBS) needs to be studied more thoroughly to setup the Lean Concept of *Value Stream Mapping*. The Value Stream Mapping is related to the process mapping used in Six Sigma. It starts with defining the client (customer) view of the project's value and then determining the steps in the process where value can be added, and improvements made.

The difference between Lean and standard Six Sigma is that Lean is more of a philosophy while Six Sigma is more a Program that is followed. Lean attempts to teach an organizational culture change. It also aims to create permanent behavior change among employees to identify and eliminate waste. As stated Six Sigma is like a Program. It is mostly a methodological process to intervene, rather than to attempt to change the organizational culture or to create a permanent behavioral change among employees.

It is also important to note that the use of Kanban Boards can assist not only to limit the Work in Process (WIP) [22] but also multitasking. Toyota invented kanban boards with the aim to limit waste of time and cost. Gives the ability to teams to see the tasks to be done, which tasks are in progress and which tasks are completed.

Japanese cultural influence on project management

By looking at Hofstede's [2] main Cultural Dimensions for Japan, it can be noticed that two indexes are very high. Masculinity and Uncertainty Avoidance rate as some of the highest scores in the world compared to other countries. In Figure 11 can be seen that the index score for Masculinity is at 95. This reflects on the competitive nature of the Japanese culture that also applies to their work environments. They strive for perfection in their work that can be seen in their project management methods utilized (Lean Project Management, Six Sigma, and Kanban). The high score in Uncertainty Avoidance reflects on the need to limit the unpredictable. This again reflects on their focus in project management. Japan has become used to a range of natural and man-made disasters (tsunamis, earthquakes, war). This resulted in the high score in the Uncertainty Avoidance Index. The Japanese people learned to prepare themselves at all times for uncertain events. It can also be noticed that the lower score in Power Distance and Individualism reflects on their Collective High-Context Culture. The Japanese people are more inclined to work as teams and groups, rather than as individuals. They are also more inclined to follow a hierarchy leadership structure. Although they are borderline in this index compared to other Asian countries.

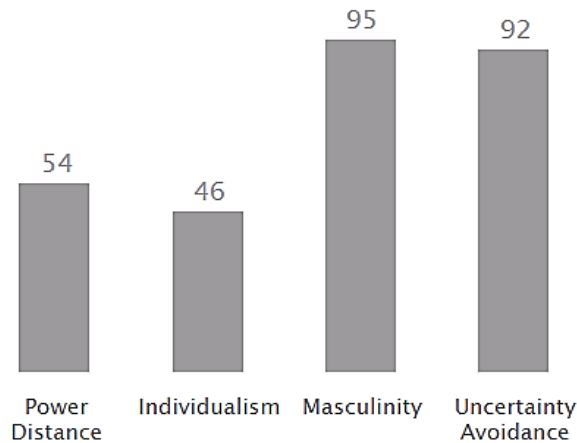


Figure 11: Hofstede's four main cultural dimensions for Japan [2] [75]

2.2.4 Success Driven Project Management - Russia

Vladimir Liberzon from Spider Management Technologies in Russia helped developed the Success Driven Project Management (SDPM) Method. Critical Chain is based mostly on limiting the impact of the Resource constraint in the Critical Path method (of which resource leveling forms a fundamental part of the method). Success Driven Project Management is based on not only limiting the impacts of the resource constraint, but also the Project Scope, Schedule, and Risk constraints. The Critical Chain does not account for these other constraints and rather focus on the Resource constraint only. This method, therefore, takes Critical Chain (CCPM) further into a more detailed monitoring of constraints on a project or projects.

The SDPM methodology has common features with the Critical Chain theory. The following summary reflects on the main aspects of SDPM [76]:

- Calculating the critical path. However, then considering all schedule constraints that include not only human resources but also material availability, scope, schedule and risk constraints,
- Calculating what is called the Resource Constrained Activity Floats which is similar to the CCPM Feeding Buffers,
- Calculating what is called the Resource Constrained Assignment Floats to determine critical resources,
- Undertaking a Project Risk Simulation (like Monte Carlo) and then calculate the Success Probabilities,

- Calculation and management of what is called the Contingency Reserves which is similar to the CCPM Project Buffer.

By controlling the current values and trends of the Project Success Probabilities, project managers can have project performance analysis presented in a very informative way. This can provide additional performance analysis compared to the traditional Earned Value Method [77] [78].

Success Driven Project Management (SDPM) [76] [79] is, therefore, based on a set of indicators measuring a project's performance and forecasting the final success. This methodology is supported by specialized software capable of supplying the project management team with valuable information to make decisions on.

The Success Driven Project Management Method is used mostly in Russia on large-scale infrastructure projects (Sochi Winter Olympics, Nuclear Power Plants, and cross Siberian Highway projects). However, it was also successfully used in other countries like Brazil.

Russian cultural influence on project management

By looking at Hofstede's [2] main Cultural Dimensions for Russia, it can be noticed that two indexes are very high. Power Distance and Uncertainty Avoidance rate also as one of the highest scores in the world compared to other countries. In Figure 12 it can be seen that the index score for Power Distance is at 93. This reflects on the impacts that Russia's very centralized and socialist government control have on national culture. Most things in life are controlled by a central government in Moscow. Russia also has one of the most complex bureaucratic environments in the world. Their work environments are controlled by a top-down leadership style. Russians are, therefore, very success and status driven to be able to have a position among each other in society. Their Uncertain Avoidance Index also rates high at 95. This reflects on their ability to be highly focused on detail and precision. This to avoid any uncertainty in tasks and events to be completed. They also have a high focus on planning. Their Success Driven Project Management Method is a direct reflection of these high rating Cultural Dimension indexes. It can also be noticed that the Individualism and Masculinity indexes rates low. This again reflects on their centralized government controlled society and the fact that they are a collective society where the "We" (group) instead of the "I" (individual) counts.

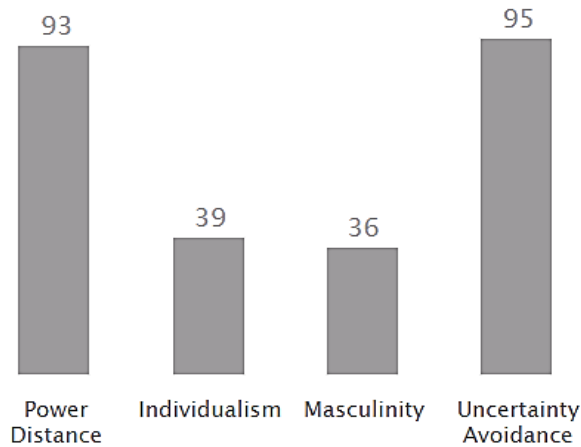


Figure 12: Hofstede's main cultural dimensions for Russia [2] [80]

2.2.5 Conclusions from the Literature Review of Project Management Methods

From the literature study on project management methods it was noticed that the traditional Critical Path Project Management Method used in western countries like America and the UK (currently more than 50 years old), have limitations when applied in today's Technology and Information Age. Project Management Methods developed in Israel, Japan and Russia, reflect on these countries' cultural leadership and time management styles. It was noticed that the most traditional Critical Path Project Management Method may have become outdated compared to the more dynamic and flexible Critical Chain Project Management Method or the Lean and Success Driven Project Management Methods.

It is concluded that to be able to be effective in today's rapid changing and complex multicultural global work environments, the use of more flexible and dynamic project management methods need to be considered. This can have many advantages in saving time and cost while optimizing resources and limiting risks.

2.3 Conclusions made from the Literature Review

The following conclusions can be made from the literature review:

1. Cultural Intelligence can play a key role in today's global work environment.
2. Project management can be influenced by cultural differences.
3. People from different cultures that make up the resources of engineering project teams have different cultural interpretations of leadership styles, individualistic or collective teamwork, time management and avoidance of risk and uncertainty.
4. Engineering teams with a high level of Cultural Intelligence can avoid issues with low productivity, conflict, and miscommunication.
5. Emotional intelligence is closely related to Social Intelligence and also Cultural Intelligence. These multi-intelligences are required to function properly in today's complex multicultural work environments.
6. Emotional, Social, and Cultural Intelligences form the layers of the Multi-Intelligences required by individuals on engineering teams to be able to interact efficiently with a 'person to person', 'person to team' and 'team to team' basis.
7. There must also be a focus on the effective use of today's available information technology project management software tools and social network and collaboration systems. The proper use of these information technology tools can assist in the communication of multicultural teams across borders in onshore or offshore environments as long as the cultural communication style differences are properly taken in account.
8. Training in cultural intelligence can increase the efficiency of culturally diverse engineering teams.
9. It is very important in today's more complex working environments to utilize more effective flexible and dynamic project management methods instead of keeping to the more traditional ways that may have now become outdated in today's Information and Technology Age.
10. The use of the Critical Chain Project Management Method that utilizes project buffers to compensate for the uncertainty in planning and design changes can be more beneficial than using the traditional Critical Path Project Management Method. It is, therefore, highly recommended for engineering projects. However, it does require a paradigm shift and needs more focus on planning detail and constant monitoring of task and resource performance.
11. Other project management methods like Lean Project Management or Success Driven Project Management also provide advantages over the more traditional project management method (Critical Path) used in Western countries. Similar to the Critical

Chain Project Management Method the Lean Project Management and Success Driven Project Management Methods focus on cutting out waste. This includes unnecessary tasks that waste time and money and impacts on current resource capacity. These methods also optimize the use of resources and control project constraints.

12. There are also various benefits for using more current dynamic or flexible project management methods when culturally diverse teams are involved. As a result of all the cultural differences between various team members, the risk of miscommunication and impact on productivity can be limited by utilizing the most current project management methods. These newer project management methods compensate by adding time buffers and a focus on project constraint management.
13. Lean Project Management helps to focus on limiting wastes by eliminating unneeded tasks through a constant improvement process.
14. By also focusing on cultural differences (by improving Cultural Intelligence), problems in project management can be identified and eliminated as part of the constant improvement process of the Lean Project Management Method.
15. Critical Chain Project Management focuses on effective optimization of resources and the tasks to be done by these resources. It helps to eliminate issues with multitasking and people's unnoticed psychological constraint to effectively use the time available to complete tasks.
16. The project management processes that include communication, resource and risk management can be more effectively handle by current project management methods in relation to the traditional project management method.

The next part (Part 3) will describe the Research Methodology followed for this study. From the Literature Review background and information were gathered to set up the online survey questionnaire to collect data for this study's research. The various aspects of Cultural Intelligence were obtained from the Literature Review from which the survey questions were compiled from. The work of Soon Ang and Linn van Dyne [41] contributed the most to setting up a questionnaire that provided results for comparison and evaluation.

Part 3

3.1 Research Methodology

3.1.1 Background

The research methodology followed the Scientific Method and is based on the Applied Research Methodology, which followed a systematic inquiry process. Online survey questionnaires, asynchronous online interviews, direct interviews, Case Studies and additional sources of information have been collected to obtain the source data for this research study. The primary locations from where the survey data was collected were the Middle East (UAE and Qatar), Australia, New Zealand, UK, America, Germany, Malaysia, India and South Africa.

One of the direct constraints identified by Goldratt [32] in project management is the human resources who need to complete the project tasks. All other non-human project constraints are necessary but can be seen as secondary (this includes the cost, time, physical resources like machinery and materials). For this reason, the aim of the research study was to analyze the collected data that reflects on the human interactions in project management. This to determine if the three influencing factors identified for this research (Cultural Intelligence, Emotional-Social Intelligence, and Information Technology) have any influence on Project Management. This also to see if improving a project team's Cultural and Emotional Intelligence levels together with the correct use of Information Technologies can enhance project management or not.

Survey questions have been set up and placed in an online survey web portal (*QuestionPro*). The survey questions covered the components of the research Literature Review (Cultural Intelligence, Emotional-Social Intelligence, Dynamic Project Management Methods and Information Technology). The survey questions consisted out of multiple choice answers. The aim was to measure both the Cultural and Emotional Intelligence capabilities of the respondents in relation to their Project Management capabilities. It also focused on measuring the cultural awareness within a project management work environment. From the Literature Review in Part 2, the background was obtained on the various aspects of Cultural Intelligence. As mentioned in Part 2, the works of Soon Ang and Linn van Dyne [41] formed an integral part of the online survey questionnaire.

The 20 question Cultural Scale developed by Soon Ang and Linn van Dyne was embedded in the questionnaire to provide the results on the 4 Cultural Factors or capabilities (CQ-Drive, CQ-Knowledge, CQ-Strategy, and CQ-Action). Also, the work of David Livermore [27] was utilized

to derive from the 4 Cultural Factors the three additional measures of Cultural Intelligence: Cultural Judgement and Decision Making, Task Performance, and Cultural Adaption.

The survey data has been analyzed using the Quantitative Research Method by means of descriptive statistics. The Qualitative Research Method (related to Ethnographic and Social Research methods) [81] [82] was also used in part for evaluating the online interview survey responses and real life Case Study findings. The aim was to understand and capture the cultural and human behavioral components reflected in the interview answers. A partial methodological triangulation analysis [83] [84] of the interview responses and Case Study findings was undertaken to compare with the online questionnaire survey data. This helped to assess if there were similarities in the data source findings from the Qualitative and Quantitative Methods used. It formed part of evaluating the three influencing factors on project management. The methodological triangulation findings are describe in more detail in Part 4, 5 and 6. Figure 13 indicates the triangulation between the Quantitative and Qualitative source data obtained for this study.

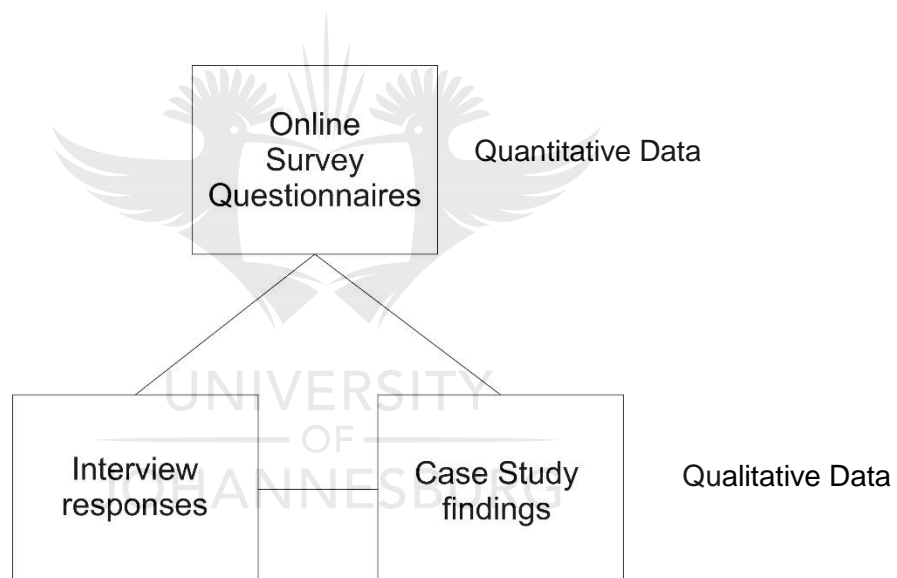


Figure 13 Methodological Triangulation between Quantitative and Qualitative data

Survey Data from 112 fully completed online surveys was obtained out of a list of 300 people to whom the online survey were sent. The online survey data was checked for errors and filtered out to finalize a sample size of $n = 112$. Some surveys from the 300 invitations were incomplete or incorrectly filled in while some other surveys were terminated before completion of the full questionnaire.

The survey data were collected from 3 sub-groups of people surveyed. The first sub-group surveyed was from one Engineering Company that has offices in various parts of the world. Most of this group's people were selected from South Africa. This sub-group also included people who were known and worked in the engineering field that are from different parts of the

world. The second sub-group was people from one major project in Qatar who came from various parts of the world to work in Qatar. This sub-group also formed part of one of the Case Studies described in Part 5. The third sub-group was people from an independent unknown group selected by the survey company (*QuestionPro*). In Part 4, 5 and 6 this will be discussed further.

To obtain more direct feedback from engineers and project managers in specific engineering projects, it was decided to include with the online surveys, interviews that is focused on particular aspects of project management that can be influenced by cultural differences. This online interview survey data formed part of the qualitative research data collected. The interviews included similar questions than the online questionnaire and specifically additional questions on how culture impacts on communication, decision-making, the perception of time (schedule) and conflict resolution. The interview questions were therefore aimed to get direct feedback on how culture impacted specific projects.

A total of 17 online asynchronous interviews [85] [86] were completed by engineers and project managers from different cultural backgrounds. These asynchronous interviews were conducted online via a web portal. Web-based voice conferencing were also used. An additional 5 face-to-face interviews were completed with team members from different cultural backgrounds that were based in Qatar.

People from the following cultures have been included in the surveys: America, Australia, Britain (UK), Canada, China, Egypt, Germany, Greece, Fiji, India, Iraq, Ireland, Jordon, Lebanon, Malaysia (incl. Singapore), New Zealand, Philippines, Poland, Serbia (Yugoslavia) and South Africa.

3.2 Research Questions

The main research question for this study is:

- **Does Culture influence the effectiveness of project management in a culturally diverse work environment?**

From this main research question, the following secondary research questions follow:

1. Do project managers and team leaders consider cultural differences when assembling cultural diverse teams and do they prioritize improving their cultural knowledge (cultural intelligence) to improve the efficiency of the team(s)?
2. Which aspects of cultural intelligence need to be focused on the most by project managers and team leaders?
3. Does cultural intelligence also apply to virtual offshore teams or do information technologies eliminate the cultural barriers?
4. Which aspects of emotional intelligence are most important within a cultural diverse team environment to ensure the team's success?
5. Do project managers focus on the use of more current and adaptable project management methods like Critical Chain Project Management in delivering projects?

In addition, the following tertiary research questions can be asked further to determine the influence of culture and human emotional interactions in project management:

1. Will there be an increase in team productivity and success when cultural intelligence, emotional and social intelligence are all taken into account together with the use of more current dynamic project management methods (like when critical chain project management is used in conjunction with effective Information Technologies)?
2. Is it important for project managers to pre-select team members from different cultures to ensure the strengths and skills of the individual team members will enhance the team as a whole?
3. Which team is more efficient, those of the same monoculture or those of cultural diverse teams?
4. How much does language differences impact communication and understanding between multi-cultural team members?
5. Do team members from different cultures understand and handle risk within a project delivery differently?

6. Do team members from different cultures have a different perspective on Time and can cultures with a focus on time work efficiently together with those who is less focus on completing tasks in a set time frame?
7. Does multitasking influence the productivity of project teams from different cultures?

The survey questionnaire was set up to focus on obtaining answers to the above-listed questions. The online survey questionnaire was broken down into the following main categories for which the data was collected:

- A. Demographics (e.g. age, country born, countries worked in)
- B. Corporate outlook (e.g. work environment is acceptable or not)
- C. Project Management knowledge and experience level
- D. Cultural Intelligence level and understanding
- E. Emotional Intelligence level and understanding

Part 3 described the Research Methods used for the study. This included both Quantitative and Qualitative Research Methods using online survey and interview questionnaires. It also described the primary Research Question for this research study for which an answer will be evaluated in the next part. In Part 4 that follows, the online survey data from the online surveys and interviews were analyzed. A partial methodological triangulation analysis was done by comparing the Quantitative Research findings from the online surveys with the Qualitative Research findings from the interviews and the Case Studies. This is described in more detail in Part 4, 5 and 6.

Part 4

4.1 Online Survey Data Analysis

4.1.1 Introduction to Online Questionnaire Survey

An online questionnaire survey was utilized to collect the data for this research study. The survey data was collected using *QuestionPro*. As mentioned in Part 3, three sub-groups of people in engineering and project management were surveyed. The survey invitations were sent out to two main independent groups that made up the 3 sub-groups of people surveyed. The first main group consisted of 200 invites to people that were known from around the world in the fields of engineering and project management. This first main group of 200 invites covered the first 2 sub-groups of people as described in Part 3. The second main group consisted of 100 invites to people that were unknown from around the world but also work in the fields of engineering and project management. This main group formed the third sub-group of people surveyed.

Part of the first main group of 200 invites that was divided into the first 2 sub-groups related to the case studies of this research. The second main group of 100 invites was to people that were unknown. They were mainly from the UK, USA, Germany, and Malaysia. This second main group of unknown people were added to the survey data to increase the data for the countries that were represented in the surveys. This also helped to compare if the independent and unknown group reflected a similar outcome in terms of the cultural differences between countries.



Figure 14 Main Groups of people for online surveys, Case Studies, and Interviews

The survey data was, therefore, collected from 3 different groups of people from around the world. This allowed to do comparisons between the groups. It should be noted that the majority national culture that was represented in the survey data was from South Africa (27%). This was done intentionally to be able to compare the South African culture to various other cultures for which the survey data was collected specifically. The aim of this was also to understand if South African expats working in other countries can deal with the Cultural influences that impact on engineering and project management in the same way as to other cultures surveyed.

4.1.2 Online Questionnaire Design

The online questionnaire consisted of 32 questions. The questions were grouped into five categories. These categories were the following:

- Geographic information (where people were born and where they are working)
- Project management skills level
- Company corporate well-being (reflecting in part on corporate culture success)
- Cultural Intelligence (ability to understand and interact with team members from other cultures) by following CQ Scale developed by D. Livermore, S. Ang, and L v Dyne [40] [41]
- Emotional Intelligence (ability to self-regulate and interact with team members on an emotional level) when using the questionnaire developed by Linac [60]. This questionnaire because of the similarity to many other emotional intelligence survey questions because of the completeness the relevance of the questions.

From the Literature Review (Part 2) and the primary Research Question defined in Part 3 (Research Methodology), the 32 questions in five categories were compiled. The questions aimed to obtain the information from the survey data to evaluate to what extent cultural differences impact on project management. It also aimed to evaluate if people involved with project management are aware of cultural differences and impacts on project management. By utilizing the CQ Scale developed by Soon Ang and Linn van Dyne questions were compiled for the category on Cultural Intelligence.

4.1.3 Descriptive Statistical analysis and interpretation of survey data

The survey data collected can be summarized using the following Descriptive Statistical analysis and interpretation:

4.1.3.1 Demographics

- The total sample size of n = 112 (fully completed surveys) were collected out of 300 invitations sent to people all over the world.
- The overall response return rate was therefore 37%.
- As described in the introduction above, the 300 invitations consisted of five different groups of people. The first main group consisted of 200 invitations and returned 60 fully completed survey questionnaires. The second main group consisted of 100 invitations and returned 52 fully completed survey questionnaires.
- The survey data was collected from respondents who represented 27 different countries in the online survey.
- The main survey data in terms of sample size was collected from the following countries: Australia, Germany, South Africa, UK and the USA.
- The other respondents that completed the online surveys represented countries from Europe, the Middle East, and Asia. India and Malaysia were the second largest sample size.

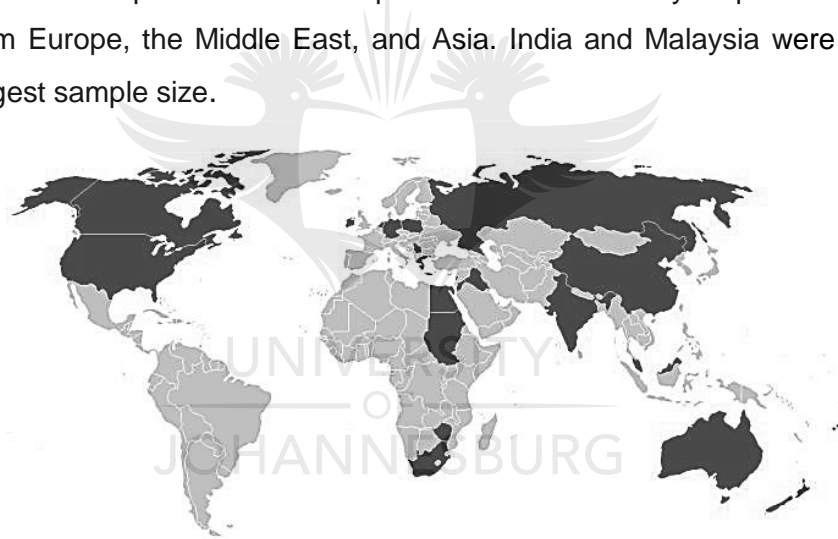


Figure 15: Countries in which people were born in and who participated in the online survey.

#	Country	Frequency	Percent	Cumulative Percent %
1	Australia	8	7.1	7.1
2	Austria	1	.9	8.0
3	Canada	1	.9	8.9
4	Egypt	1	.9	9.8
5	Fiji	1	.9	10.7
6	Germany	9	8.0	18.8
7	Greece	1	.9	19.6
8	India	5	4.5	24.1
9	Iraq	1	.9	25.0

10	Ireland	3	2.7	27.7
11	Jordan	1	.9	28.6
12	Kuwait	1	.9	29.5
13	Lebanon	1	.9	30.4
14	Malaysia	6	5.4	35.7
15	Netherlands	1	.9	36.6
16	New Zealand	3	2.7	39.3
17	Poland	1	.9	40.2
18	Russian	1	.9	41.1
19	Singapore	1	.9	42.0
20	South Africa	30	26.8	68.8
21	Sri Lanka	1	.9	69.6
22	Sudan	1	.9	70.5
23	UK - Northern Ireland	18	16.1	86.6
24	UK - Scotland	1	.9	87.5
25	USA	12	10.7	98.2
26	Yugoslavia	1	.9	99.1
27	Zimbabwe	1	.9	100.0
Total		112	100.0	

Table 11: Survey Data reflecting respondents Countries they were born in

4.1.3.2 Corporate outlook (acceptable work environment)

- As part of the survey, questions were included that related to the respondents' work satisfaction and corporate outlook in the current country and company they work for.
- The purpose of these questions were to determine if the people surveyed were satisfied with the company they are working in, in the current country.
- These question responses reflect indirectly on the Corporate Culture success of the company (known and unknown), as represented by the respondents.
- From the survey, the following conclusions were reached:
 - Most respondents (52%) worked for more than 5 years at their current companies.
 - Most respondents (55%) are very satisfied with the company they are currently working at.
 - 39% have indicated that their companies may be less flexible towards family responsibilities.
 - About 25% felt neither satisfied nor dissatisfied with their current companies.
 - Less than 15% were dissatisfied with their companies.

- It is concluded that more than 55% of the respondents surveyed felt very satisfied or extremely satisfied (5%) with their companies Corporate Culture. This may indicate that the companies of the respondents are successful in creating a positive Corporate Culture environment (“Third Cultural Space”) where culturally diverse teams can work at a satisfactory level.
- About 45% of the companies may not be providing a positive Corporate Culture environment (“Third Cultural Space”) to work in as culturally diverse teams.

4.1.3.3 Project Management knowledge and experience

		Experience Level in Project Management					
Number of countries other than home working in		Post-graduate degree in Project Management	Certification in Project Management (PMP, PRINCE2 or equivalent)	Diploma or certificate in project management training course	Basic understanding of main principles of project management	Very limited knowledge of project management	Row Totals
	1	12.5%	12.5%	37.5%	37.5%	0.0%	12.5%
	2	18.8%	6.3%	31.3%	43.8%	0.0%	25.0%
	3	25.0%	12.5%	12.5%	50.0%	0.0%	25.0%
	4	0.0%	0.0%	20.0%	60.0%	20.0%	15.6%
	5+	14.3%	0.0%	35.7%	50.0%	0.0%	21.9%
Column Percent		15.6%	6.3%	26.6%	48.4%	3.1%	100%

Table 12: Comparison between of Number of Countries Worked to Project Management Experience

- For Table 12 a comparison was made from the Surveyed Data between the respondents experience level in Project Management to the number of countries worked other than the home country.
- The comparison indicated that:
 - 48.4% of the overall group of survey respondents have only a basic understanding of Project Management mostly.
 - 25% of the overall group of respondents worked in 2 or 3 countries other than their home country.

- 25% of the subgroup of respondents that worked in 3 countries have a Post-Graduate degree in Project Management.
 - 60% of the subgroup of respondents that worked in 4 countries also have only a basic understanding of Project Management.
 - 35.7% of the subgroup of respondents that worked in 5 or more countries have a diploma or certificate in Project Management.
- It can be concluded from the comparison table that:
 - The majority of people surveyed do not have a high level of formal project management training. Most are at the basic, diploma or certificate level. This means that the many may not fully understand all the processes and knowledge areas in Project Management to detect where cultural issues may impact on project management.
 - Furthermore, most of the surveyed people worked overseas in 2 or more countries.
 - This however can assist with Cultural Intelligence. The respondents can have higher CQ-Drive (Motivation) and CQ-Knowledge scores [3] [41] that can help to limit the effect of “culture shock” (first-time oversea work). This will allow people to be more comfortable and at ease in a new cultural environment.

	Managed Virtual offshore team(s) before	Managed Local onshore team(s) before	Never worked with any virtual offshore team(s) before	Row Totals
Worked overseas outside home country for more than 2 year before returning home.	43.5%	43.5%	13.0%	16.9%
Worked for long periods in another or various countries other than the home country.	33.3%	44.4%	22.2%	33.1%
Worked in the home country only and on projects in the home country.	25.0%	50.0%	25.0%	5.9%
Worked in the home country only as a Virtual / Offshore team member of overseas projects.	40.0%	40.0%	20.0%	3.7%
Worked in the home country and visit other countries on a short-term basis regularly.	14.3%	57.1%	28.6%	15.4%
Relocated permanently to another country and is working on various projects <u>in this country only</u> .	21.1%	63.2%	15.8%	14.0%
Relocated permanently to another country and is working on various projects <u>in other countries</u> .	26.7%	53.3%	20.0%	11.0%
Column Percent	29.4%	50.0%	20.6%	100%

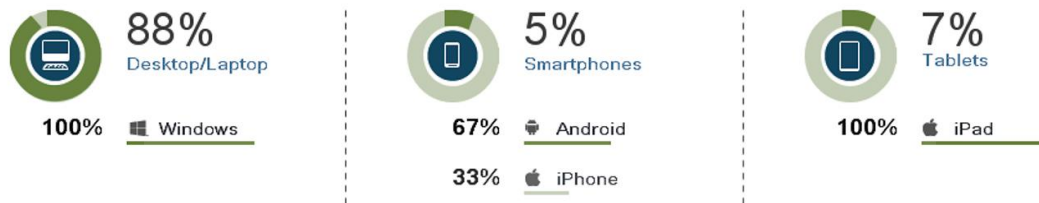
Table 13: Comparison between Managing Virtual Team and Local Teams in relation to Working outside of home country

- From Table 13 a comparison was made between working offshore with Virtual Teams (or onshore with local teams) in relation to working overseas outside of the home country (or in the home country only).
- The comparison indicated that:
 - 50% of the overall group of respondents managed only local onshore teams and not Virtual offshore teams in other countries.
 - 33.1% of the overall group of respondents worked did however worked for long periods in other countries outside their home country.
 - 63.2% of the subgroup of respondents relocated to another country and is working only with the local onshore teams of that country, not Virtual offshore teams from other countries also.
 - Only 26.7% of the subgroup of respondents managed virtual offshore teams while working outside of their home country (relocated from their home countries).
- It can be concluded from the comparison table that:
 - The majority of people surveyed working with local onshore teams only.
 - However, many respondents did indicate that they have been involved with work outside of their home country.
 - The minority of people surveyed worked with Virtual Teams and outside of their home countries.
 - Similar to the previous comparison (Table 12), people who worked outside of their home countries have the advantage over those that worked only inside their home countries. There cultural understanding and adaptability in a new country will be much easier that those that experience it for the first time.
 - Furthermore, people who managed Virtual Offshore team while being outside of their home countries also have the advantage of understanding not only the cultural differences that need to be taken into account, but also the Information Technologies that are involved.

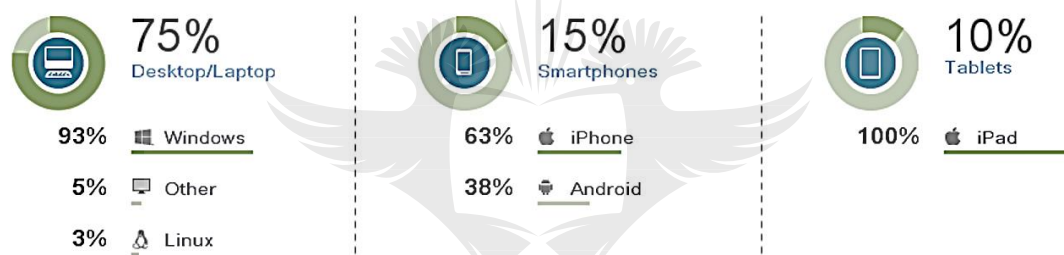
4.1.4 Use of Information Technology Devices

- Part of Virtual Teamwork involves the correct use of Information Technology. The current trend is to be able to make use of mobile devices as part of one's work environment.
- From the survey data, the following summary can be made on the use of electronic Information Technology devices:

Devices used to complete survey: Survey Group 1 (N=60, Know Group of People)



Devices used to complete survey: Survey Group 2 (N=52, Unknown Group of People)



Overall Average:	82 %	10%	9%
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Table 14: Device used for survey (Information Technology use)

- From the above data, it can be seen that an average of more than 80% of the respondents used their desktops or laptops to complete the online surveys.
- Almost 20% of the surveys were done utilizing mobile devices like smartphones or tablets.
- This provided an indication that many of the people are utilizing the current trend in mobile technology.
- It also provides an indirect reflection on people's ability to work in virtual team environments where both the desktop and laptop office equipment can be utilized together with mobile technologies.

4.1.5 Comparing Project Management Skill Level to Cultural Awareness in Project Management

Survey questions related to project management also included questions to test cultural awareness in project management:

- The respondents were asked if they believe it is important to understand Culture while leading and being part of cultural diverse teams.
- They were also asked to indicate if Cultural differences impact on team performance, which includes cross-cultural issues like miscommunication, mistrusts, and conflict.
- The question was asked if the respondents notice any problems specifically with cross-cultural communication and collaboration.
- Another question was included to test if the respondents will take in consideration cultural differences when new teams are being set up for a project.

From the survey responses obtained (from both surveyed groups), it was clear that almost all respondents believe that culture does influence project management and should be taken in account in a project where culturally diverse teams are involved.

4.1.6 Descriptive Statistical Analysis:

The following Descriptive Statistical Analysis compares the Project Management Skill Level of the respondents to their Cultural Awareness in Project Management. The following section describes the calculation methods used in determining the final results for analysis.

4.1.6.1 Calculation of Project Management Skill Level

The Project Management Skill Level of the respondents were calculated from:

- The number of years of experience in project management and;
 - A score rating from 1 to 6 has been allocated for the number of years of experience in project management. A score of 1 was given for one year or less experience in project management while a score of 6 was given for 30 years or more experience in project management.
- Project management training skills level (postgraduate degree in project management, certification in project management, formal training course or only a basic understanding of project management).
 - A score rating from 1 to 5 has been allocated for the training skills level in project management. A score of 1 was given if the respondent has only very

limited understanding of project management while a score of 5 was given if the respondent had a postgraduate degree in project management.

4.1.6.2 Calculation of Cultural Awareness in Project Management

The cultural awareness in project management was calculated from five questions that were asked in an online survey. This score ratings for each question can be summarized as follows:

1) **Considering CQ in Project Management:**

- A score of 1 was given if the respondents indicated that it was important to have a proper understanding of Culture while leading or being part of culturally diverse teams.
- A score of 0 was given if the response given indicated that it was not important to have any understanding of culture while leading or being part of culturally diverse teams.

2) **Observation of Cultural impacts on team performance during a Project**

- A score of 0 to 4 was given for the question related to the number of times it is noticed that cultural differences impact on team performance.
- A score of 0 was given if it is only noticed once a year that culture impacts on team performance.
- A score of 4 was given if the respondents indicated that they were aware of cultural differences and impacts on team performance on a daily basis. This question directly relates to the CQ Scale developed by S. Ang, L. v Dyne and D. Livermore [41]. CQ-Drive, CQ-Strategy and CQ-Action all form part of a person's ability to observe cultural differences and to be able to make strategic decisions to adapt to the difference of cultures in the work environment.
- It is, therefore, argued that a person who only notices cultural differences and impacts once a year, has a low Culturally Intelligent level then the person who is aware of cultural differences and impacts on a daily basis. The logic that is being applied here, is to state that people who have high Cultural Intelligence levels will be focusing on a daily basis to detect if there are any cultural differences and impacts to be aware of and to be resolved while working in a culturally diverse work environment.

3) **Taking in account CQ in setting up Culturally Diverse Teams**

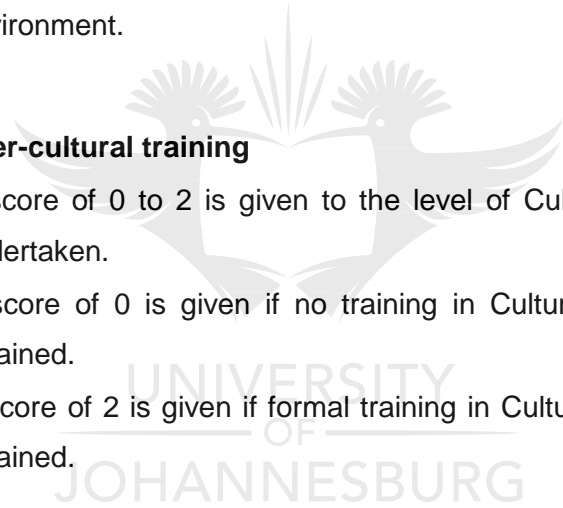
- A score of 0 to 3 was given to the response if cultural differences are being taken in account when setting up culturally diverse teams for a new project.
- A score of 0 is given if the response stated that it was not taken in account at all.
- A score of 3 is given if the response stated that it would always be taken in account.

4) **Notice Communication and collaboration issues across cultures**

- A score of 0 or 1 is given if it is noticed or not that culture impacts on communication and collaboration in a culturally diverse team environment.

5) **Received inter-cultural training**

- A score of 0 to 2 is given to the level of Cultural Intelligence training undertaken.
- A score of 0 is given if no training in Cultural Intelligence has been obtained.
- A score of 2 is given if formal training in Cultural Intelligence has been obtained.



4.1.6.3 Results from the online survey data

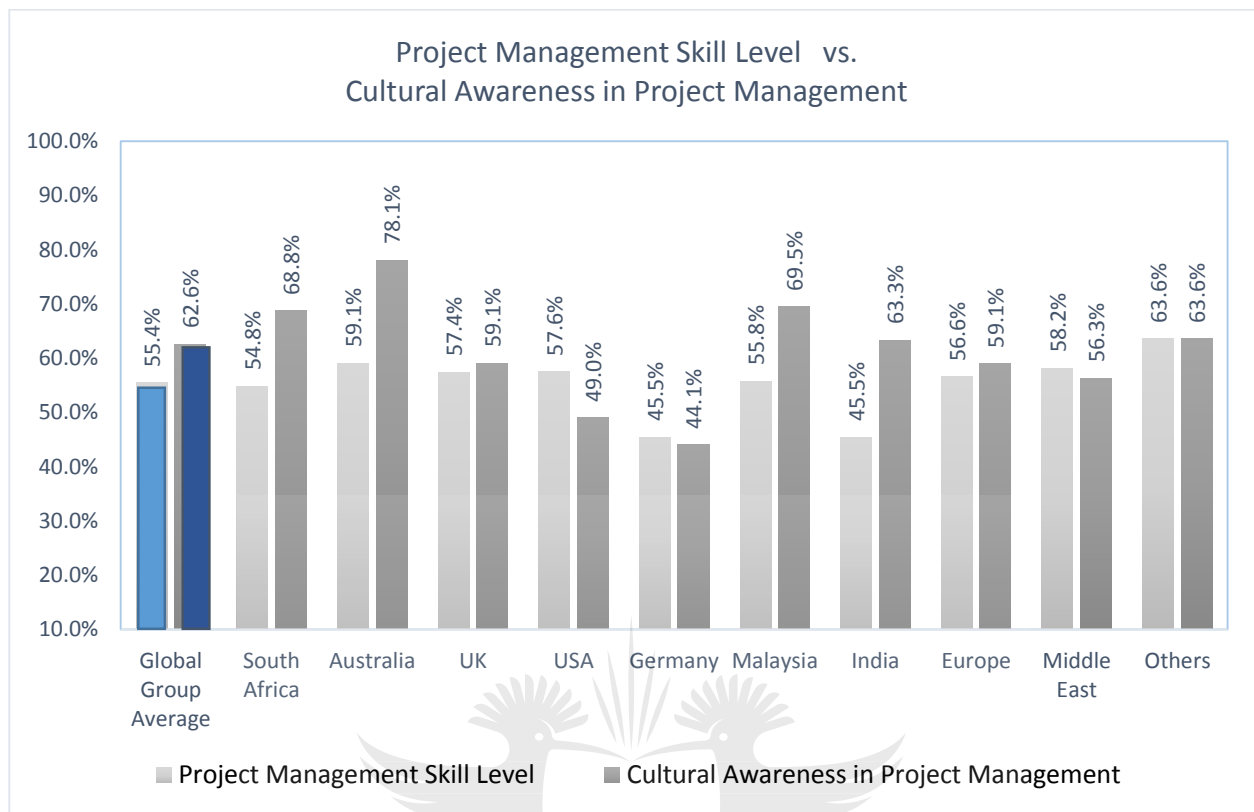


Figure 16: Summary of Project Management skill level vs. Cultural Awareness in Project Management

- From Figure 16 and Table 15, it is noticed that Germany rates the lowest in comparison to all other countries surveyed. For the German-born respondents surveyed, their average Project Management Skill Level is only at 45.5% (similar to India), and their Cultural Awareness average in project management is only at 44.1%. By looking at Figure 17 which reflects Hofstede's Cultural Dimensions for Germany, it can be noticed that the Individualism, Masculinity, and Uncertainty Avoidance dimensions all rank above average compared to other countries. This indicates that Germany is a highly individualistic society as well as a competitive one where the self-realization of the individual account in the work environment. The Germans are also very much focused on detail, precision, and planning. This to avoid uncertainty and risk.
- These Cultural Dimension Values of Hofstede, together with a cultural history that was shaped by two World Wars that isolated Germany for a long period from the rest of the world, may help to explain in part the reason the Germans' cultural awareness in project management is ranked low. Germans may function in their work environment within Germany mostly as a mono culture with fewer influences from other cultures. It is also in

part related to the fact that the Germans surveyed have not all worked outside of Germany to the same extent as other respondents surveyed from other countries.

- Germans' low project management skill level may be attributed to the fact that the specific group surveyed had a below average experience in project management. This may not be true for all Germans to have a low project management skill level. In contrast, this is reflected in the fact that many projects undertaken by Germans that involves project management were successful managed.
- The Germans' lowest score in cultural awareness in project management is, however, important to note as part of the outcome of the survey data.

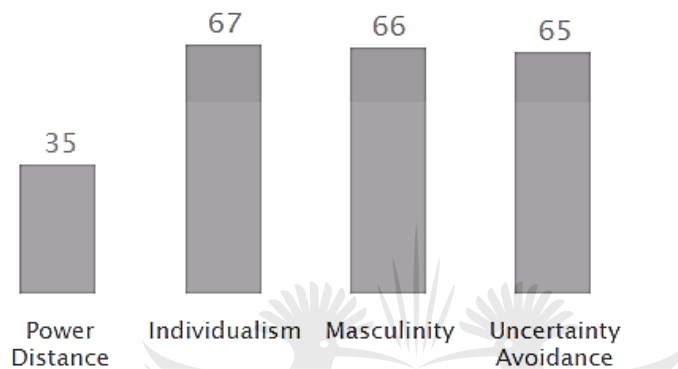


Figure 17: Hofstede's Cultural Dimensions for Germany [2] [87]

- From the overall group of countries surveyed, Australia ranks the highest in terms of cultural awareness in project management.
- South Africa, Malaysia, and India rank the second highest in cultural awareness in project management.
- All the remaining countries surveyed rank slightly below the global average of all countries in terms of cultural awareness in project management.
- Most of the countries surveyed have a project management skill level close to the global average of the group.

N=110	Global Group Average	South Africa	Australia	UK	USA	Germany	Malaysia	India	Europe	Middle East
Project Management Skill Level	55.4%	54.8%	59.1%	57.4%	57.6%	45.5%	53.8%	45.5%	56.6%	58.2%
Cultural Awareness in Project Management	62.6%	68.8%	78.1%	59.1%	49.0%	44.1%	69.5%	63.3%	59.1%	56.3%
Considering CQ in Project Management	92.0%	93.3%	100.0%	89.5%	91.7%	88.9%	100.0%	80.0%	88.9%	80.0%
Observation of Cultural impacts during a Project	59.2%	68.3%	65.6%	52.6%	31.3%	50.0%	64.3%	60.0%	69.4%	65.0%
Taking in account CQ in setting up Culturally Diverse Teams	65.5%	68.9%	75.0%	61.4%	55.6%	37.0%	76.2%	66.7%	59.3%	86.7%
Notice Communication issues across cultures	71.4%	90.0%	100.0%	63.2%	41.7%	44.4%	71.4%	80.0%	66.7%	40.0%
Received inter-cultural training	25.0%	23.3%	50.0%	28.9%	25.0%	0.0%	35.7%	30.0%	11.1%	10.0%

Table 15: Summary table - comparison of Project Management Skill Level vs Cultural Awareness in Project Management

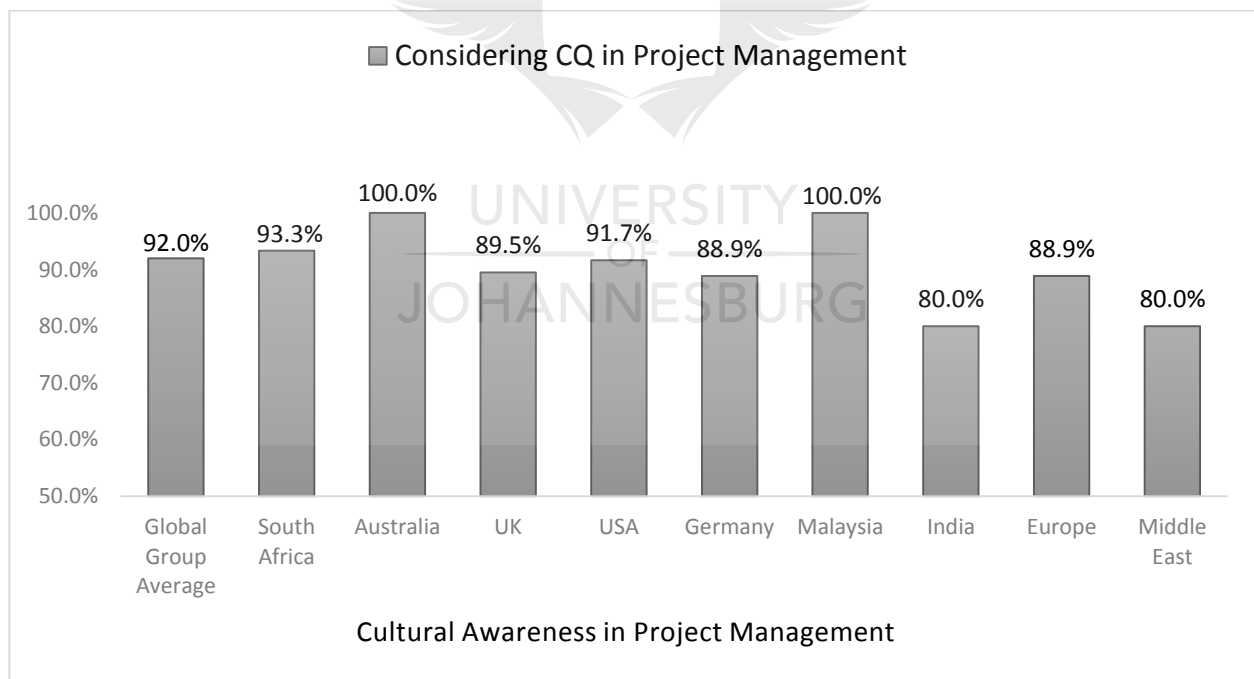


Figure 18: Summary - CQ be considered in Project Management

- Figure 18 indicates that most countries do consider cultural differences in project management and he is aware of Cultural differences impact on project management.

- Both Australia and Malaysia (from same region of the world, but representing both western and eastern cultures), have indicated in the survey that they are taking cultural differences in project management fully in account (100%).
- India and the Middle East ranks the lowest (80%) and are below the global group average.
- All other countries rank close to the global group average (92%).
- South Africa ranks (93.3%), slightly above the global group average.

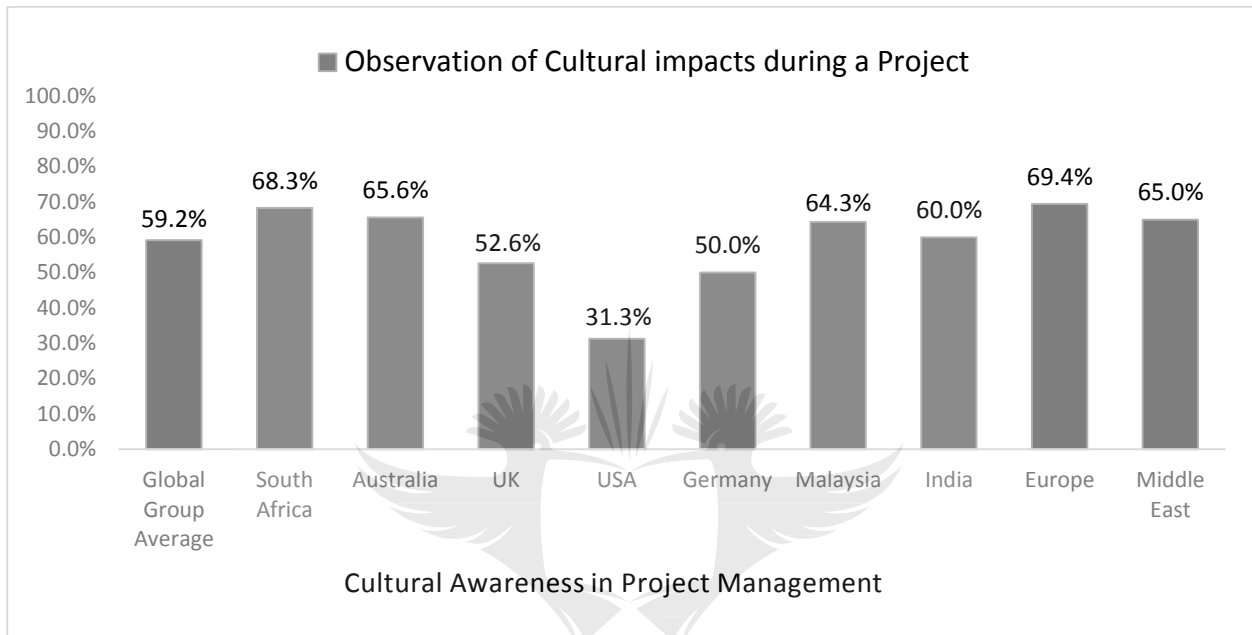


Figure 19: Summary - cultural impacts team performance as observed during a project

- From Figure 19 the USA ranks the lowest (31.3%) compared to all the countries surveyed. From the previous Figure 16 the USA ranked high in terms of considering cultural differences in project management. This may imply that the USA respondents surveyed are aware that cultural differences exists in project management but may not be directly focusing on observing Cultural impacts on team performance project management.
- Europe ranked the highest (69.4%) in terms of observing cultural impacts on team performance in project management.
- South Africa, Australia, Malaysia and the Middle East all ranked second highest (>64%) and above the global group average (59.2%).

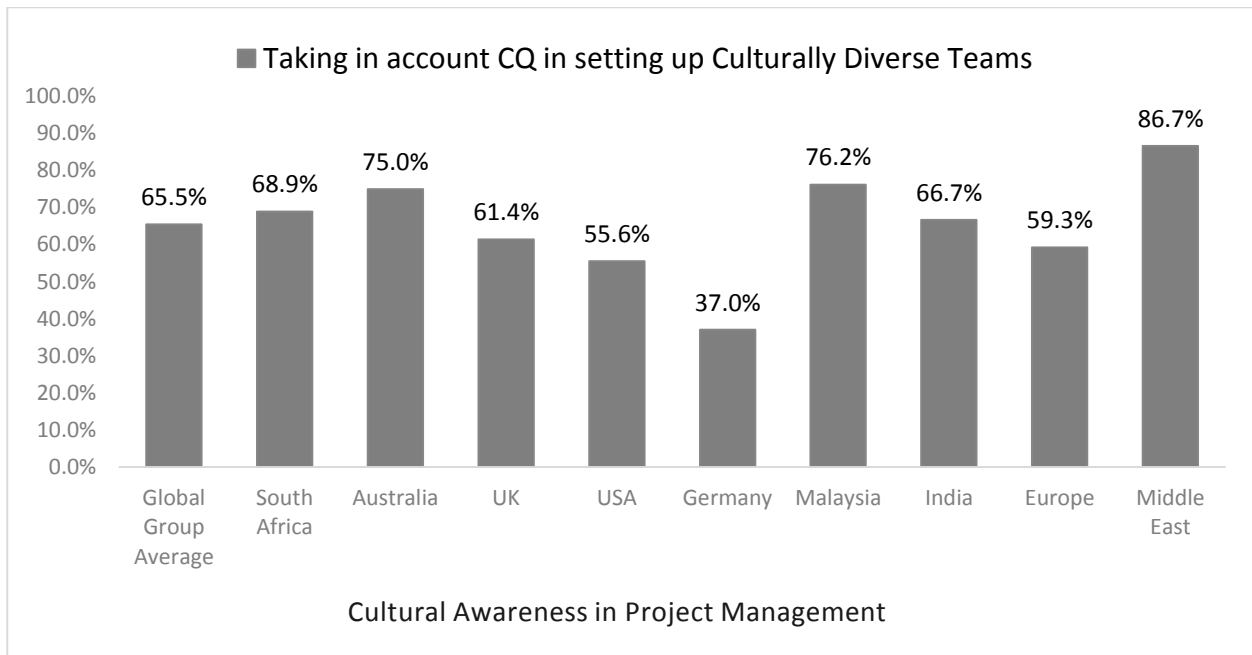


Figure 20: Summary - CQ is taken into account to setup Culturally Diverse teams for a new project.

- From Figure 20 it can again be seen that Germany ranks the lowest (37%) of all the countries surveyed.
- The Middle East ranked the highest at 86.7%. This reflects the reality that the work environment in the Middle East countries is very culturally diverse. As a result, many companies HR Departments will be focusing on hiring people from various cultures across the world and the Middle East. However, this does not mean that these companies always fully consider cultural intelligence as part of hiring people from different cultures.
- Australia and Malaysia ranked the second highest (>75%), while South Africa the UK and India ranked the third highest (>60%).

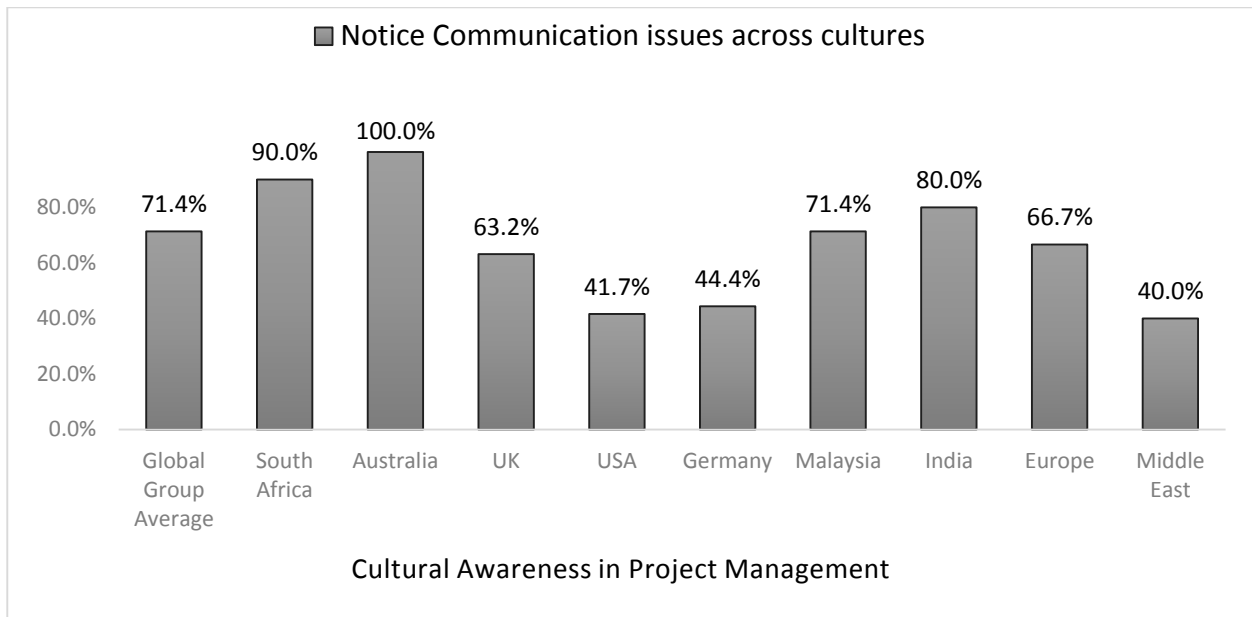


Figure 21: Summary - communication and collaboration issues notice across cultures

- From Figure 21 it is noticed that Australia ranks the highest (100%), followed by South Africa (90%) and India (80%) in the third place. All three these countries are high above the global group average (71.3%).
- The Middle East ranks the lowest (40%), followed by the USA (41.7%) and Germany (44.4%).
- The low rank of the Middle East may be contributed to the fact that the very culturally diverse working environments in the Middle East consist of various languages being used from all over the world (and not only Arabic). The result of this is that many Middle Eastern people surveyed may not observe or take full notice of any communication issues related to cultural differences. They may assume that the communication issues only relate to language issues (misinterpretation) and not also the underlying cultural differences that can contribute to miscommunication.
- From both Figure 18 and Figure 19, the USA ranks low in terms of observing cultural influences in project management. This may be attributed to the fact that most of the USA respondents also surveyed have not worked outside of the USA. They may, therefore, have not developed their Cultural Intelligence enough to detect and observe these cultural influences in project management.
- Malaysia ranks equally with the global group average (71.4%), while the UK (63.2%) and Europe (66.7%) is slightly below the global group average.

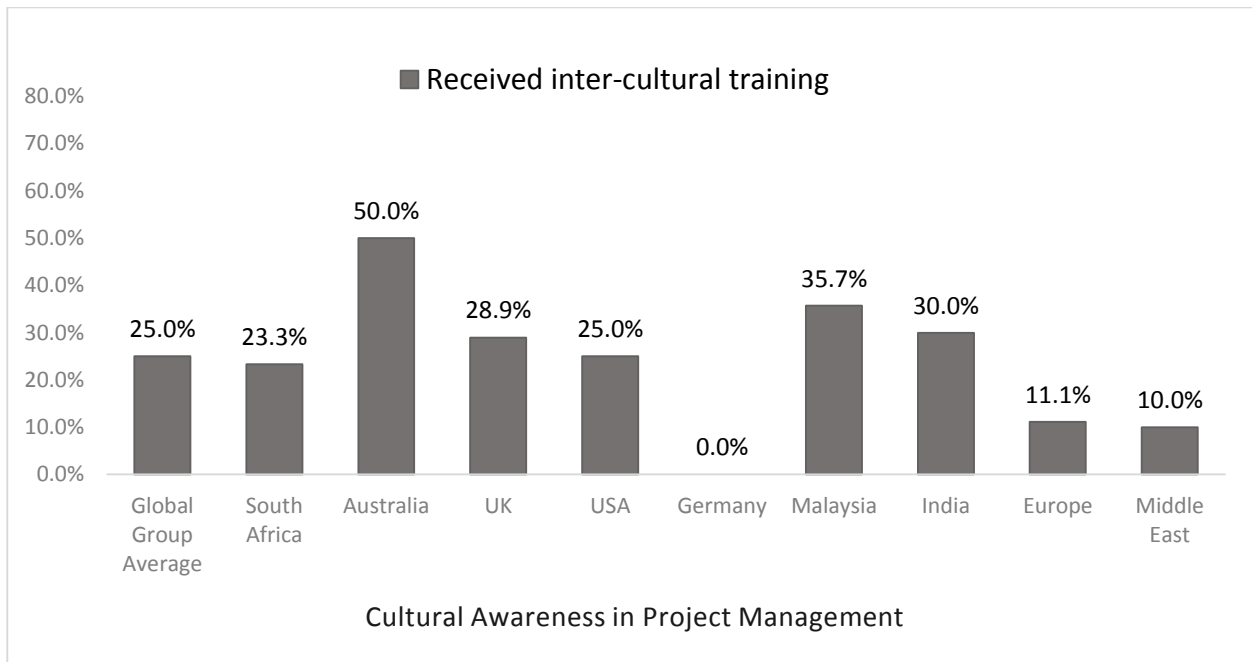


Figure 22: Summary of results on inter-cultural (CQ) training received.

- From Figure 22 it is noticed that most of the countries ranks very low in terms of receiving inter-cultural training.
- Australia ranked too high us at 50%, followed by Malaysia second (35.7%), then India (30%), UK (28.9%) and the USA (25%) close to the global group average (25%).
- South Africa (23.3%) was slightly below the global group average (25%).
- Germany indicated that no inter-cultural training has been received (0%)
- Both Europe (11.1%) and the Middle East (10%) ranked second lowest.
- From the above, it is clear that most countries do not undertake formal intercultural training, and it is not been put as a priority by many companies that have culturally diverse teams. It can also be assumed that for certain countries the teams are not all culturally diverse to place a focus on undertaking inter-cultural training.

4.1.6.4 Cultural Intelligence (CQ Scale measurement)

- The following section describes and summarizes the survey findings made on the level of understanding that the survey respondents have on Cultural Intelligence and Emotional Intelligence.
- The Cultural Intelligence ratings were calculated using the 20-question survey (CQ Scale) developed by Soon Ang and Linn van Dyne [41]. This determines a person's Cultural Intelligence level based on 4 main Cultural Factors (as describe in the Literature Review, Part 2):
 - Overall Cultural Intelligence (CQ) Score = CQ-Drive (Motivation) + CQ-Knowledge (Cognitive) + CQ-Strategy (Metacognitive) + CQ-Action (Behaviour)
- The Emotional Intelligence ratings were calculated using the questionnaire developed by Linac [60]. The questions related to the 5 Emotional Intelligence Factors as per Coleman [28] [29]:
 - Overall Emotional Intelligence (EQ) Score = EQ-Self Awareness + EQ-Self Regulation + EQ-Self Motivation + EQ-Social Awareness + EQ-Relationship Management (Social Skill)

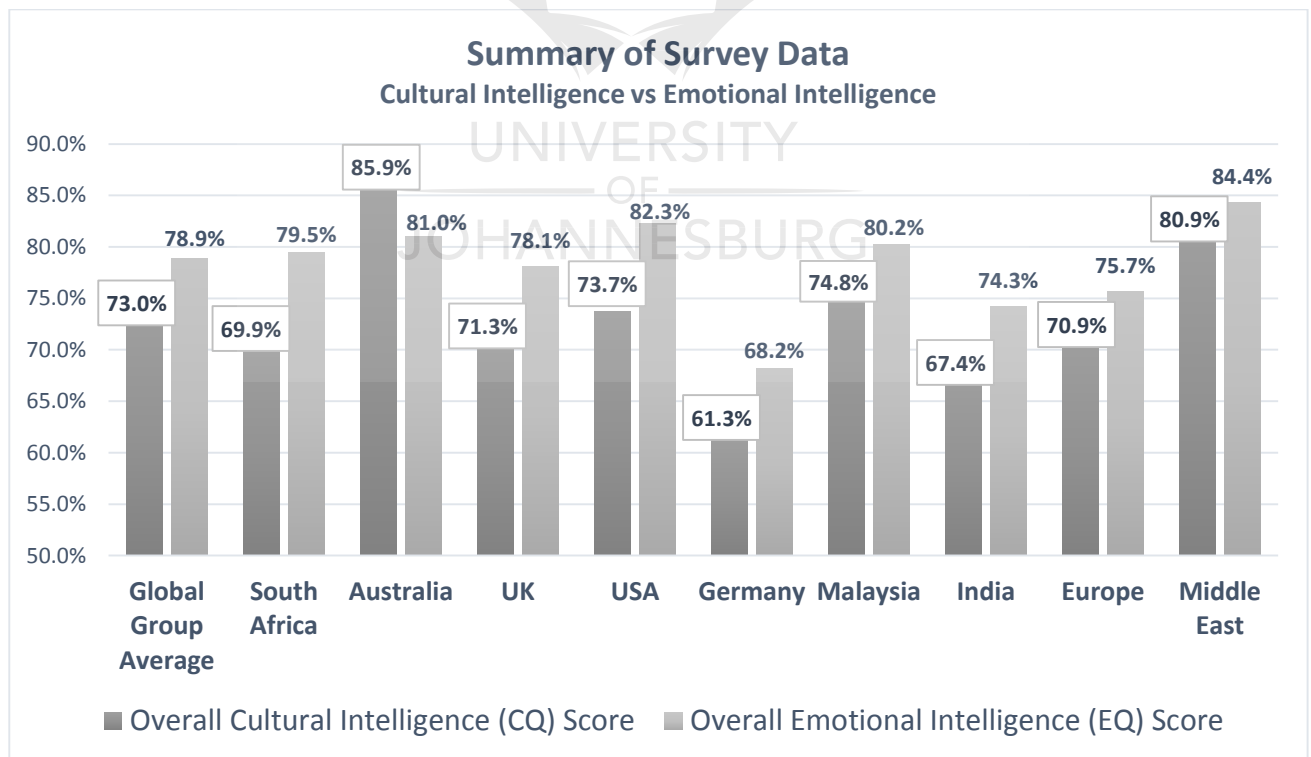


Figure 23: Summary of Survey - Overall Cultural Intelligence vs Overall Emotional Intelligence

- From Figure 23 the following findings have been made on the Cultural Intelligence Scores:

- The Global Group Average for Cultural Intelligence is 73%.
- Australia ranks the highest in Cultural Intelligence (85.9%) followed by the Middle East at 80.9%.
- Looking at the various score ratings for Cultural Intelligence (CQ-Drive, CQ-Knowledge, CQ-Strategy and CQ-Action), the Australians did score themselves higher than other countries. This may be contributed to their cultural preference to be very individualistic and competitive. Looking at Hofstede's Cultural Dimensions (Figure 24), it can be seen that the Australian Culture is a highly Individualistic and competitive (Masculine) culture that is based on the achieved status of individuals. As a result, self-assessments may be completed with higher than average scores.

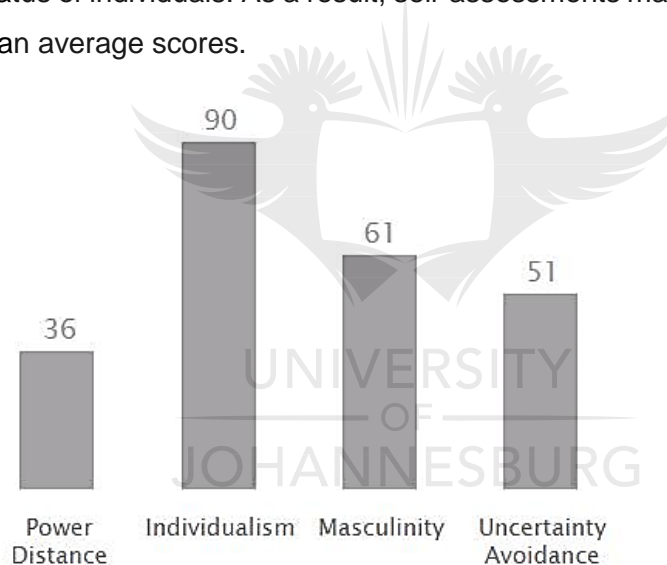


Figure 24: Hofstede's Cultural Dimensions for Australia [2] [88]

- Germany ranks the lowest (61.3%) in Cultural Intelligence.
- Compared to the Australians, the Germans have less of an Individualistic culture (See Figure 25 for Hofstede's Cultural Dimension of Germany), and this may be contributing to ranking themselves at a lower level.
- However, this remains an assumption, and it should be concluded that the Australians surveyed do have a higher Cultural Intelligence rating than the Germans. It can also be attributed to other factors like the fact that Australia may obtain more Cultural Intelligence experience while working outside of Australia.

- South Africa (69.9%), UK (71.3%), India (67.4%) and Europe (70.9%) rank slightly below the global group average (73%).

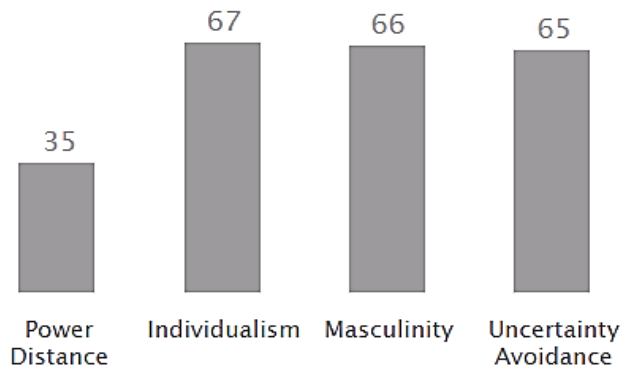


Figure 25: Hofstede's Cultural Dimensions for Germany [2] [87]

4.1.6.5 Results for the 4 Cultural Factors in the CQ Scale

- The following Figure 26 is a summary of the results of the 4 Cultural Factors in the CQ Scale.
- These factors are:

CQ-Drive (Motivation)

CQ-Knowledge (Cognitive)

CQ-Strategy (Meta-Cognitive)

CQ-Action (Behaviour)

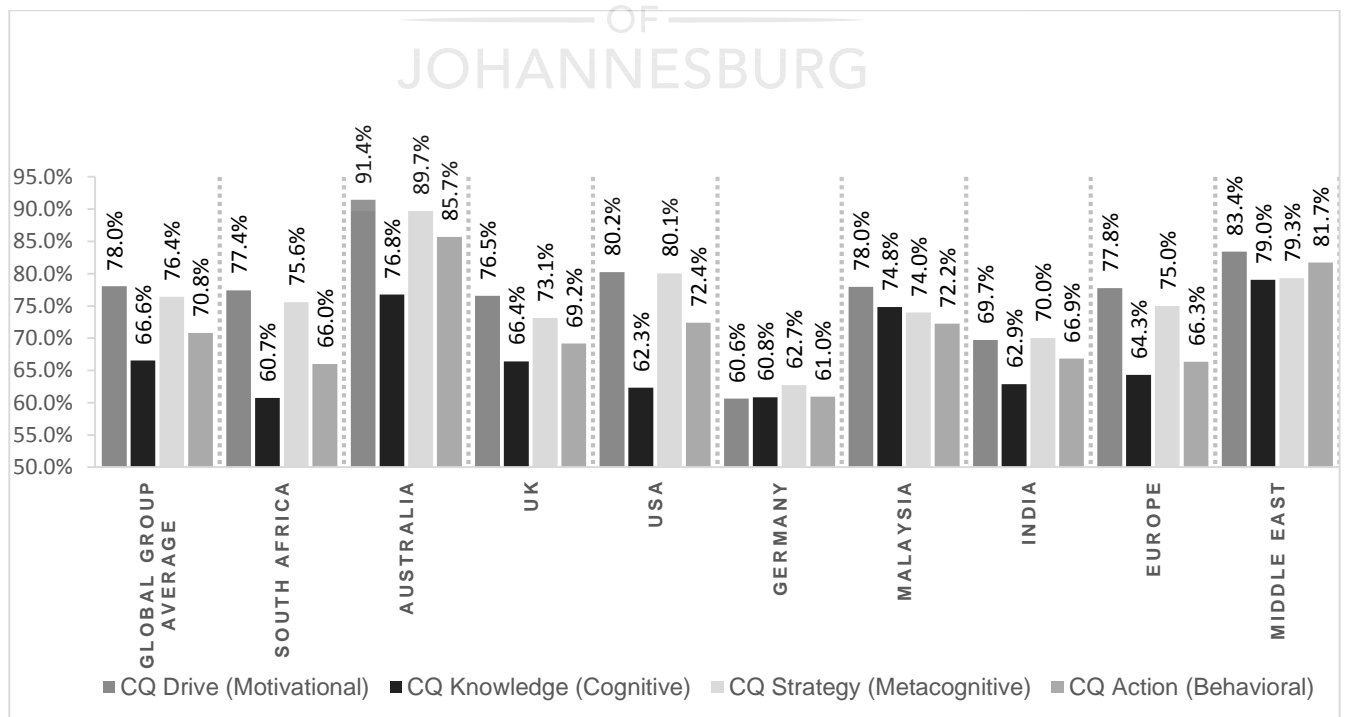


Figure 26: Graphical summary of results for the 4 Cultural Factors in the CQ Scale

	Global Group Average	South Africa	Australia	UK	USA	Germany	Malaysia	India	Europe ^b	Middle East
Sample Size	n = 110 ^a	n = 30	n = 8	n = 19	n = 12	n = 9	n = 7	n = 5	n = 9	n = 5
Overall Cultural Intelligence (CQ) Score	73.0%	69.9%	85.9%	71.3%	73.7%	61.3%	74.8%	67.4%	70.9%	80.9%
CQ Drive (Motivational)	78.0%	77.4%	91.4%	76.5%	80.2%	60.6%	78.0%	69.7%	77.8%	83.4%
CQ Knowledge (Cognitive)	66.6%	60.7%	76.8%	66.4%	62.3%	60.8%	74.8%	62.9%	64.3%	79.0%
CQ Strategy (Metacognitive)	76.4%	75.6%	89.7%	73.1%	80.1%	62.7%	74.0%	70.0%	75.0%	79.3%
CQ Action (Behavioral)	70.8%	66.0%	85.7%	69.2%	72.4%	61.0%	72.2%	66.9%	66.3%	81.7%

Table 16: Tabled summary of results for the 4 Cultural Factors in the CQ Scale

Notes: a - Some surveys (Canada, Fiji, Zimbabwe, Sri Lanka) excluded due to limited survey responses (1 each).

b – Europe: Ireland (3), Yugoslavia (1), Netherland (1), Greece (1), Poland (1), Russia (1), Austria (1)

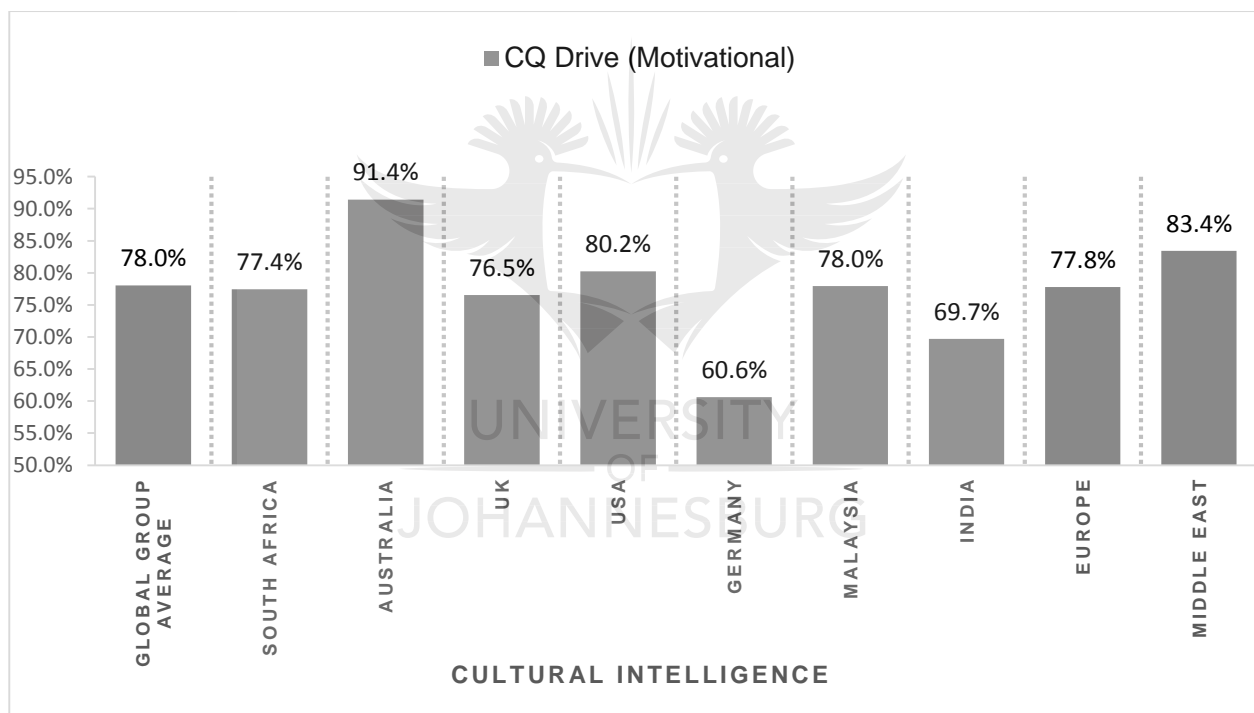


Figure 27: Summary of results for CQ-Drive (Motivation)

- Global group average is 78%.
- Australia ranks the highest (91.4%), followed by the Middle East (83.4%) second and the USA (80.2%) in the third place.
- Germany ranks the lowest (60.6%).
- South Africa (77.4%), UK (76.5%), Malaysia (78%) and Europe (77.8%) rank close to the global group average.
- It is concluded that Australia, the Middle East, and USA have a higher than average CQ-Drive (Motivation) than the other countries surveyed.

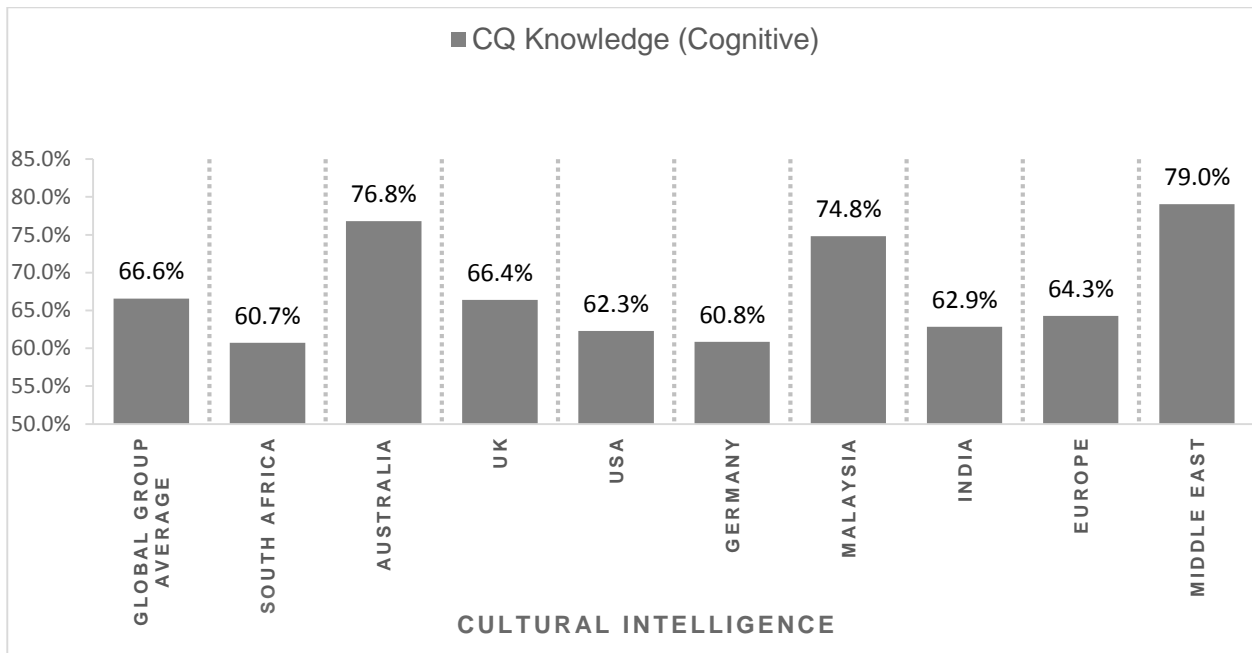


Figure 28: Summary of results for CQ-Knowledge (Cognitive)

- Global group average is 66.6%.
- The Middle East ranks the highest (79%), followed by Australia (76.8%) second and Malaysia (74.8%) in the third place.
- South Africa ranks the lowest (60.7%), close to Germany (60.8%)
- The UK (66.4%) ranks close to the global group average, while the USA (62.3%), India (62.9%) and Europe (64.3%) are slightly below the global group average.
- It is concluded that the Middle East, Australia, and Malaysia have the higher than average CQ-Knowledge (Cognitive) capability than the other countries surveyed.

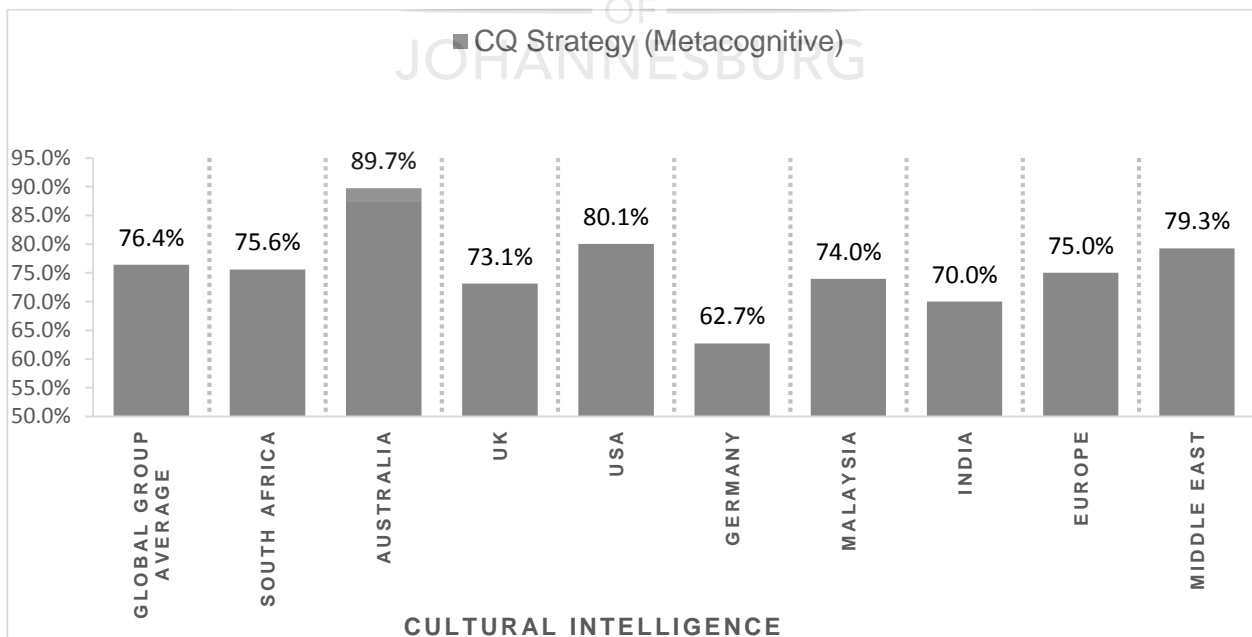


Figure 29: Summary of results for CQ-Strategy (Meta-Cognitive)

- Global group average is 76.4%.
- Australia ranks the highest (89.7%), followed by USA (80.1%) second and the Middle East (79.3%) in the third place.
- Germany ranks the lowest (62.7%)
- South Africa (75.6%), UK (73.1%), Malaysia (74%) and Europe (75%) ranks slightly below the global group average.
- India (70%) is somewhat below the global group average.
- It is concluded that Australia, the USA, and the Middle East have a higher than average CQ-Strategy (Meta-Cognitive) capability than the other countries surveyed.

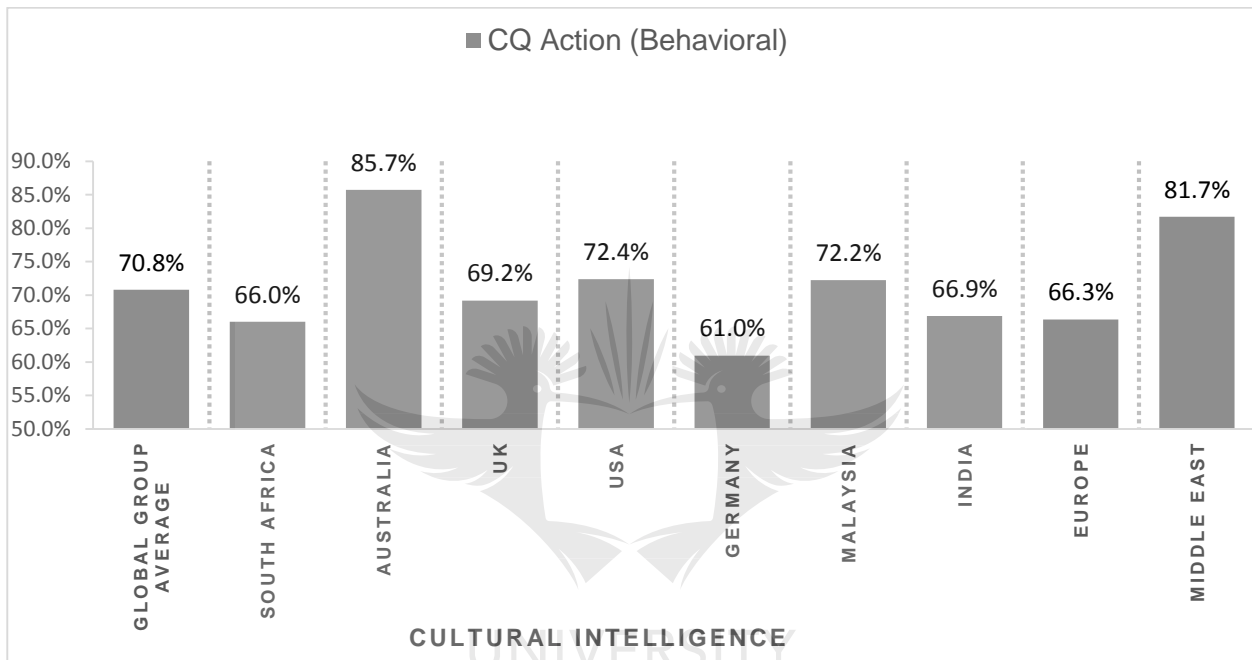


Figure 30: Summary of results for CQ-Action (Behavioural)

- Global group average is 70.8%.
- Australia ranks the highest (85.7%), followed by the Middle East (81.7%) second.
- Germany ranks again the lowest (61%)
- The USA (72.4%) and Malaysia (72.2%) rank third just above the global group average.
- South Africa (66%), UK (69.2%), India (66.9%) and Europe (66.3%) ranks slightly below the global group average.
- It is concluded that Australia and the Middle East have a higher than average CQ-Action (Behavioural) capability than the other countries surveyed.

	Overall Rank				
	1	2	3	4	5
CQ Drive (Motivational)	Australia	Middle East	USA	Malaysia	Europe
CQ Knowledge (Cognitive)	Middle East	Australia	Malaysia	UK	Europe
CQ Strategy (Metacognitive)	Australia	USA	Middle East	South Africa	Europe
CQ Action (Behavioral)	Australia	Middle East	USA	Malaysia	UK

Table 17: CQ Scale - Top 5 rankings of countries surveyed

4.1.6.6 Cultural Skill Capabilities (Cultural Judgment, Decision Making, Task Performance and Adaptability)

Using the CQ Scale to combine the CQ results from the 20-question Cultural Intelligence Scale, 3 additional measures (outcomes) [27] that reflect on a person's Cultural Intelligence level and efficiency can be calculated.

These 3 additional measures are a person's culturally sensitive Judgment and Decision Making abilities, their Task Performance and Cultural Adaption ability. These 3 additional measures are calculated using the combined scores of the 4 Cultural Intelligence Factors as follow:

- Cultural Judgment and Decision Making ability = CQ-Knowledge + CQ-Strategy
- Cultural sensitive Task Performance = CQ-Strategy + CQ-Action (Behaviour)
- Cultural Adaption = CQ-Drive (Motivation) + CQ-Action (Behaviour)

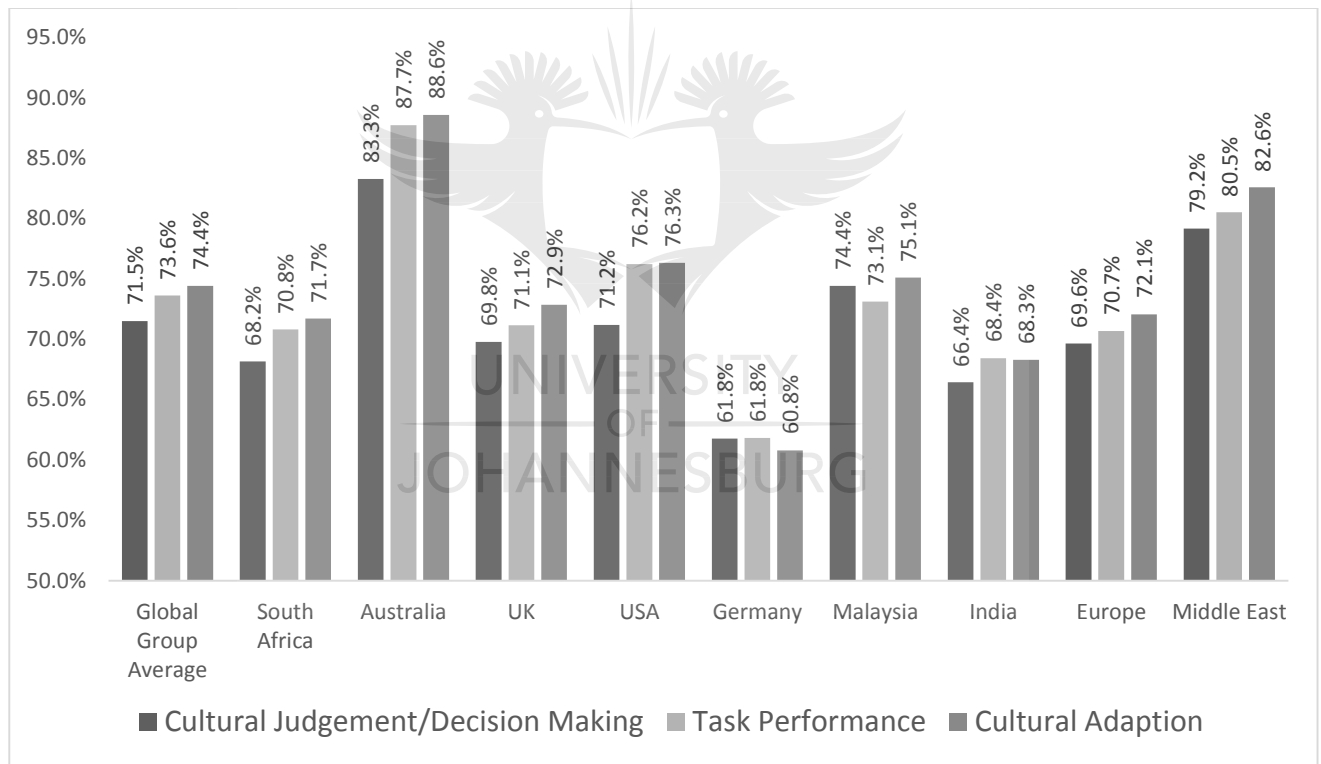


Figure 31: Graphical Summary of result for Cultural Intelligence Skills

- Australia ranks the highest followed by the Middle East and USA with Malaysia

	Global Group Average	South Africa	Australia	UK	USA	Germany	Malaysia	India	Europe	Middle East
Sample Size	n = 110	n = 30	n = 8	n = 19	n = 12	n = 9	n = 7	n = 5	n = 9	n = 5
Overall Cultural Intelligence (CQ) Score	73.0%	69.9%	85.9%	71.3%	73.7%	61.3%	74.8%	67.4%	70.9%	80.9%
Cultural Judgment/ Decision Making	71.5%	68.2%	83.3%	69.8%	71.2%	61.8%	74.4%	66.4%	69.6%	79.2%
Task Performance	73.6%	70.8%	87.7%	71.1%	76.2%	61.8%	73.1%	68.4%	70.7%	80.5%
Cultural Adaption	74.4%	71.7%	88.6%	72.9%	76.3%	60.8%	75.1%	68.3%	72.1%	82.6%

Table 18: Tabled summary of results for Cultural Intelligence Skills

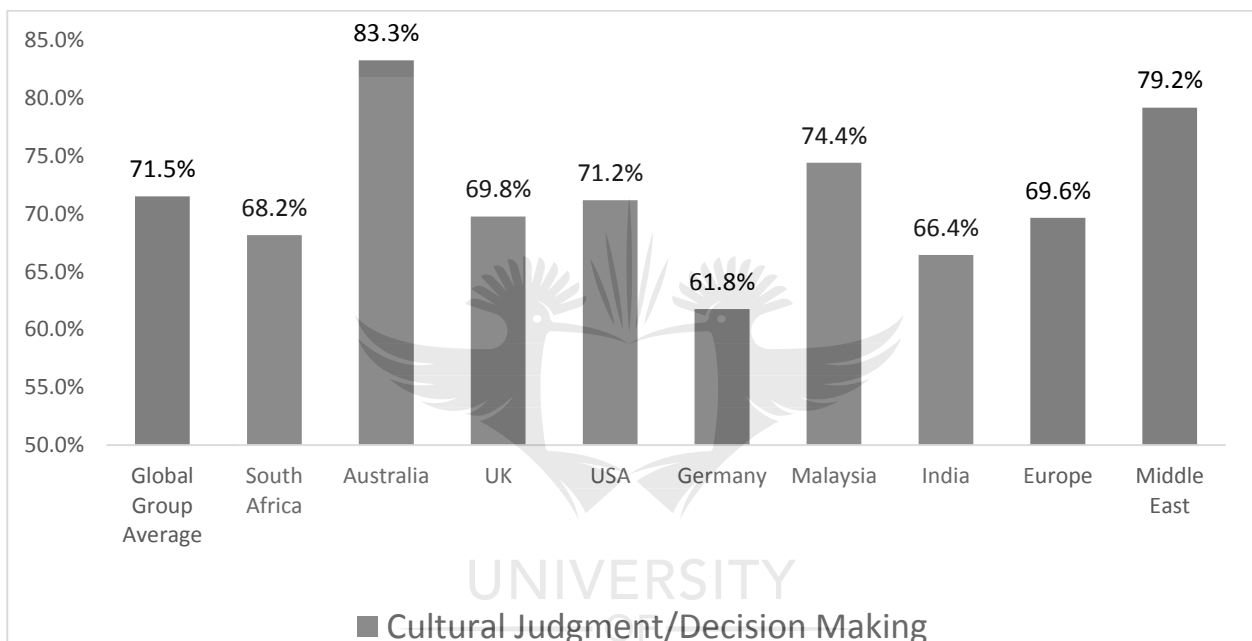


Figure 32: Summary of results for CQ-Judgment and Decision Making Capability

- Global group average is 71.5%.
- Australia ranks the highest (83.3%), followed by the Middle East (79.2%) second.
- Germany ranks again the lowest (61.8%)
- Malaysia (74.4%) rank third just above the global group average.
- South Africa (68.2%), UK (69.8%), India (66.4%) and Europe (69.6%) ranks slightly below the global group average.
- It is concluded that Australia and the Middle East have a higher than average CQ-Judgment and Decision Making capability than the other countries surveyed.

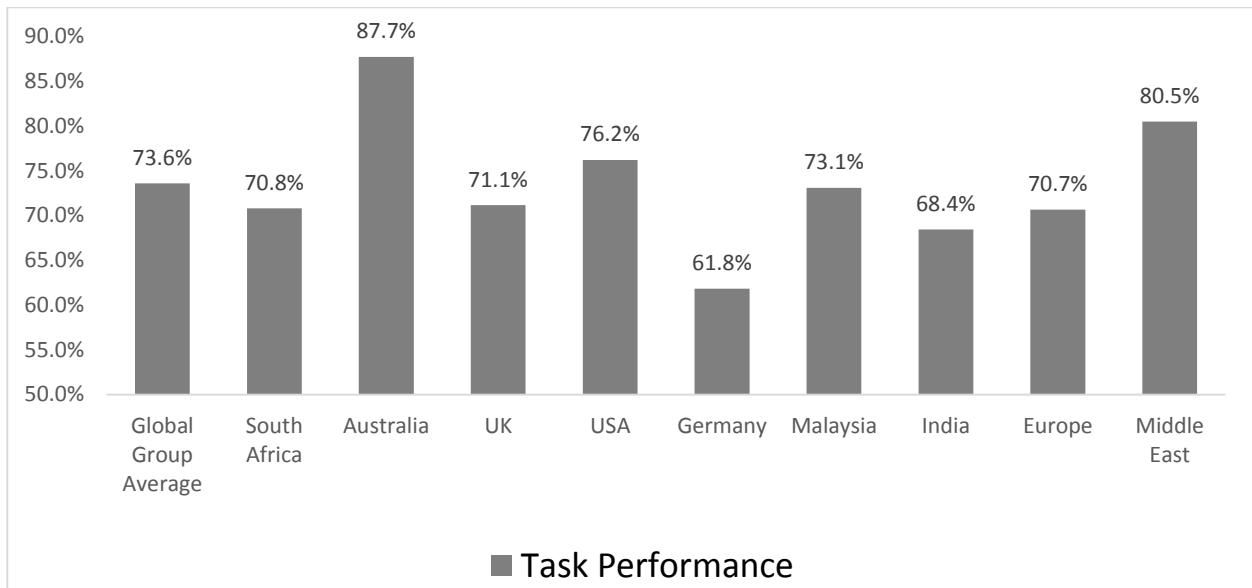


Figure 33: Summary of results for CQ-Task Performance Capability

- Global group average is 73.6%.
- Australia ranks the highest (87.7%), followed by the Middle East (80.5%) second.
- Germany ranks again the lowest (61.8%)
- USA (76.2%) rank third just above the global group average.
- South Africa (70.8%), UK (71.1%), Malaysia (73.1%), India (68.4%) and Europe (70.7%) ranks slightly below the global group average.
- It is concluded that Australia and the Middle East have a higher than average CQ-Task Performance capability than the other countries surveyed.

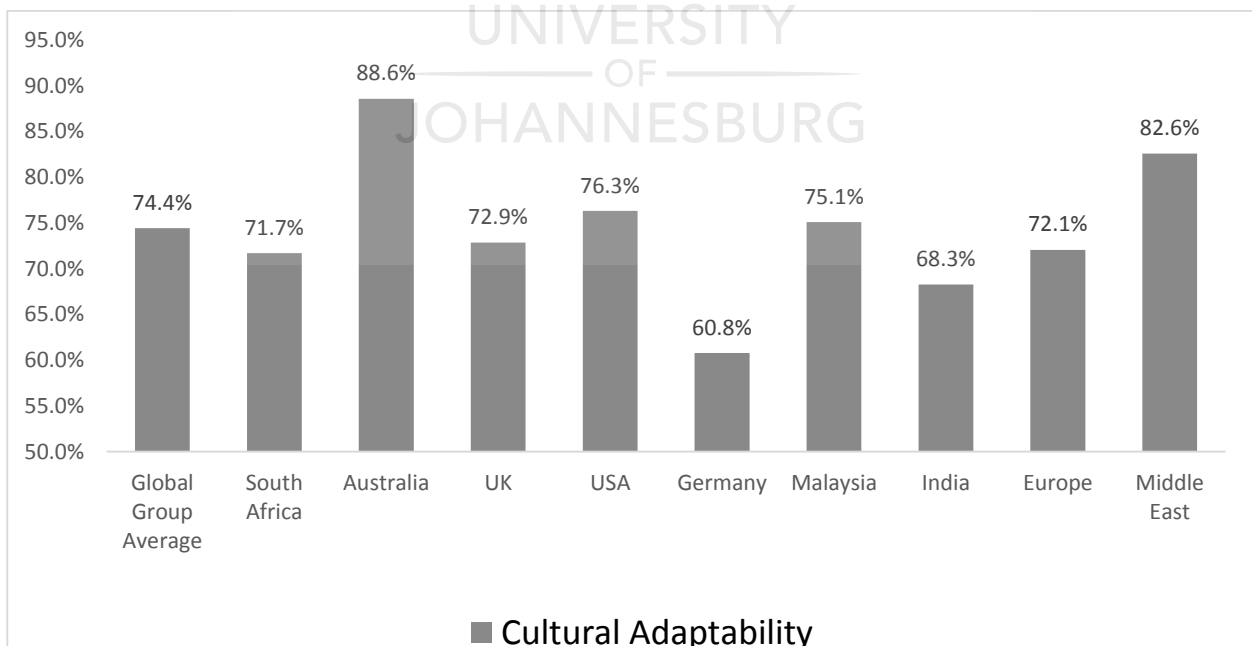


Figure 34: Summary of results for CQ-Adaptability

- Global group average is 74.4%.
- Australia ranks the highest (88.6%), followed by the Middle East (82.6%) second.

- Germany ranks again the lowest (60.8%)
- The USA (76.3%) and Malaysia (75.1%) rank third just above the global group average.
- South Africa (71.7%), UK (72.9%), Europe (72.1%) and India (68.3%) ranks slightly below the global group average.
- It is concluded that Australia and the Middle East have a higher than average CQ-Cultural Adaptability than the other countries surveyed.

	Overall Rank				
	1	2	3	4	5
Cultural Judgment/Decision Making	Australia	Middle East	Malaysia	USA	UK
Task Performance	Australia	Middle East	USA	Malaysia	UK
Cultural Adaption	Australia	Middle East	USA	Malaysia	UK

Table 19: CQ Capabilities - Top 5 rankings of countries surveyed

4.1.6.7 Emotional Intelligence

Five Emotional Intelligence factors have been measured from the online survey data. This included Self-Awareness, Self-Regulation, Self-Motivation, Social Awareness and Relationship management [28] [60].

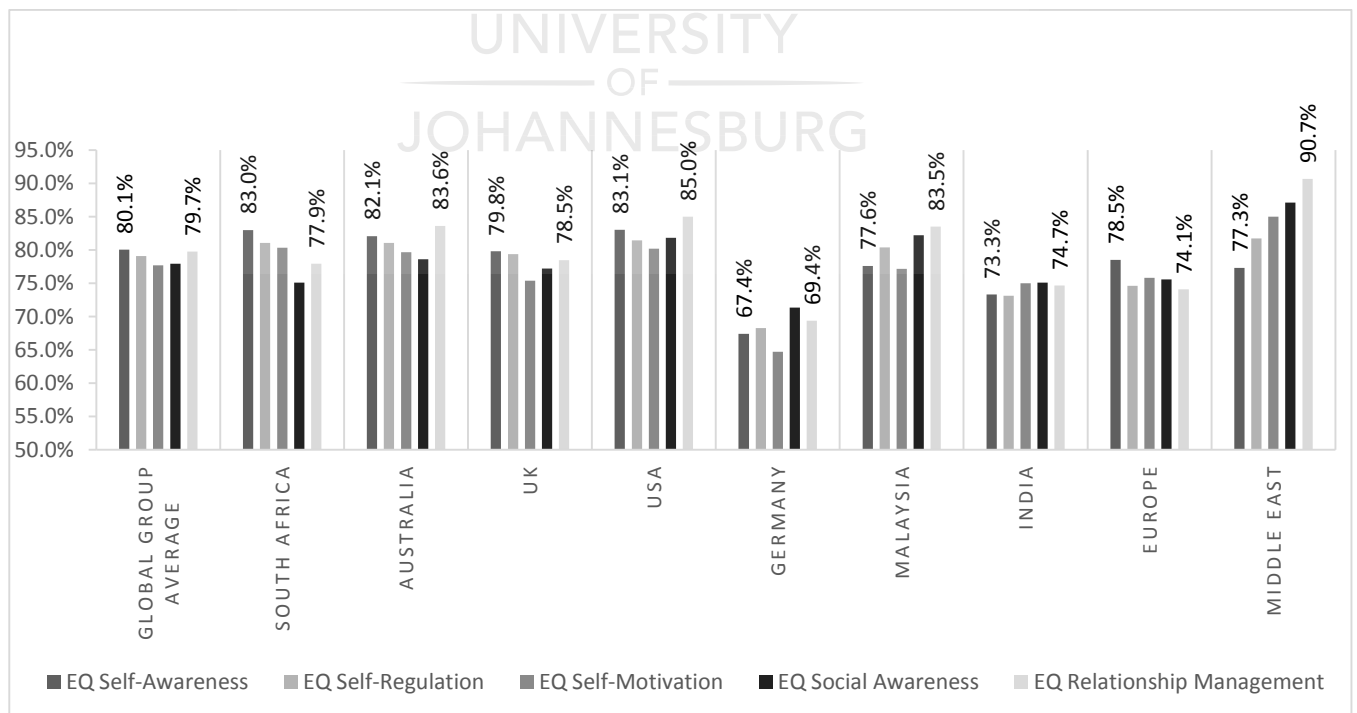


Figure 35: Graphical summary of Emotional Intelligence survey results (5 EQ Factors)

- The Middle East ranks the highest (90.7%) in EQ-Relationship Management, followed by the USA (85%).
- Germany ranks the lowest in all 5 EQ factors surveyed.

	Global Group Average	South Africa	Australia	UK	USA	Germany	Malaysia	India	Europe	Middle East
Sample Size	n = 110	n = 30	n = 8	n = 19	n = 12	n = 9	n = 7	n = 5	n = 9	n = 5
Overall Emotional Intelligence (EQ) Score	78.9%	79.5%	81.0%	78.1%	82.3%	68.2%	80.2%	74.3%	75.7%	84.4%
EQ Self-Awareness	80.1%	83.0%	82.1%	79.8%	83.1%	67.4%	77.6%	73.3%	78.5%	77.3%
EQ Self-Regulation	79.1%	81.0%	81.1%	79.4%	81.4%	68.3%	80.4%	73.1%	74.6%	81.7%
EQ Self-Motivation	77.7%	80.3%	79.7%	75.4%	80.2%	64.7%	77.1%	75.0%	75.8%	85.0%
EQ Social Awareness	77.9%	75.1%	78.6%	77.2%	81.9%	71.4%	82.2%	75.1%	75.6%	87.1%
EQ Relationship Management	79.7%	77.9%	83.6%	78.5%	85.0%	69.4%	83.5%	74.7%	74.1%	90.7%

Table 20: Tabled summary of Emotional Intelligence survey results (5 EQ Factors)

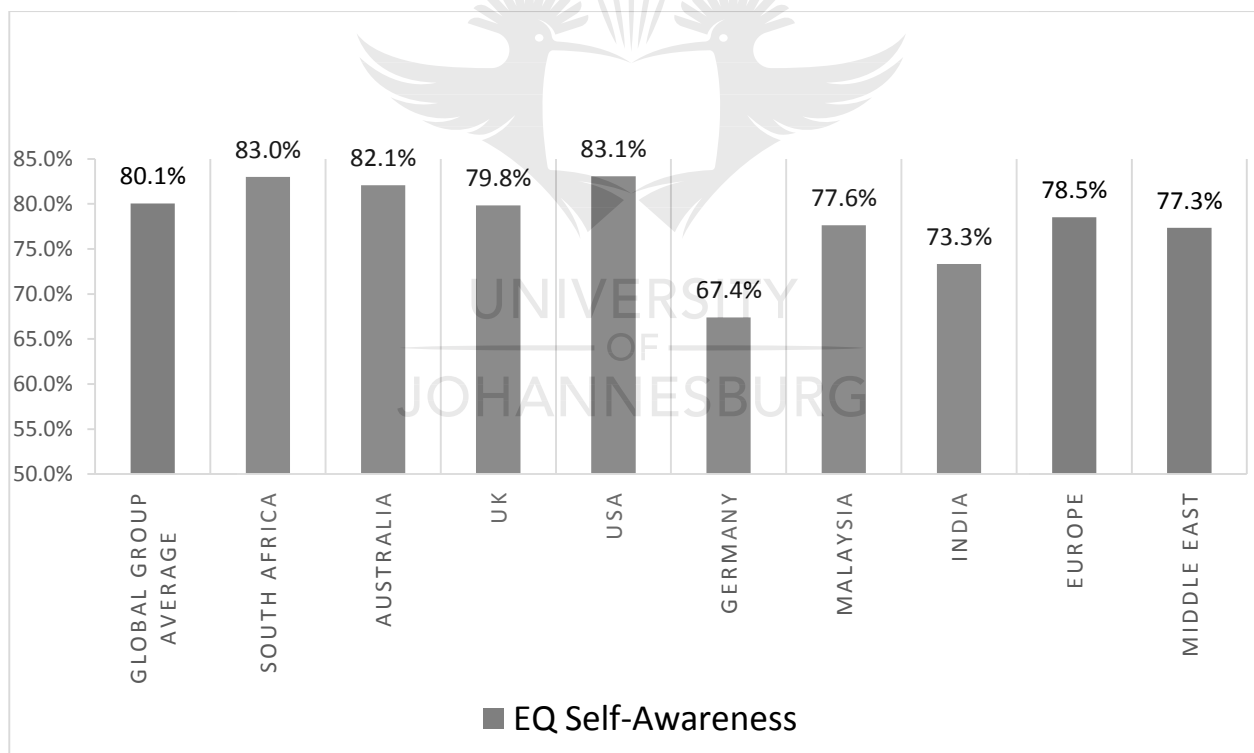


Figure 36: EQ-Self Awareness results

- The USA (83.1%) and South Africa (83%) ranks the highest in EQ-Self Awareness.
- Australia is third (82.1%) after South Africa.
- UK (79.8%), Malaysia (77.6%), India (73.3%), Europe (78.5%) and the Middle East (77.3%) are all slightly below the global group average (80.1%)
- Germany ranks the lowest (67.4%)

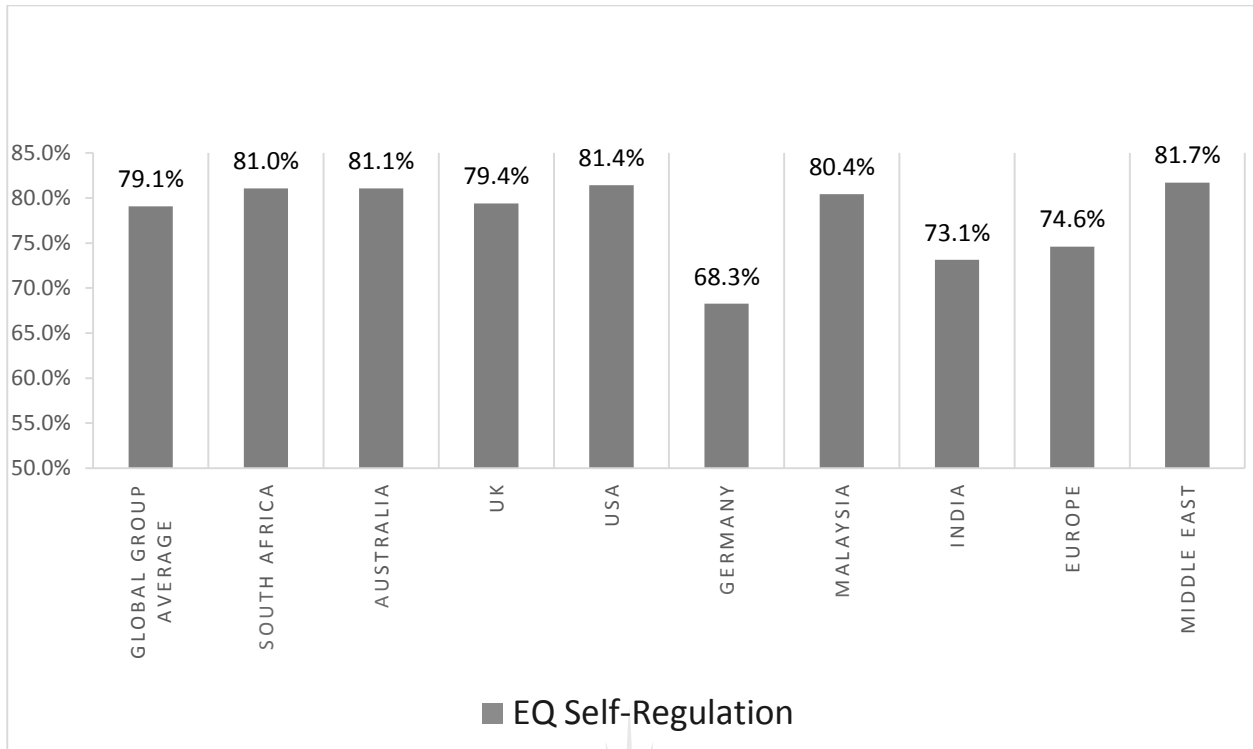


Figure 37: EQ- Self-Regulation results

- South Africa (81%), Australia (81.1%), UK (79.4%), USA (81.4%), Malaysia (80.4%) and the Middle East (81.7%) all rank slightly higher than the global group average (79.1%) in EQ-Self Regulation
- India (73.1%) and Europe (74.6%) is below the global group average.
- Germany is the lowest again (68.3%)

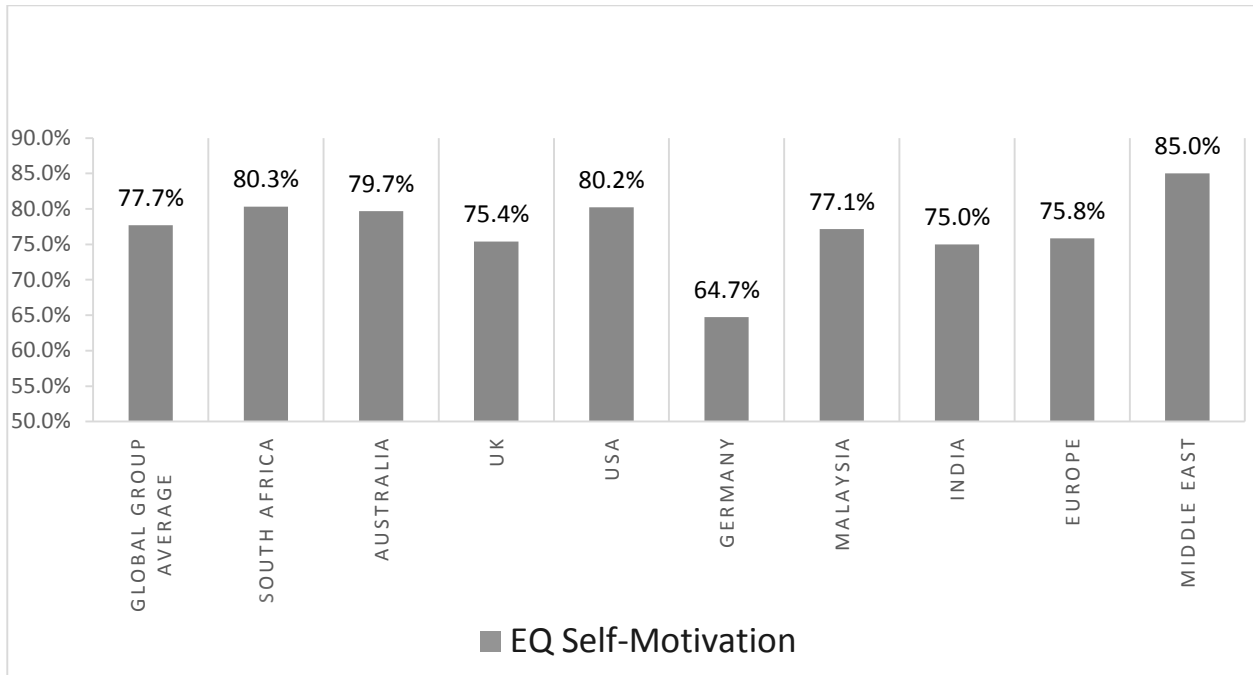


Figure 38: EQ- Self Motivation results

- The Middle East ranks the highest (85%) in EQ-Self Motivation.
- South Africa (80.3%) and the USA (80.2%) ranks second.
- Australia (79.7%) and Malaysia (77.1%) ranks close to the global group average (77.1%).
- UK (74.4%), India (75%) and Europe (75.8%) are slightly below the global group average.
- Germany ranks the lowest (64.7%)

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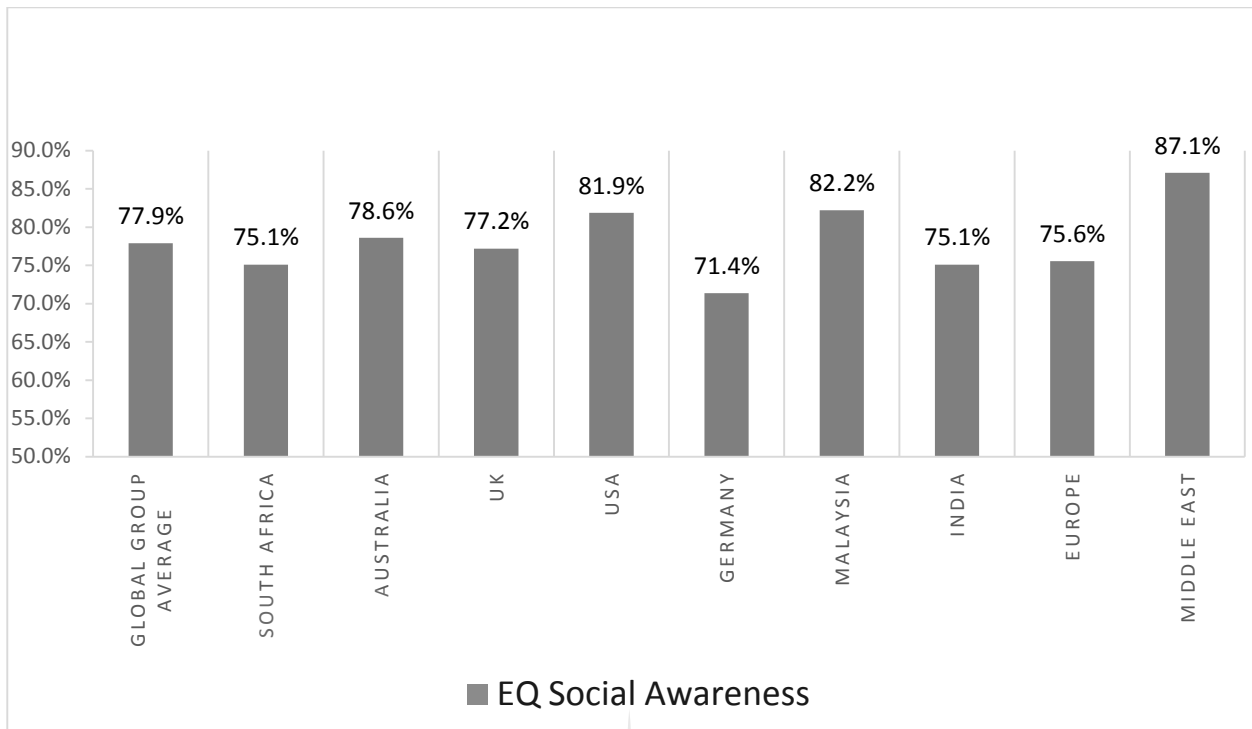


Figure 39: EQ- Social Awareness results

- The Middle East ranks the highest (87.1%) in EQ- Social Awareness.
- The USA (81.9%) and Malaysia (82.2%) ranks second.
- Australia ranks third (78.6%) slightly higher than the global group average (77.9%).
- South Africa (75.1%), UK (77.2%), India (75.1%), Europe (75.6%) all rank slightly below the global group average.

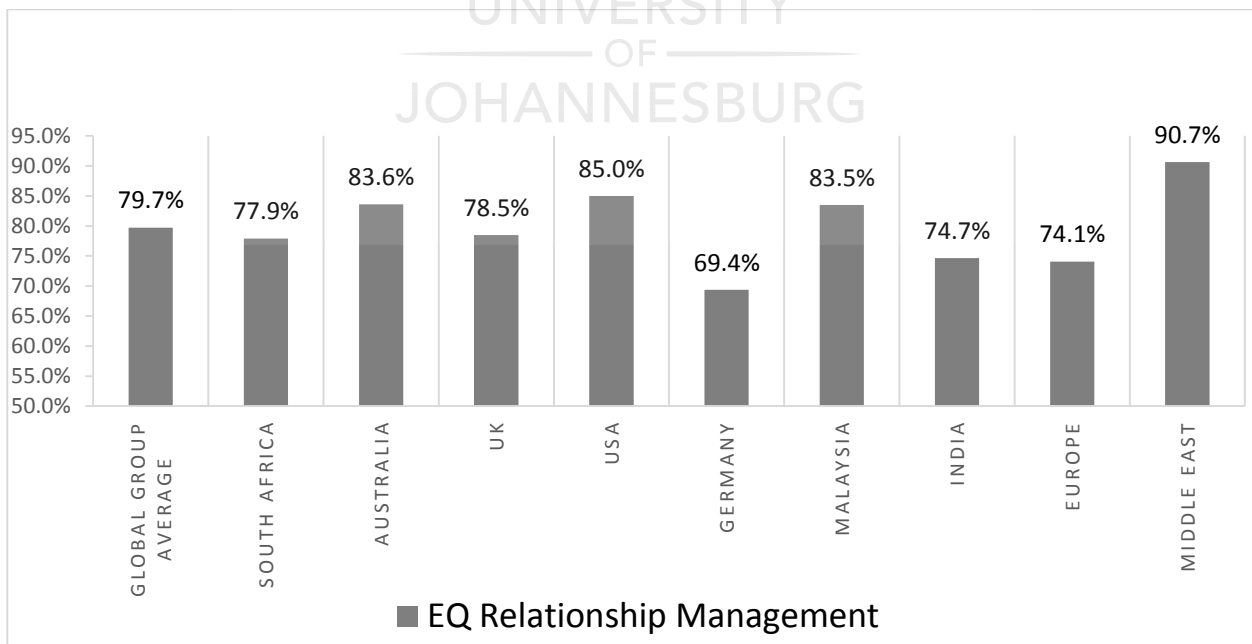


Figure 40: EQ- Relationship Management (Social Skills) results

- The Middle East ranks the highest (90.7%)
- The USA (85%), Australia (83.6%), Malaysia (83.5%) rank second above the global group average (79.7%)
- South Africa (77.9%) and UK (78.5%) are third and slightly below the global group average
- India (74.7%) and Europe (74.1%) is forth.
- Germany ranks lowest (69.4%)

4.1.7 Summary of Findings from Online Survey data

- Because the self-assessments undertaken by the respondents for Cultural and Emotional Intelligence depend on the individuals self-rating, it was noticed that some countries like Australia rated themselves higher than countries like Germany. This may reflect on their unique cultural difference in approaching the questions or because the groups surveyed did, in fact, have a specific rating as per the survey results.
- In general, the overall CQ and EQ scores of the various cultural groups surveyed were within the average range of the group.
- Except for the Australian group (which rated high on scores), it was noticed that the Middle Eastern group did rank high for most of the 4 Factors of Cultural Intelligence (CQ-Drive, CQ-Knowledge, CQ-Strategy and CQ-Action), including the 3 additional Cultural Abilities (Cultural Judgment/Decision Making, Task Performance and Cultural Adaptability). The some applied to Emotional Intelligence rankings for the Middle East.
- This finding may reflect the multi-cultural work environment that many Middle Eastern respondents are involved in. They, therefore, not only have a Collective Cultural lookout, but also the experience obtained from working in a multi-cultural environment outside their home countries.

4.1.8 Conclusions from the online survey data

- From the survey results related to Cultural Awareness in Project Management, it can be concluded that people that are involved with project management did notice cultural influences in the projects they worked in. However, they may not fully understood how to deal with the cultural differences and the impacts because most have not obtained formal training in Cultural Intelligence,

- Because most people surveyed worked in more than 2 countries and not only their own country of origin, it may have helped them be more Cultural Intelligent (CQ-Drive and CQ-Knowledge) than people who never worked outside their home countries.
- By utilizing the academically validated 20-question CQ Scale as developed by S. Ang, L v Dyne [41] it is possible to assess a project group's Cultural Intelligence level. This can assist to improve and detect weaknesses in a group's Cultural Intelligence level. The 3 additional capabilities of Cultural Judgment/Decision making, Task Performance and Cultural Adaptability [27] can assess with selecting people for a multi-cultural project team. Pre-assessment during job interviews can be undertaken to make decisions on which resources will be best fit to undertake the multi-cultural assignment.

4.2 Interview survey analysis

4.2.1 Introduction to Interview surveys

A total of 17 asynchronous online interview surveys has been completed. The interviews were undertaken by people involved in the specific Case Studies described in Part 5 of this study. The people interviewed were asked to describe cross-cultural issues specifically in communication, decision-making, time management, and conflict resolution. All four of these cross-cultural issues relate to the efficiency of project management.

4.2.2 Interpretation of interview answers

Descriptive Statistics:

- From the 17 people interviewed, the majority was from South Africa (7). The other cultures that were represented were: UK, Australia, New Zealand, Netherlands, Egypt, Iraq, Fiji, Lebanon, Jordan and Yugoslavia (all 1 person each represented).
- Most people interviewed (47.1%) were between 40-50 years of ages, followed by those between 50-65+ years of age (35.3%).
- Most people have worked in 4 countries (35.3%). 29.4% of people interviewed worked in 5 or more countries, other than their home country.

Age Range:

30 - 40	3	17.7%
40 - 50	8	47.1%
50 - 65+	6	35.3%

Total n = 17

Number of countries (other than your home country) worked in:

1	0	0.0%
2	3	17.6%
3	3	17.6%
4	6	35.3%
5+	5	29.4%

Total n = 17

- Most of the people interviewed (58.8%) have only a basic understanding of the main principles of project management

Project Management Skill level:	Frequency	%
Post-graduate degree in Project Management	3	17.6%
Certification in Project Management (PMP, PRINCE2 or equivalent)	0	0.0%
Diploma or certificate in project management training course	3	17.6%
Basic understanding of main principles of project management	10	58.8%
Very limited knowledge of project management	1	5.9%

n = 17

- The majority of people indicated that they had between 1 – 5 years of Project Management experience (35.3%), followed by those with 5-10 years of experience (29.4%):

Years of experience in Project Management:

<1 year	0	0.0%
1 - 5 years	6	35.3%
5 - 10 years	5	29.4%
10 - 20 years	3	17.6%
20 - 30 years	2	11.8%
30+ years	1	5.9%

n = 17

- Most people did not receive any form of cross-cultural training (64.7%). The others reported on obtaining informal training (35.3%)

Cultural Intelligence Training:

Completed formal training in cross-culture communication and Cultural Intelligence	0	0.00%
Completed informal training by attending workshops, seminars or reading	6	35.3%
No training	11	64.7%

n = 17

- The people interviewed were asked to rank 4 main cross-cultural issues in order of significance that influenced project management on the project.
- The majority of people (82.4%) rank communication as the key cross-cultural issues identified on the project for which they were interviewed.
- Decision Making ranked second (52.9%), followed by Conflict Resolution (47.1%) and lastly Time Management (41.2%)

n = 17	1		2		3		4	
1 Communication	14	82.4%	0	0.0%	1	5.9%	2	11.8%
2 Decision Making	2	11.8%	9	52.9%	3	17.6%	3	17.6%
3 Conflict Resolution	0	0.0%	4	23.5%	8	47.1%	5	29.4%
4 Time Management	1	5.9%	4	23.5%	5	29.4%	7	41.2%

The following summarizes the 4 main cross-cultural issues (communication, decision-making, conflict resolution, and time management), which people interviewed describe in more detail.

- **Main cross culture communication issues encountered on the project:**
 - Misinterpretation and misunderstanding of information or instructions given either in writing or verbally.
 - Language issues (written or verbal). Differences in language can result in actions and instructions communicated being misunderstood.
 - Meetings are not being conducted in one language only (Example: Arabic people will start discussing among themselves in Arabic while the others will not be able to follow).
 - Differences in tone and volume of voice and body language can sometimes be misinterpreted. Disrespect or mistrust can result.
 - Differences in communication style between High Context cultures (Middle East) and Low Context cultures (West). High Context Cultures communicates easier for themselves as a collective group while Low Context Cultures tend to communicate between individuals that can make decisions by on their own.
- **Cross-cultural decision-making issues noticed during the project:**
 - Differences in focus prohibit decision-making or influence the outcome.
 - Collective, High Context Cultures tend to leave the final decision to the top leader which can delay the overall decision to move forward.
 - Reluctance to take responsibility that impacts on decision-making.

- Differences in the approach to make decisions can result in conflict or misinterpretations.
 - Time is lost to make decisions, resulting in impacting project schedule.
 - Decisions based on personal preference that is not in line with the overall goal or vision of others.
 - Differences in decision-making style. Some base decisions on fact and information while other will base it on the management or leader's preference.
 - Need to ask for the second opinion because a person, leader or adviser is not fully trusted in the decision-making process.
- **Cross-cultural conflicts encountered and the resolution for it:**
 - Shifting responsibilities or blame between people of different cultures.
 - Some cultures rely on top leadership decision-making to move forward while other cultures rely on the outcome of a number of meetings to get a collective buy-in (longer time to finalize).
 - Methods used to inform people about low performance may be understood and taken wrongly.
 - The need to build trust and respect by building mutual relationships.
 - Understand the differences between cultural and personality conflicts.
- **Cross-cultural time management issues noticed during the project:**
 - Differences in working pace (urgency to complete). Some cultures will resist completing work earlier in the time frame given to avoid having to take on more work or additional work in the same time frame given.
 - Poor timekeeping to attend meetings on time.
 - Some cultures are more flexible in their outlook of time (time is seen as more fluid and not fixed). This can conflict with cultures that rely on punctuality and proper planning.
 - Lack of prioritizing tasks to be done.

4.2.3 Qualitative Analysis of interview survey data

Following an interpretive method to analyze the interview responses (as summarized above), from an observer point of view, the following main findings related to cultural influences on project management can be highlighted:

1. The people interviewed (mostly South Africans) have limited experience in project management in terms of training and number of years of experience.
2. Most also have no cross-cultural training.
3. However, from the group of 17 people most were able to report back that there are cross-cultural influences on communication, decision-making, conflict resolution, and time management. Only 3 people reported in part that some of the questions asked in the interviews were either not understood, or it was not noticed that there were issues on the project related to culture.
4. From the Online Survey data that had a larger group of South Africans, it was noticed that South Africans had one of the highest ratings for the question on if cultural issues are noticed in project management or not (Figure 16,Part 4).
5. For the responses, it was noticed that the people from the western countries (South Africa, UK, Australia, New Zealand and Netherlands) had a work and cultural perspective expected from these more individualistic western culture groups. They will report on the issues as seen from their cultural point of view, while the group that is related to the Middle East was less focused on the 4 main issues to be discussed (communication, decision making, conflict resolution and time management). The Middle Eastern responses were either short or less elaborated than the ones from the western respondents. A conclusion from this is that the South Africans and other people from western countries are more focused on communication, decision making, conflict resolution and time management and have notice to a greater extend the influence of culture while working in the Middle East compared to those that are from the Middle East.
6. It is clear that for cross-cultural communication the focus should be on how High Context (Collective) Cultures communicate in comparison to Low Context (Individualistic) Cultures. The direct verse indirect way of communication also need to be taken into account.
7. For decision-making, it is important to understand the key players in the decision process. Trust and mutual respect have been highlighted by the responses and forms a very valid point to take into account in cross-cultural decision-making. Without trust and respect, people may tend to delay decisions or refuse to accept the decision taken by others from a different cultural background.

4.2.4 Conclusions from interview responses

- Companies should focus on improving Project Management and Cultural Intelligence skills of project teams.
- Training in Project Management together with Cultural Intelligence can assist to enhance the effectiveness of a project team by enabling them to understand both the project management processes that are influenced by cultural differences and the reasons behind the cultural differences noticed. Project team members will become better equip to make proper assessment of the situation at hand and be able to adapt and respond more adequately.
- The fact that most people interviewed (as also from the online surveys) do not have a high level of project management and cultural intelligence training, reflect on the reality that this is not being directly prioritised by the individuals or their companies. This may be contributed to the difference in focus on these cultural issues between people from different cultures and the fact that focus on cultural intelligence has only initiated in the last decade or less as more international cross-cultural projects are being undertaken.

4.3 Summary of conclusions from survey findings

The following main conclusions are highlighted from the survey findings:

1. Companies should invest more in Project Management and Cultural Intelligence training, especially for people that will be assigned to multi-cultural projects. From the surveys it was clear that most people did not receive any formal high level of training in Project Management and many had no training in Cultural Intelligence to assist them in their work done outside of the countries they were born in. People, therefore, need to learn by trial and error and do not always know what the real underlying cultural problems are and how to deal with it.
2. The fact that the majority of people surveyed had worked in more than 2 countries may have helped to compensate for the lack of formal training in Cultural Intelligence. The experience gained by working in various countries assisted to learn by observation the differences in culture.
3. The fact that the majority of people surveyed did not have formal training in Project Management (either obtained international recognised certification or post-graduate training in project management), does place a concern that this may contribute to the failure of projects. People may have obtained basic cultural knowledge by observation when working on projects in countries outside their home country, but they may not be

able to understand the underlying influences of culture on the project management processes.

4. People may notice the influences of culture on communication, decision making, conflict, and time management, but they may not be able to resolve the issues properly Their lack of formal Cultural Intelligence training and project management limit their abilities to mostly observations only with only some reactive cultural adjustments undertaken to align with other cultures better.
5. Although the online surveys did not conclusively indicate a prominent and direct link between Project Management performance and Cultural influences, it can be concluded from the interview and survey results that cultural differences do influence project management processes of communication, resource allocation, time management, decision making and conflict resolution and even understanding how to interpret risks.



Part 5

5.1 Case Studies from Projects

5.1.1 Introduction to Case Studies

Three case studies were selected for this research. The case studies were based on projects undertaken in South Africa and the Middle East (UAE and Qatar). People that were involved with the projects were requested to complete the online asynchronous interviews.

Each case study will be assessed according to the Countries represented. This in terms of the team and the client involved. The problems, challenges and lessons learned are described in brief. At the end of each case study, the findings and assumptions are listed.

5.1.2 Selection of Project Case Studies

The three case studies were selected to present the project in which cultural influences on project management were directly observed. The project in Qatar was selected due to the number people involved representing 20 nationalities and the project management complexity.

The case study for South Africa was selected because this was the first of its kind where a Brazilian client came to work directly in South Africa while the work is to be undertaken in a third country (Mozambique). A case study of the UAE was selected because it presented the first project undertaken in a foreign country outside of Africa.

All three projects on which the case studies will be based presented unique cross-cultural experiences while undertaking the project management of each of these projects. The project in Qatar is the most complex project management project undertaken and fully reflect on the complex inter-personal and inter-cultural relationships involved.

5.2 Project Case Studies

5.2.1 Qatar Middle East Project

Programme Management of multiple Highway Design Projects

Client (Stakeholder) Nationalities: 3	Arab: Qatar, Iraq, Egypt (Qatari Government)
Countries of project delivery: 6	Qatar, UAE, South Africa, Australia, New Zealand, Hong Kong
Project Nationalities involved: 19	Qatar, South Africa, Australia, New Zealand, UK, Ireland, Greece, Poland, India, Iraq, Jordan, Egypt, Lebanon, China, Malaysia, Philippines, Fiji, Yugoslavia, Zimbabwe
Dominant Nationalities on Project: 4	South Africa, Australia, Egypt, UK, Ireland
Timeframe of Case Study:	36 months (2011 to 2013)

Introduction and background

This project involved the Programme Management of more than 30 design projects in and around Doha City and Qatar. The projects were designed by various design consultants from different countries. The projects formed part of the planning to upgrade Qatar's major highway infrastructure for the 2022 Football World Cup [FIFA]. More than 10 design consultant companies have been involved in the design of the 30 design projects from concept design to detail design and tender stage.

The project involved managing the designs of all the design consultant companies over the period of 2011 to 2015. It also involves providing technical inputs for decision-making to the client. Third-party approvals with external authorities were also required to be managed.

Problem identification

From the start of the project, it was clear that one of the major problems will be communication and the immense diversity of the people involved. More than 21 different cultures were involved. These cultures included: Britain, Ireland, America, Canada, Australia, New Zealand, France, Germany, Netherlands, Spain, Greece, India, China, Malaysia, Philippines, South Africa, Egypt, Lebanon, Syria, Turkey, Sudan and Jordan.

Differences in communication styles between Western countries, Middle Eastern countries, and Eastern countries were clearly impacting people's understanding of how to approach the design

projects in a productive manner. Another major problem identified was the constant change of priorities among the various projects from the client side. This increased the need for multitasking that led to a range of scheduling issues that resulted in team unproductiveness. Also, due to various issues resulting from cross-cultural communication, people's understanding of problems resulted in conflict and loss of time to resolve issues in the design development process.

Because of the impact of multitasking, people had to shift their focus constantly from one project to another which resulted in more time spent to finish the design deliverables. The design review process were also impacted which added more time to resolve design issues identified in the consultants' design projects.

Third-party external authority approvals also became problematic due to the constant design changes and lack of guidelines and standards. This resulted in the loss of trust and people interrelationships were compromised. The approval process was therefore impacting the programme schedule for the various projects even further.

Challenges identified

- Differences in communication styles (mostly Arabic and English)
- Complexity is due to the number of communication channels. Following the formula for calculating the number of communication channels, it indicates that each person on this project needs to deal with hundreds or thousands of communication channels across various cultures.
- Lack of decision-making and delays in decisions being made
- Constant design changes
- Constant design policy or criteria changes
- Project Priority management
- Proper determination of real project risks and monitoring and managing it.
- Document control and information technology
- Stakeholder management
- Time (schedule) management
- Dealing with both High Context (Collective /Indirect /Inform) and Low Context (Individualistic/ Direct /Formal) Cultures simultaneously across multiple teams and stakeholder groups

Results from the online survey questions

The following represents the descriptive statistics from the online survey results specifically related to this Middle East project case study. The results are shown for two companies (groups). The one company group presented the Technical Team, and another company group represented the Management Team. The two companies also involved have two different Organizational Cultures.

Countries represented on the Technical Team (Company No 1):

#	Countries:	Number
1	South Africa	7
2	Australia	1
3	UK/Scotland	1
4	New Zealand	1
5	Ireland	2
6	Egypt	1
7	Jordan	1
8	Lebanon	1
9	Fiji	1
10	Philippines	1
11	Poland	1
12	Yugoslavia	1

Cultural Intelligence Scores of Technical Team

Overall CQS Score	70.8%
CQ Drive (Motivational)	78.6%
CQ Knowledge (Cognitive)	62.6%
CQ Strategy (Metacognitive)	74.1%
CQ Action (Behavioral)	67.9%
Cultural Judgment/Decision Making	68.4%
Task Performance	71.0%
Cultural Adaption	73.2%

Cultural Intelligence Scores of South Africans (majority) on the Technical Team

Overall CQS Score	67.1%
CQ Drive (Motivational)	77.6%
CQ Knowledge (Cognitive)	57.1%
CQ Strategy (Metacognitive)	71.9%
CQ Action (Behavioral)	61.6%

Cultural Judgment/Decision Making	64.5%
Task Performance	66.8%
Cultural Adaption	69.6%

Countries represented in the Management Team (Company No 2):

#	Countries:	Number
1	South Africa	2
2	Australia	1
3	UK/Scotland	1
4	New Zealand	1
5	India	1
6	Greece	1
7	Zimbabwe	1

Cultural Intelligence Scores of the Management Team

Overall CQS Score	81.2%
CQ Drive (Motivational)	84.3%
CQ Knowledge (Cognitive)	72.9%
CQ Strategy (Metacognitive)	83.5%
CQ Action (Behavioral)	84.3%
Cultural Judgment/Decision Making	78.2%
Task Performance	83.9%
Cultural Adaption	84.3%

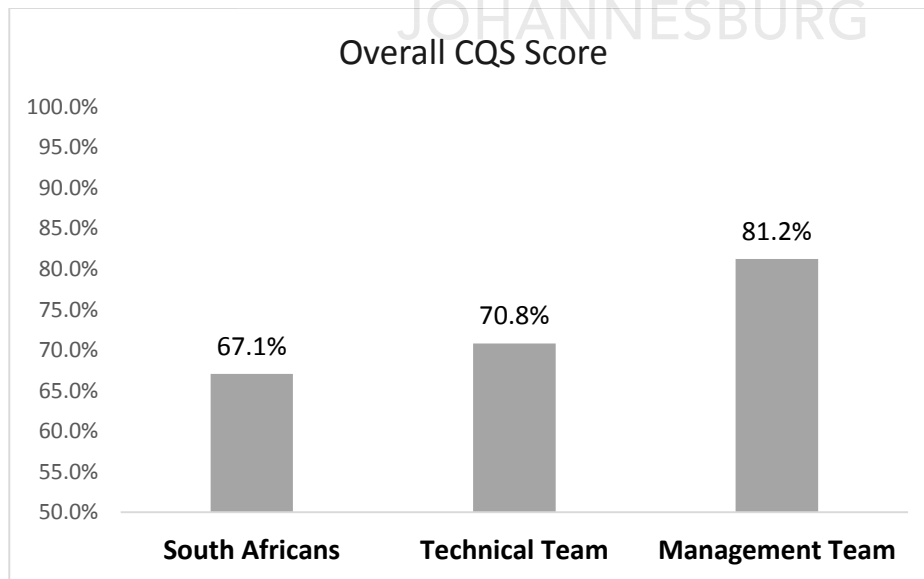


Figure 41: Case Study 1: Overall CQ Scale Results (three groups)

- The Management Team (Company No 2) had the highest score 81.2%

- The South Africans that are the majority in the Technical Team (Company No 1) had the lowest CQ Score (67.1%)
- The overall score of the Technical Team (Company No 1) is 70.8%, which is lower than that of the Management Team.
- It was concluded that for the overall CQ Score for this project, the South Africans had a lower Cultural intelligence skill level than the other cultures on the Technical Team and also compared to the Management Team.

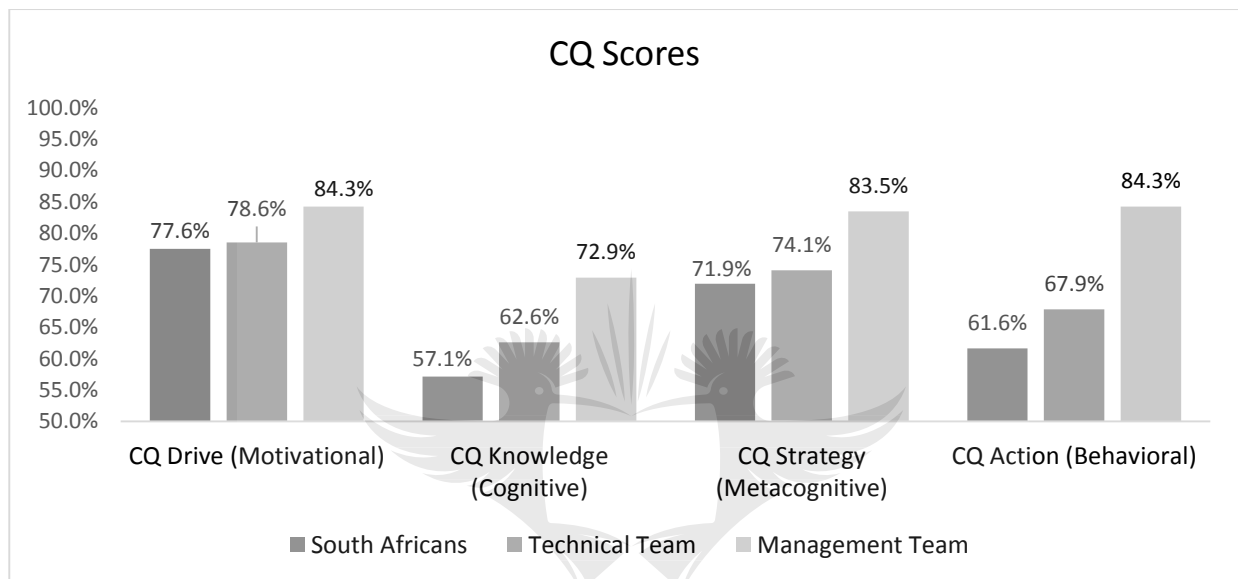


Figure 42: Case Study 1 –CQ Scores for the 4 main Cultural Intelligence Factors (Three groups)

- Comparison with the 4 individual CQ Factors shows that the Management Team have the higher scores (CQ-Drive 84.3%, CQ-Knowledge 72.9%, CQ-Strategy 83.5%, CQ-Action 84.3%).
- The Technical Team had the second highest scores (CQ-Drive 78.6%, CQ-Knowledge 62.6%, CQ-Strategy 74.1%, CQ-Action 67.9%).
- The South African group on the Technical Team had the lowest scores (CQ-Drive 77.6%, CQ-Knowledge 57.1%, CQ-Strategy 71.9%, CQ-Action 61.6%).

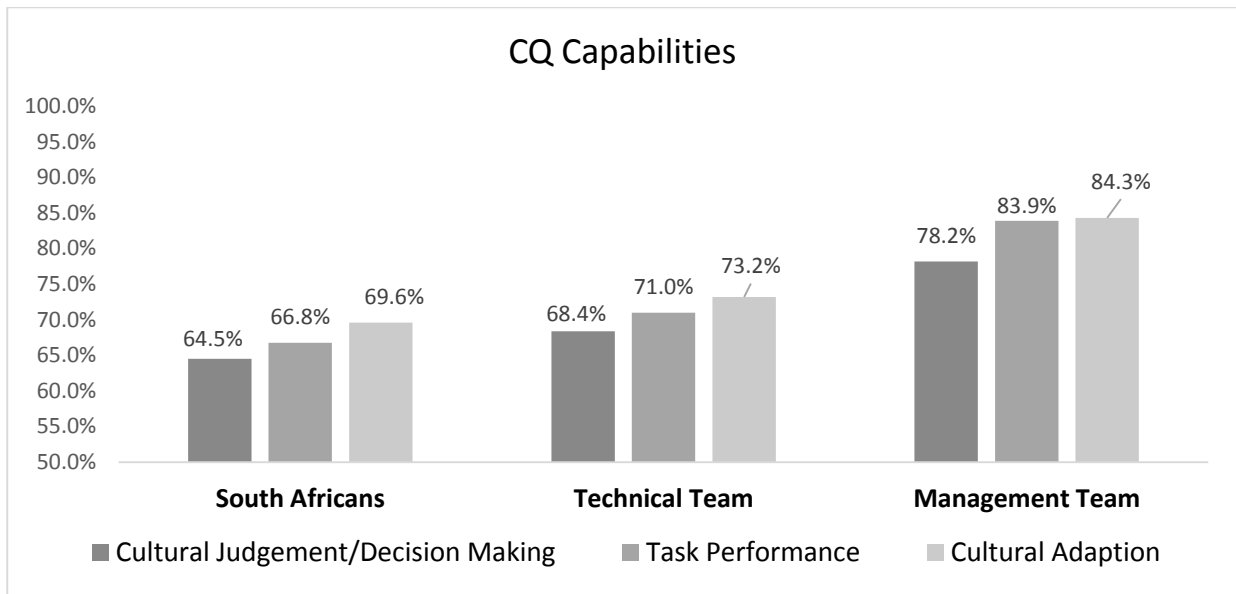


Figure 43: Case Study 1 – CQ Capabilities (Three groups)

- For the 3 individual CQ Capabilities, it is also noticed that the Management Team has the higher scores for Cultural Judgment/Decision Making, Task Performance, and Cultural Adaptability.
- The overall conclusion made from the score results is that the Management Team for this project has a higher Cultural Intelligence capability than the Technical Team and specifically the majority group on the Technical Team (South Africans).

Lessons learned

The lessons learned can be summarized as follows:

- Cross-cultural communication styles can have a significant impact on productivity and people's understanding of design problems.
- Multitasking can impact project and programme schedule negatively
- Not having priorities set for the various projects caused misunderstanding of what needed to be focused on which led to more impacts to schedule
- The impact of not having external authority guidelines and standards in place
- The impact of miscommunication and/or non-communication between various authorities in the approval process caused more delays in the delivery of projects

Findings and assumptions

- As concluded from the scores obtained from the CQ-Scale, the Management team rated higher in Cultural Judgement, Decision Making, Task Performance and Cultural Adaptability.
- The fact that most people surveyed worked in 2 or more countries other than their home country helped to contribute to making it easier to work on this project.
- By looking at Hofstede's 4 main Cultural Dimensions (Figure 44), it is noticed that a wide range of scores are reflected for Power Distance (PDI), Individualism (IDV), Masculinity (MAS) and Uncertainty Avoidance (UAI).
- For the South African group the Cultural Dimensions (from Figure 42 below) are:
 - PDI = 49 – Power Distance: this shows a hierarchal leadership and management style is accepted but not to the full extent as some of the other countries like China (80), Egypt (70), Fiji (78), India (77), Iraq (95), Jordan (70), Lebanon (75), Philippines (94), Qatar (95)
 - IDV = 65 – Individualism: this shows an Individualistic society, more than a Collective (Group) society
 - MAS = 63 – Masculinity: a “live in order to work” approach. Managers are accepted to be decisive. There is also a competitive nature.
 - UAI = 49 – Uncertainty Avoidance: Schedules more flexible, more relaxed approach to work
- For countries like Iraq, Malaysia, Philippines and Qatar a high PDI (Power Distance) is noticed. This means a very high hierarchal leadership style is expected.
- For countries like Australia and the UK very high IDV (Individualism) ratings can be noticed. This means people from these countries will be highly individualistic in their work and leadership styles. It is more about the “I” than the “We” that counts. This can be one of the conflict points with the most Collective Cultures like Egypt, Iraq, India, Jordan, Lebanon, Malaysia, and Qatar.
- For Greece, Iraq, Poland and Qatar high UAI (Uncertainty Avoidance) ratings are noticed. This can be problematic when decisive decision-making is required, and risks need to be managed on the Project. It can conflict with cultures with high PDI (Individualism) and low UAI (Uncertainty Avoidance), like Australia and the UK.

- For the Qatari Client with representatives from the Gulf Region (Arabic speaking) and also Australian and UK Management, a conflict in decision-making was noticeable.
- The Qatari management in the Client is high PDI – Power Distance (95), compared to the low PDI of Australia (36) and UK (35).
- The high Qatari UAI – Uncertainty Avoidance (80), was also in contrast to the lower Australian UAI (51) and UK (35) ratings. Together with the very high IDV (individualism) ratings of Australia (90) and the UK (89) it resulted in conflicts with the Qatari (25) and other Arabic Speaking client representatives (Iraq – 30, Lebanon – 40, Jordan – 30).
- In some cases, these main cultural differences can result in cultures from the West seeing themselves as more superior than those in the Middle East and Asia. The opposite is then happening were the cultures in the Middle East and Asia question the motives and trustworthiness of the Western cultures. The Middle Eastern cultures that are from a Collective Society can detect more directly if people from the West are trustworthy and true to their word. This can lead to problematic relationships if westerner acts highly individualistic in his approach.

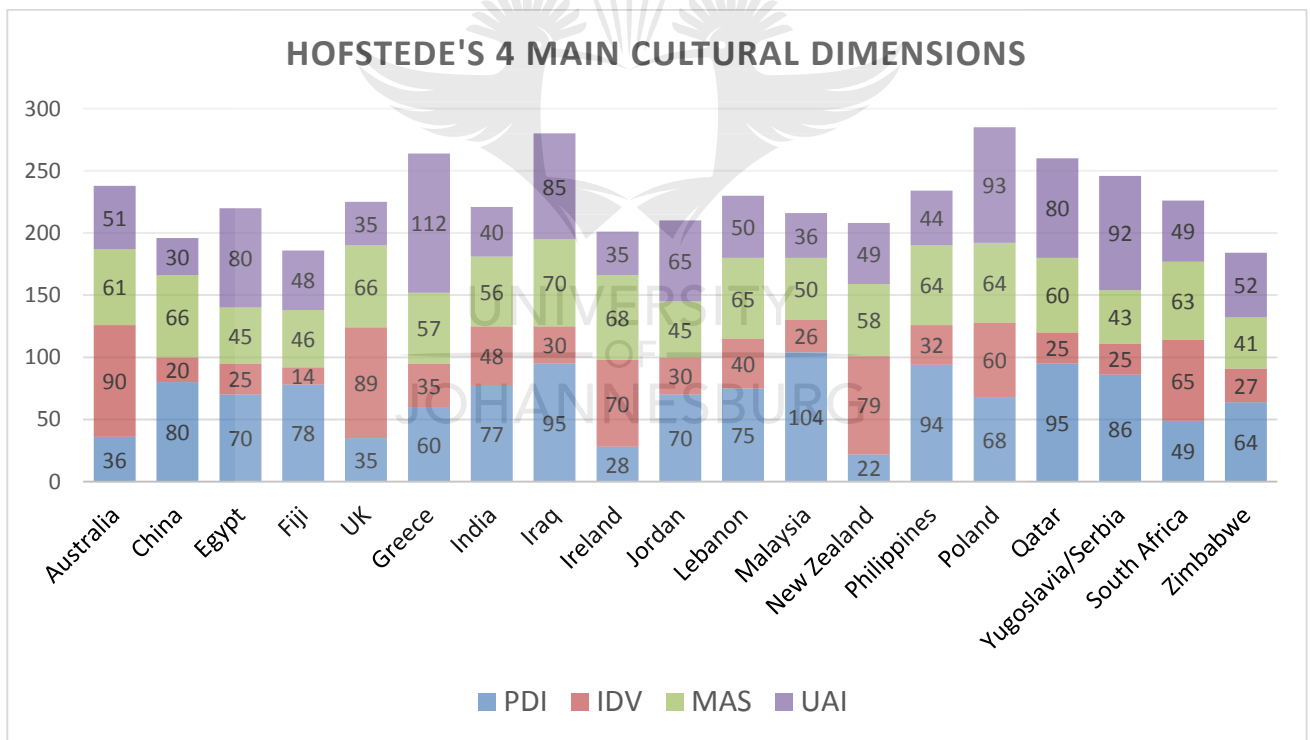


Figure 44: Case Study 1 – Hofstede's Cultural Dimensions for main countries presented on the project

Conclusions

- Prominent Cultural differences can be noticed in both Hofstede's Cultural Dimensions and the CQ Scale ratings. This for the two groups (Technical and Management) that worked on this Project on which the Case Study is based on which had more than 15 different cultures being represented.
- The difference in score ratings from the CQ-Scale indicates that Management had the higher Cultural Intelligence. This is expected on a large multi-cultural project like this. However, from the Cultural Dimensions of Hofstede, it can be seen that potential conflict can result in the main differences in leadership style and decision-making. Communication is also impacted when cultures from the opposite ends of the Cultural Dimension spectrum have to work together.
- The low level of formal project management training also contributed to a lack of proper planning, priority setting, and practical risk monitoring. Also, a proper understanding of the scope of the project and the required resources were not fully understood and with the cultural differences in play, miscommunication, and misunderstanding or misinterpretation of the task were noticeable.
- The efficiency of this project could have been improved by having more qualified project managers across the various groups that also have formal training in Cultural Intelligence.

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5.2.2 South African Project

Railway Design Project

Client (Stakeholder) Nationalities:	1	Brazilian (Mining Company)
Countries of project delivery:	3	South Africa, Mozambique, and Brazil
Project Nationalities involved:	3	South Africa, Mozambique, and Brazil
Dominant Nationalities on Project:	2	South Africa, Brazil
Timeframe of Case Study:		5 months (2010)

Introduction and background

This Railway design project was based in South Africa while the project will be constructed in Mozambique. The client was based in Brazil, Mozambique, and South Africa. Most of the design team were from South Africa only with representatives from Brazil based in the South African and Mozambique offices.

Problem identification

One of the main problems identified were the lack of coordination between client and design team. The client's constant change of mind in the design perimeters and requirements had a significant impact on the delivery of this project. Also, a lack of priority setting influenced the project. Furthermore, lack of design management and training of the junior design team members that were responsible for the delivery of the project caused loss of productivity further. The lack of focus and priority setting for tasks to be completed resulted in junior team members not fully being involved in the work to be completed. Also over management of parts of the project caused issues with the team's ability to function fully productively.

Challenges identified

- The Brazilian Client had to be accommodated in the South African offices. This impacted decision-making when decisions first needed to be communicated back to Brazil.
- The construction Project was in another country (Mozambique) therefore making it a project with the management based across three countries with three different cultural background.
- Meetings are not being well organized by client and other stakeholders
- Language differences that impacted on communication

Results from the Online survey questions

The results are only for the South Africans that work on this project. No survey results were obtainable from the Brazilian client.

A total of 9 people from South Africa participated in the online survey, and 2 were asked to complete the online interview.

Overall CQS Score	67.7%
CQ Drive (Motivational)	76.2%
CQ Knowledge (Cognitive)	54.2%
CQ Strategy (Metacognitive)	74.6%
CQ Action (Behavioral)	65.7%
Cultural Judgment/Decision Making	64.4%
Task Performance	70.2%
Cultural Adaption	71.0%

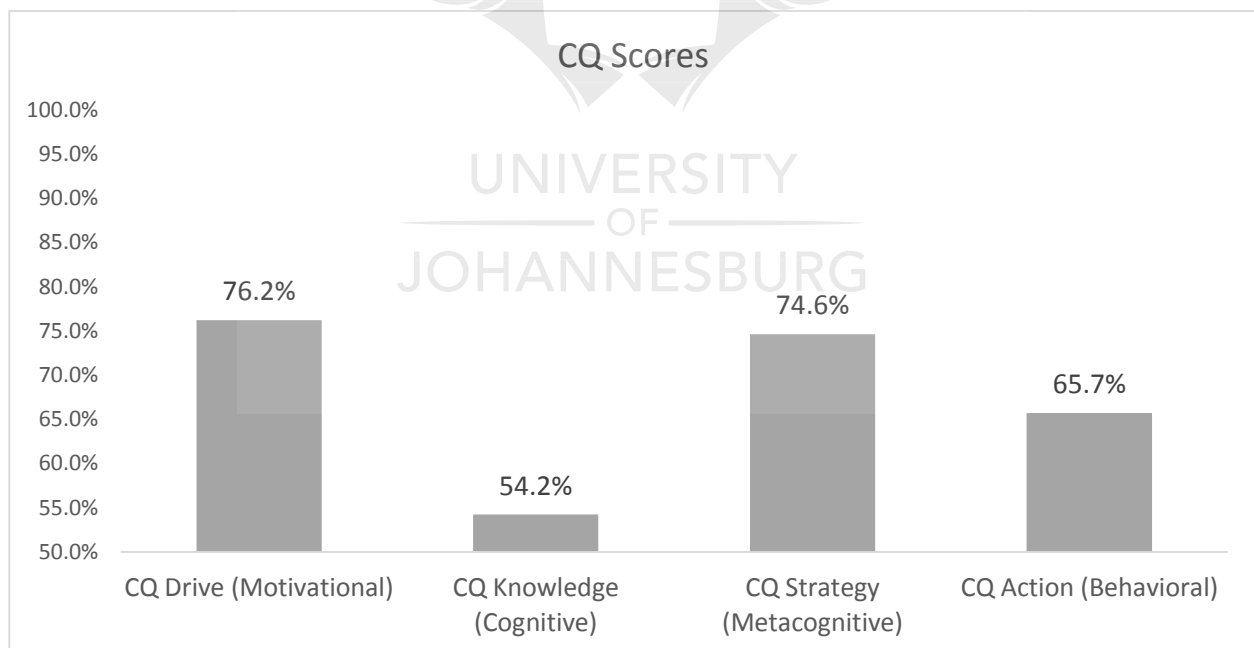


Figure 45: Case Study 2 – CQ Scores for the South African group

- The South Africa group on the project responded to the surveys. Unfortunately, the Brazilian inputs could not be obtained to compare to.

- It can be noticed that the CQ-Drive (76.2%) and CQ-Strategy (74.6%) rate the highest compared to CQ-Knowledge (54.2%) and CQ-Action (65.7%).
- It can be concluded that the South Africans had a real Cultural Motivation to work with the Brazilians, but their Cultural Knowledge and understanding was limited.
- The South African seems to have been able to formulate a strategy to find solutions related to cultural differences, but because of a lower CQ-Action value, the overall result to resolve issues may not have been the optimum.

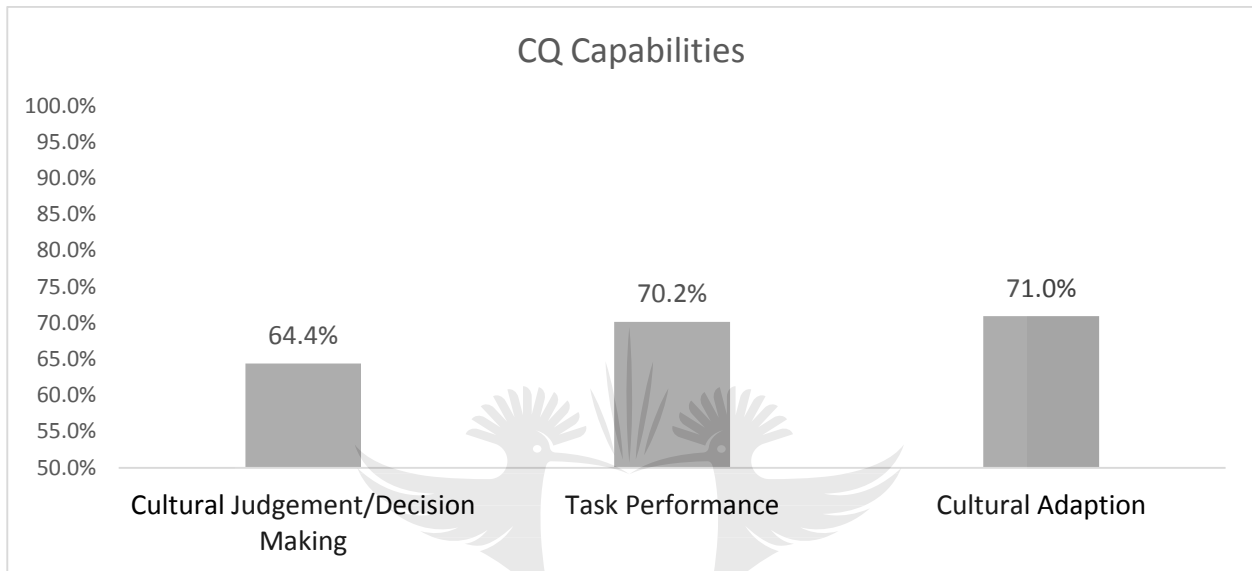


Figure 46: Case Study 2 – CQ Capabilities of South Africans on project

- From Figure 46 above it can be seen that the 3 primary CQ Capabilities for the South African did not rate low. This can indicate that the overall Cultural Capabilities of the South African team were suitable for the project. However compared to the overall global group average results the South African ratings (Part 4, Figure 31) are slightly below average.

	Global Group Average	South Africans on Project
Cultural Judgment/Decision Making	71.5%	64.4%
Task Performance	73.6%	70.2%
Cultural Adaption	74.4%	71.0%

Lessons learned

The lessons learned can be summarized as follows:

- Importance of client management to control design change
- Determining design perimeters and standards at the beginning of a project
- Importance of providing focus, clarity and priority setting for tasks to be complete

- The importance of design management and training of junior design engineers working on a large-scale project

Findings and assumptions

- By looking at Hofstede's Cultural Dimensions the following can be noticed:
 - South Africans have a lower PDI (49) – Power Distance rating that both the Brazilian and Mozambique cultures. This indicates that the Brazilian Client will be much more hierarchal in their leadership style compared to the South Africans.
 - The South Africans also differ from their Brazilian Client in their MAS (63) – Masculinity rating. The South Africans are more competitive and direct in their approach and decision making that the Brazilians.
 - Also, the Brazilians have a high UAI (76) – Uncertainty Avoidance rating that is in contrast to the South African lower score of 49. This reflects on one of the challenges identified in terms of decision-making.
 - The South Africans are also much more Individualistic (high IDV) in their approach compared to Brazil.

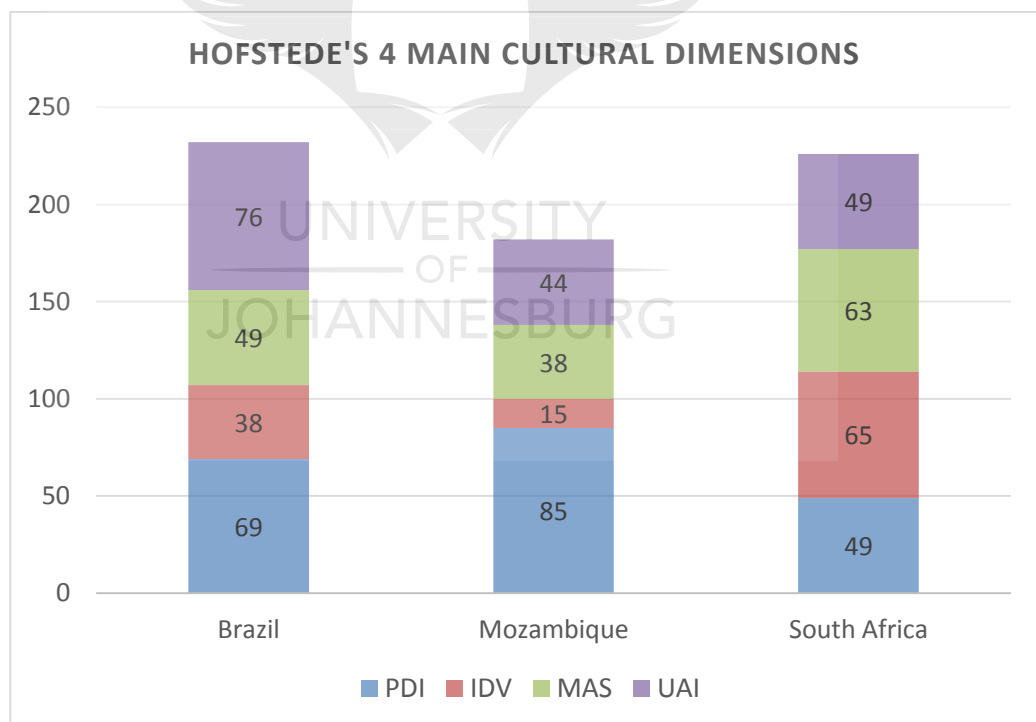


Figure 47: Case Study 2 – Hofstede's Cultural Dimensions for Brazil, Mozambique, and South Africa

Conclusion

- Similar to the first case study it was concluded that there were cultural differences that impacted on project management. From the interview and survey results, it can be noticed that the difference between the South African group and the Brazilian client existed.
- A better understanding of each other's cultural differences and how to mitigate it would have been beneficial for the project. Similar future project can be initiated with some form of cultural training and indication courses to allow people to become more adaptable and flexible in a new multi-cultural environment/



5.2.3 UAE Middle East Project

Highway Design Project

Client (Stakeholder) Nationalities:	2	Arab: Emirati, Egypt
Countries of project delivery:	3	UAE, Egypt, and South Africa
Project Nationalities involved:	4	South Africa, Egyptian, Indian, Philippines
Dominant Nationalities on Project:	2	South Africa, Egyptian
Timeframe of Case Study:		12 months (2009)

Introduction and background

This Project was the first of its kind in the Middle East for the team involved. The whole process of adapting to a new work environment outside the home country was experienced by those that worked on the project. This made this project case study an introduction to the multi-cultural work environment of the Middle East.

Problem identification

The main problem was the lack of understanding how the Arabic speaking client works. No previous history existed to use as reference when interfacing with the client and various stakeholders. The client was also in the process of re-organising to become a larger government authority. This added to the complexity of the client and stakeholder management process. The client was expanding their human resources which were from various Gulf Region countries.

Challenges identified

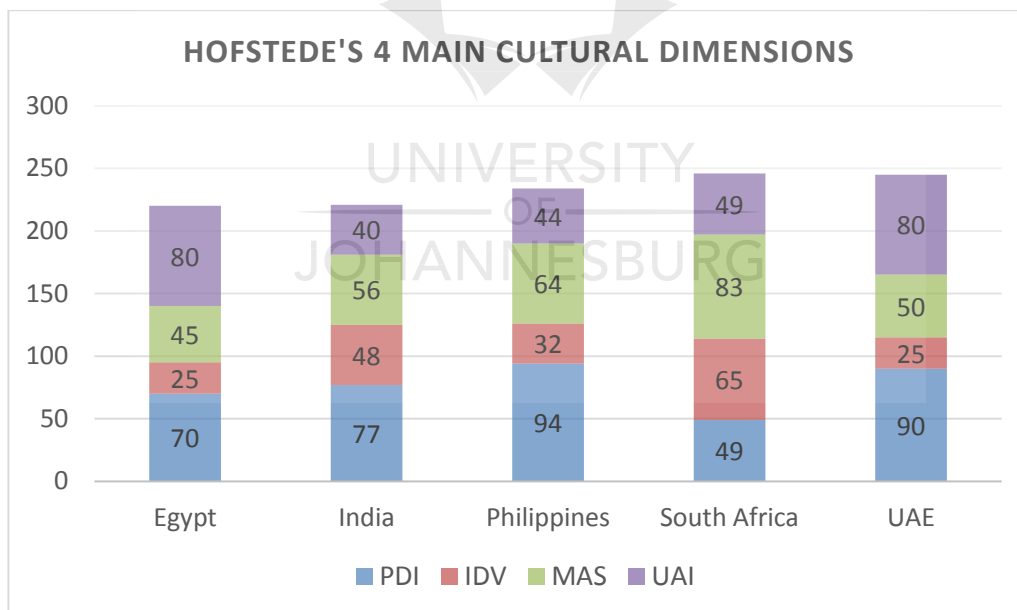
- Communication issues. First time in the Middle East and the first introduction to the Arabic language and way of working.
- As mentioned in the problem identification, the client and stakeholder management were challenging.
- Obtaining the required information on standards, policies and guidelines at the time that the client started to re-organised into a new authority

Lessons learned

- The need to undertake an induction training course in advance to relocate to a new foreign country for the first time.
- The need to have Arabic speaking team members as early as possible to assist with communication.
- Defining key stakeholders and contact people as early as possible.
- Determining and understanding the decision-making processes of the client and who the key decision makers is.

Findings and assumptions

- By looking at Hofstede's Cultural Dimensions the following was noticed:
 - The South Africans had a high rating for both IDV (65) and MAS (83). Compared to the client that had mainly Egyptian (IDV = 25, MAS = 45) and UAE (IDV = 25, MAS = 50), the South African were much more Individualistic, direct and decisive in their approach.
 - The client was much more hierarchal in their decision-making. The UAE PDI (90) and UAI (80) were both very high compared to the South Africans (PDI = 49, UAI = 49).



Conclusion

- It can be concluded that cultural differences did exist on this project on which the case study was based. This did have noticeable influences on the project management processes of communication management, decision-making, time management, and stakeholder management.

- Advance cultural intelligence training to obtain a better understanding of the client cultures would have been beneficial.



Part 6

6.1 Comparison of findings from Survey data, interviews and Case Studies (Methodological Triangulation Assessment)

By looking at the online survey, interview and case study findings as described in Part 4 and 5, a comparison was made between these sources of data using a Methodological Triangulation assessment [84] to determine the main findings from these different sources of data obtained.

In Figure 13, Part 3 the triangulation (comparison) between the Quantitative (online surveys) and Qualitative (interviews and case studies) source data was schematically shown. By referring to the online survey, interview and case study findings as described in Part 4 and 5, the following significant primarily issues due to cultural differences (which impact on Project Management), were identified:

1. Issues with Communication
2. Issues with Decision-Making
3. Issues with Task Performance
4. Issues with Trust among people
5. Issues with Adapting to a new cultural environment to avoid conflict
6. Issues with level of Cultural Intelligence Training
7. Issues with level of Project Management Training
8. Issues with correct use of Information Technologies for collaboration

By comparing the results of the online survey findings (S. Ang and L. v Dyne's Cultural Intelligence Scale and D. Livermore's measurements of Cultural Judgement, Decision Making and Cultural Adaption) with the interview responses and the case studies, it became clear that the 8 issues listed above should be focused on by Engineering and Project Managers. This to address these issues directly in the beginning of a project and to limit the influences of culture on the Project Management process efficiency.

The following is also noted:

- Cultural differences in multi-cultural teams do have an influence on project management processes and the efficiency of the people that need to work together.
- Cross-cultural communication and decision-making are key aspects to consider in a multi-cultural work environment.

- Early understanding of the various cultural differences that will be part of a project to be considered at the start of each new project.
- Early decisions should be made on the information technologies to be used. Also the protocol, policies or guidelines to be made known to all involved.

6.2 Limitations of the study

- This study did not include survey questions that specifically target the Project Management Knowledge Areas and processes to determine a direct relationship to cultural influences.
 - This will involve a much more complex assessment and analysis process.
 - Survey questions will need to be designed to target the correct responses to obtain performance indicators to use as a comparison to cultural factors that influence these processes in project management.
 - This will also require that a new survey be completed that includes only people with formal training (certification or post graduate degrees in project management) so that the data can be compared against those with limited training. The current survey included a low number of people with formal training in project management.
- The study focused mostly on the use of the 20-question CQ-Scale developed by S.Ang and L. v Dyne and Hofstede's Cultural Dimensions. The other Cultural Dimensions as researched by others (described in detail in Part 2, Literature Study), has not been fully utilized to compare with the results of the CQ-Scale and Hofstede's Cultural Dimensions. This to see if there are direct similarities or a large difference in results. To be able to utilize the other Cultural Dimensions assessments, the cost will need to be endured to obtain the survey results. This because these assessments are commercial based and not free for academic use like the CQ-Scale and Hofstede's Cultural Dimensions.
- In-depth Statistical Analysis has not been undertaken to find unique associations or particular group comparisons.
- The questions used for determining the Cultural Awareness in Project Management were limited in scope and needed further calibration to improve.

Part 7

7.1 Final Conclusions

Understanding the Influence of Culture on Project Management:

- From the Case Study observations, interview responses, and survey data it became clear that cultural differences do have an influence on Project Management in multi-cultural work environments. Mono-cultural teams that work in their own countries will have less conflicting interactions between themselves in terms of how they communicate and how decisions are being made compared to teams with various cultures represented.
- From the surveys and interview data (consisting mostly out of South Africans) it was noted that most people have limited experience and formal training in project management. Most also have no cross-cultural training. People may notice that there are some influences of culture on communication, decision-making, trust, task performance and ability to adapt, but they may not be able to fully understand how to resolve these issues properly. Their lack of formal Cultural Intelligence training and also Project Management training limit their abilities to only observation (wondering why things are different). People will therefore undertake only some reactive cultural adjustments to align with other cultures better, rather than knowing what the underlying causes and reasons for the cultural issues are and how to resolve it.
- Engineering and Project Managers should be well aware of their project team's unique cultural differences and how their own leadership styles will be interpreted and understood differently by the team members from various cultures. By understanding one's own leadership and cultural values, it becomes easier to adjust to better align with the culturally diverse team members.
- Engineering and Project Managers of culturally diverse project teams should also learn to properly understand how different communication styles (direct or indirect, high-low context) play a key role in multi-cultural work environments. Communication styles differ from country to country, specifically between Western (Direct and Low Context) and Eastern Countries (Indirect and High Context). Without understanding these underlying differences, people can easily miscommunicate relevant information between each other which can result in loss of productivity when work gets completed incorrectly and even distrust among team members.

- Engineering and Project Managers should learn not only to observe cultural differences directly on a daily basis, but also how to properly adapt to a new foreign work environment without compromising their own cultural identity or ethics.
- It is important for Engineering and Project Managers to develop multi-intelligence skills that include a high level of Cultural Intelligence. As mentioned, formal training in Project Management and Cultural Intelligence will have a positive outcome for both Engineering and Project Managers and the teams assigned to work outside of their home country within a multi-cultural work environment.
- Developing Emotional and Social Intelligences will also help to improve multi-intelligence skills. Together with improving Cultural Intelligence, it enables Engineering and Project Managers to interact efficiently on a “person to person”, “person to team” and “team to team” basis.
- People that will be assigned for the first time on overseas foreign projects should undertake Cultural Intelligence training in advance. This will help to be more prepared to understand and deal with the cultural differences before arriving in the foreign country. It can then also avoid the initial negative impacts of going through cultural shock.
- It is therefore also essential for Engineering and Project Managers to prioritize building strong trust relationships between team members and their foreign clients. This can help overcome issues that arise from Cultural differences. When people trust each other, there will be a higher tolerance for each other’s cultural differences. Engineering and Project Managers should create work environments where culturally diverse team learn how to collaborate effectively with each other. By creating collaborative project tasks that ensure team members need to work together and rely on each other to complete the project, the trust relationships can be built, improved and monitored.
- A focus should be placed on understanding the main Cultural Value differences between countries that can influence Project Managements effectiveness. Specifically the Cultural Values identified by researchers like Hofstede. The Cultural Values (or Dimensions) that are of importance to understand and take into account in Engineering Management are the Power Distance, Collectivism/ Individualism, and Uncertainty Avoidance indicators. This can assist with pre-assessments of where the main cultural differences are so that the required steps can be taken to mitigate miscommunication, misunderstanding, and conflicts quicker.

The use of more flexible and dynamic Project Management methods:

- The use of more flexible and dynamic project management methods like Critical Chain Lean Project Management needs to be considered in large-scale resource constraint and culturally diverse team environments. The limitations of the older Critical Path

Method place restrictions on how well resource constraints and other influences on the project can be monitored and controlled.

- Critical Chain Lean Project Management does need a paradigm shift and more discipline to implement but provides a better way to manage uncertainty and monitor which constraint need to be focus on. It also helps to eliminate unneeded task by following a monitored continues improvement process.
 - Another prominent factor in the success of Project Management is how Multi-Tasking and Work-in-Progress (WIP) are controlled. Both Multi-tasking and Work-in-Progress should be limited to culturally diverse projects. Dealing with cultural differences should remain the focus rather than adding task related problems that come with multi-tasking and uncontrolled WIP workload that impact on team performance.
 - It is important to always set task priorities early for the team to contain unnecessary multi-tasking and to avoid spending time on less important tasks in limited time frames to complete a project. People normally tend to focus first on the less important and easier tasks to complete. The Engineering and Project Manager should ensure that each team member know exactly what their tasks are and the completion dates should be determined taking into account known and unknown factors like leave schedules, resource constraints, and design change requests.
 - Where multiple projects are completed at once it will be important to predetermine a priority list of the projects to be completed as per the client's needs and in relation to the overall main Project or Programme Schedule. This will help the team members to know in advance what projects are to be focused on and what tasks for each project should be prioritized.
 - The correct use of Information Technologies needs to be determined in advance of starting a project. This includes how emails will be handled and how documents will be controlled. Without setting up a proper Document Control System and email, protocols can lead to much frustration in a culturally diverse work environment.
- The use of social networking in a multi-cultural work environment and specifically a Virtual Team environment can add much benefit to a project team and need to be taken into account. This especially for the younger generation of workers that are accustomed to social networking and collaboration.

7.2 Recommendations

From the conclusions made in 7.1 above, the following key recommendations can be made:

1. Leadership and Management should take into account the influences of culture on project management within a multi-cultural work environment. It is essential for large scale projects that will be completed by people with different cultural backgrounds.
2. Neglecting the underlying cultural differences the can cause issues in communication, decision-making (acceptance of responsibility), task performance (which includes the perception of time that relate to the project schedule), and trust can all undermine the success of a project.
3. Companies that send people to foreign countries should understand the importance of formal training in Cultural Intelligence. However, the people that is sent on the overseas assignment will need to be motivated to undertake the assignment. This can be pre-assessed using the 20-question CQ –Scale (S. Ang, L v Dyne) [41]. People with high CQ-Drive (Motivation), CQ-Knowledge and Cultural Adaptability scores have a better chance in succeeding at an early stage in their overseas assignments.
4. Use of Collaborative Online Project Management tools and Critical Chain [9] or Lean Project Management Methods to be considered as part of managing both local onshore or Virtual offshore project teams.

7.3 Further Study

- Further research can include a more in-depth analysis of how Key Performance Indicators (KPIs) in Project Management related to the main processes of communication management, resource management, time management, stakeholder management, and decision-making, are influenced by cultural differences.
- Further research can also include a more in-depth statistical analysis to find direct associations between the various Cultural Dimensions identified by Hofstede [2] and the GLOBE Research Project [56] and the related project management processes that are influenced by these Cultural Dimension differences between countries.
- The 20-Question CQ Scale developed by Soon Ang, Linn van Dyne [41] [48] can be further evaluated to determine how the CQ-Drive (Motivation), CQ-Knowledge and Cultural Adaptability Scores reflect on Project Managers' success on large-scale multicultural projects.
- A further study can also be undertaken to determine the effectiveness of online social networking Information technologies and if it can assist with cross-cultural communication and teamwork.

Part 8

References

- [1] G. Hofstede, *Cultural Consequences*, 2nd ed., London: Sage Publications, 2001.
- [2] G. Hofstede, *Cultures and Organisations: Software of the Mind*. 3rd Ed, New York, NY: McGraw-Hill, 2013.
- [3] P. C. Early and S. Ang, *Cultural Intelligence - Individual Interactions Across Cultures*, Stanford: Stanford University Press, 2003.
- [4] U. Ojiako and e. al., *Cultural Imperatives in Perceptions of Project Success and Failure*, Pennsylvania, USA: Project Management Institute (PMI), 2012.
- [5] PMI, *A Guide to the Project Management Body of Knowledge: PMBOK Guide*. 5th Ed, Newtown Square, PA: Project Management Institute (PMI), 2013.
- [6] D. Kuchta and J. Sukpen, "Culture and Project Management," *Journal of Intercultural Management*, Vols. 5, No 3, no. September, p. 23–38, 2013.
- [7] R. D. Elena, "CULTURAL DIFFERENCES IN PROJECT MANAGEMENT," *Annales Universitatis Apulensis Series Oeconomica*, vol. 2, no. 2 /12, pp. 657-662, 2010.
- [8] F. Trompenaars and C. Hampden-Turner, *Riding the Waves of Culture: Understanding Diversity in Global Business*, London, UK: Nicholas Brealey International, 2012.
- [9] L. Leach, *Critical Chain Project Management*, 3rd ed., Boston: Artech House, 2014.
- [10] L. Leach, *Lean Project Management: Eight Principles for Success*, Boise, ID: Advance Projects, 2005.
- [11] L. Leach and S. Leach, *Lean Project Leadership*, Boise, ID: Advance Projects, 2010.
- [12] T. Grisham, *International Project Management: Leadership in Complex Environments*, New Jersey: John Wiley & Sons, Inc, 2010.
- [13] M. M. Ajmal, M. Hussein and H. Saber, "Relationship of Culture and Trust in International Project Environments: A Theoretical Study," *International Journal of Information Technology & Computer Science*, vol. 5, no. September/October, pp. 13-32, 2012.
- [14] M. Sennara, "Managing Cultural Risks on International Projects," in *Proceedings of the Project Management Institute Annual Seminars & Symposium*, San Antonio, Texas, USA, October 3–10, 2002.
- [15] R. D. Lewis, *When Cultures Collide: Leading across Cultures: A Major New Edition of the Global Guide*, Boston: Nicholas Brealey International, 2012.

- [16] R. D. Lewis, *When Teams Collide: Managing the International Team Successfully*, London, UK: Nicholas Brealey International, 2012.
- [17] D. Coleman, R. E. Boyatzis and A. McKee, *Primal Leadership: Realizing the Power of Emotional Intelligence*, Boston, MA: Harvard Business School, 2002.
- [18] Y. Pretorius, *Aspects of Engineering Project Failure: A Managerial Approach*, Johannesburg: Faculty of Engineering, Rand Afrikaans University (RAU), 2001.
- [19] O. Obikunle, "Dealing With Cultural Diversity In Project Management," 2002. [Online]. Available: <http://www.pmi.org/learning/dealing-cultural-diversity-project-management-129>. [Accessed Jun 2014].
- [20] G. Durochik, "Key Success Factors For Multicultural Project Management," 1999. [Online]. Available: <http://www.pmi.org/learning/key-success-factors-multicultural-project-management-1150>. [Accessed Jun 2014].
- [21] R. Newbold and B. Lynch, *The Project Manifesto - Transforming your life and work with Critical Chain Values*, Lake Ridge, VA: ProChain Press, 2014.
- [22] J. Benson, *Why Limit WIP, we are drowning in Work*, Seattle, WA: Modus Cooperandi Press, 2014.
- [23] J. F. Cox and J. G. Schleier, *Theory of Constraints Handbook*, McGraw-Hill, 2010.
- [24] H. Kerzner, *Project Management: A Systems Approach to Planning, Scheduling, and Controlling*, Hoboken, NJ: John Wiley & Sons, 2013.
- [25] D. A. Suberroc, "Multicultural Project Management," 1996. [Online]. Available: <http://www.pmi.org/learning/multicultural-project-management-human-resource-794>. [Accessed Jun 2014].
- [26] I. v. d. Merwe, *Aspects of Diversity that Influence International Construction Projects in Mozambique*, University of Johannesburg (UJ) - Faculty of Engineering and the Build Environment, 2009.
- [27] D. A. Livermore, *Leading with Cultural Intelligence: The New Secret to Success*, New York: AMACOM, American Management Association, 1st Ed 2010, 2nd Ed 2015.
- [28] D. Coleman, *Emotional Intelligence*, London: Bloomsbury Publishing, 2004.
- [29] D. Coleman, *Working with Emotional Intelligence*, London: Bloomsbury Publishing, 2004.
- [30] J. Nemiro, M. Beyerlein, L. Bradley and S. Beyerlein, *The Handbook of High-Performance Virtual Teams, A Toolkit for Collaboration across Boundaries*, San Francisco: John Wiley & Sons, 2008.
- [31] K. S. Lojeski and R. R. Reilly, *Uniting the Virtual Workforce*, New Jersey: John Wiley & Sons, 2008.

- [32] E. M. Goldratt, What is this thing called Theory of Constraints and how should it be implemented, Great Barrington: North River Press, 1990.
- [33] E. H. Schein, Organizational Culture and Leadership. 4th Ed, San Francisco: Jossey-Bass, 2010.
- [34] A. McKee, "Emotional and Social Intelligence," Teleos Leadership Institute, [Online]. Available: <http://www.teleosleaders.com/howwedoit/emotional.php>.
- [35] N. Pouch, "Cultural Differences in Project Management," January 2013. [Online]. Available: <http://www.thepmchannelnews.com/tag/culture-in-project-management/>. [Accessed June 2014].
- [36] S. Cerimagic and J. Smith, "PROJECT MANAGERS: THE IMPORTANCE OF CROSS-CULTURAL PREPARATION," in *27th Annual ARCOM Conference*, Bristol, UK, 2011.
- [37] H. E. Gardner, Multiple Intelligences: New Horizons in Theory and Practice, New York: Basic Books, Perseus Book Group, 2008.
- [38] H. Gardner, "Multiple Intelligence OASIS (OASIS, Official Authoritative Site of Multiple Intelligences)," [Online]. Available: <http://multipleintelligencesoasis.org/about/the-components-of-mi/>. [Accessed Aug 2014].
- [39] C. B. Shearer, "Multiple Intelligences Research and Consulting, Inc.," MIDAS, [Online]. Available: <http://www.miresearch.org/multiple-intelligences/mi-theory/>. [Accessed June 2014].
- [40] D. A. Livermore, The Cultural Intelligence Difference: Master the One Skill You Can't Do without in Today's Global Economy, New York: AMACOM, American Management Association, 2011.
- [41] S. Ang and L. V. Dyne, Handbook of Cultural Intelligence - Theory, Measurement and Applications, New York: M.E. Sharpe Inc, 2008, pp. 91-144, 177-240, 289-304.
- [42] E. Meyer, The Culture Map - Breaking through the invisible boundaries of Global Business, New York: Public Affairs - Perseus Books Group, 2014.
- [43] E. T. Hall, Beyond Culture, New York: Anchor Books Editions (Random House Inc), 1989.
- [44] E. T. Hall, The Silent Language, New York: Anchor Books Editions (Random House Inc), 1990.
- [45] M. D. Hills, "KLUCKHOHN AND STRODTBECK'S VALUES ORIENTATION THEORY," 2002. [Online]. Available: <http://www.wvu.edu/culture/Hills.htm>. [Accessed Aug 2014].
- [46] L. R. Kohls, Survival kit for overseas living, Chicago: Intercultural Network, SYSTRAN Publications, 1979.
- [47] Itim, "The Hofstede Centre," Itim, [Online]. Available: <http://geert-hofstede.com/intercultural-management-courses.html>. [Accessed April 2014].

- [48] P. C. Early, S. Ang and J.-S. Tan, GQ - Developing cultural intelligence at Work, Stanford: Stanford University Press, 2006.
- [49] D. A. Livermore, Expand Your Borders: Discover 10 Cultural Clusters, East Lansing, Michigan: Cultural Intelligence Centre, LLC, 2013.
- [50] C. I. Center, "Cultural Intelligence Center," [Online]. Available: <http://www.culturalq.com/tmpl/research/cvalues.php>. [Accessed Aug 2014].
- [51] T. Hampden-Turner, "Trompenaars Hampden-Turner Consulting," [Online]. Available: <http://www2.thtconsulting.com/about/people/fons-trompenaars/>.
- [52] T. Berlitz, "Training Management Corporation (TMC)," TMC - Berlitz, [Online]. Available: <http://www.tmc corp.com/Online-Learning/Assessments/Cultural-Orientations-Indicator-COI/76/>. [Accessed Aug 2014].
- [53] M. Blankenburgh, Inter-Cultural Intelligence - from surviving to thriving in the global space, Dubai: Amazon (eBook), 2013.
- [54] M. H. Hoppe, "Culture and Leader Effectiveness: The GLOBE Study," 2007. [Online]. Available: <http://www.inspireimagineinnovate.com/PDF/GLOBEsummary-by-Michael-H-Hoppe.pdf>. [Accessed Jun 2014].
- [55] C. N. Grove, "Introduction to the GLOBE Research Project on Leadership Worldwide," Grovewell LLC, 2005. [Online]. Available: <http://www.grovewell.com/pub-GLOBE-intro.html>. [Accessed Jun 2014].
- [56] N. M. S. U. (NMSU), "GLOBE Project - Global Leadership & Organizational Behavior Effectiveness," NMSU College of Business, [Online]. Available: <http://business.nmsu.edu/research/programs/globe/>. [Accessed Jun 2014].
- [57] J. Chhokar, F. Brodbeck and R. House, Culture and Leadership Across the World: The GLOBE Book of In-Depth Studies of 25 Societies, Mahwah, N.J: Lawrence Erlbaum Associates, 2007.
- [58] R. D. L. Kai Hammerich, Fish can't see water - How National Culture can make or break Corporate Strategy, West Sussex, UK: John Wiley & Sons Ltd, 2013.
- [59] Itim, "The Hofstede Centre - Organisational Culture Dimensions," Itim, [Online]. Available: <http://geert-hofstede.com/organisational-culture-dimensions.html>. [Accessed Aug 2014].
- [60] Linac, "Emotional Intelligence Self Assessment," Linac, [Online]. Available: http://www.linac.co.uk/images/pdfs/personaldownloads/ei_selfassessment.pdf. [Accessed Aug 2014].
- [61] J. D. Mayer, "Personal Intelligence - Beyond Emotional Intelligence," WordPress, 2014. [Online]. Available: <http://personalintelligence.info/the-theory-of-personal-intelligence/beyond-emotional-intelligence/>.

- [62] E. Erasmus, *Using Virtual Team Project Communication as a means of predicting Virtual Team Effectiveness*, Johannesburg: University of Johannesburg (UJ), Faculty of Engineering, 2009.
- [63] G. LLC, "Global Leadership Training - Virtual Team Performance Facilitation," Grovewell LLC, [Online]. Available: <http://www.grovewell.com/virtual-team-facilitation.html>. [Accessed Aug 2014].
- [64] R. Hoffman, B. Casnocha and C. Yeh, *The Alliance - Managing talent in the networked age*, Boston: Harvard Business Review Press, 2014.
- [65] Wikipedia, "Kanban," Wikipedia, 2014. [Online]. Available: <http://en.wikipedia.org/wiki/Kanban>. [Accessed Aug 2014].
- [66] Toyota, "Kanban System: Just-in-Time — Philosophy of complete elimination of waste," Toyota, 2014. [Online]. Available: http://www.toyota-global.com/company/vision_philosophy/toyota_production_system/just-in-time.html. [Accessed Aug 2014].
- [67] Dirk Holtbrugge, Abigail Weldon and Helen Rogers, "Cultural determinants of email communication styles," *International Journal of Cross Cultural Management*, vol. 13, no. 89, pp. 89-108, 2012.
- [68] C. K. W. D. Dreu and L. R. Weingart, "Task Versus Relationship Conflict, Team Performance and Team Member Satisfaction: A Meta-Analysis," American Psychological Association, Inc, 2003.
- [69] E. Meijer, "Critical Chain: A hands-on Project Application," Integrated Management Systems Inc (IMSI), Detroit, USA, 2003.
- [70] G. K. Rand, "Critical Chain: The Theory of Contraints applied to Project Management," *International Journal of Project Management*, no. 18, pp. 173-177, 2000.
- [71] G. I. Kendall, "Critical Chain and Critical Path – What's the Difference?," [Online]. Available: <http://www.tocinternational.com/pdf/Critical%20Path%20vs.%20Critical%20Chain.pdf>. [Accessed June 2013].
- [72] F. Retief, "Overview of Critical Chain Project Management," Management Planning Systems, 2002. [Online]. Available: <http://projectcontrolling.nl/wp-content/uploads/2012/12/Overview-of-Critical-Chain.pdf>. [Accessed 2014].
- [73] G. Hofstede, "The Hofstede Centre - Cultural Tools Country Comparison - Israel," [Online]. Available: <http://geert-hofstede.com/israel.html>. [Accessed Oct 2014].
- [74] Wikipedia, "Lean project management," Wikipedia, [Online]. Available: http://en.wikipedia.org/wiki/Lean_project_management. [Accessed Oct 2014].
- [75] G. Hofstede, "The Hofstede Centre - Cultural Tools Country Comparison - Japan," [Online]. Available: <http://geert-hofstede.com/japan.html>. [Accessed Oct 2014].

- [76] R. Archibald, V. Liberzon and P. B. d. S. Mello, "The Application of Success Probabilities, Success Driven Project Management/SDPM, and some Critical Chain Concepts to the Oil & Gas Industry in Brazil," in *PMI College of Scheduling 5th Annual Conference*, Chicago, IL USA, 2008.
- [77] S. M. Technologies, "Spider Project - Running the Projects Faster, better and at Lower Cost," [Online]. Available: http://www.spiderproject.ro/en/Spider_Project_Brochure.pdf. [Accessed Feb 2013].
- [78] S. Project, "Success Driven Project Management - Comparative to EVM," [Online]. Available: <https://sites.google.com/site/successdrivenprojectmanagement/home/comparative/to-evm>. [Accessed Feb 2015].
- [79] S. Project, "Spider Project," [Online]. Available: http://www.spiderproject.ru/publ_e.php?p=2|6. [Accessed Feb 2013].
- [80] G. Hofstede, "The Hofstede Centre - Cultural Tools Country Comparison - Russia," [Online]. Available: <http://geert-hofstede.com/russia.html>. [Accessed Oct 2014].
- [81] W. M. Trochim, "Web Center for Social Research Methods - Knowledge Base, Qualitative Approaches," [Online]. Available: <http://www.socialresearchmethods.net/kb/qualapp.php>. [Accessed Feb 2014].
- [82] Wikipedia, "Qualitative Research," Wikipedia, [Online]. Available: http://en.wikipedia.org/wiki/Qualitative_research. [Accessed Jun 2014].
- [83] M. Q. Patton, "National Center for Biotechnology Information," HSR: Health Services Research, 1999. [Online]. Available: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1089059/pdf/hsresearch00022-0112.pdf>. [Accessed April 2015].
- [84] N. L. Y. S. Denzin, *The Landscape of Qualitative Research*, Thousand Oaks, CA: Sage Publishing, 1998.
- [85] Wikipedia, "Online Interview," [Online]. Available: http://en.wikipedia.org/wiki/Online_interview. [Accessed Jun 2014].
- [86] UWE, "Research Observatory - Researchs Methods, Online Interviewing," University of the West of England, [Online]. Available: <http://ro.uwe.ac.uk/RenderPages/RenderLearningObject.aspx?Context=7&Area=1&Room=3&Constellation=25&LearningObject=119>. [Accessed Oct 2014].
- [87] G. Hofstede, "The Hofstede Centre - Cultural Tools Country Comparison - Germany," [Online]. Available: <http://geert-hofstede.com/germany.html>. [Accessed Oct 2014].
- [88] G. Hofstede, "The Hofstede Centre - Cultural Tools Country Comparison - Australia," [Online]. Available: <http://geert-hofstede.com/australia.html>. [Accessed Oct 2014].
- [89] J. D. Mayer, *Personal Intelligence - The Power of Personality and how it shapes our lives*, New York: Scientific American - Farrar, Straus and Giroux, 2014.

[90] Wikipedia, "Cultural Intelligence," Wikipedia, April 2014. [Online]. Available: http://en.wikipedia.org/wiki/Cultural_intelligence. [Accessed September 2014].



Appendixes

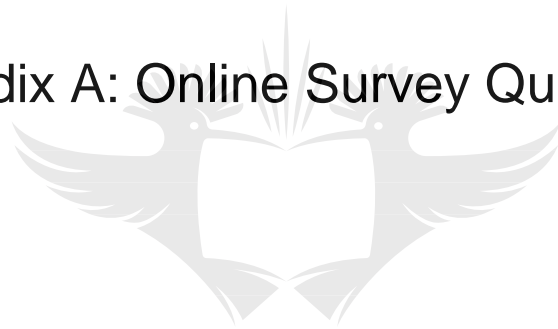
Appendix A: Online Survey Questions

Appendix B: Survey Data

Appendix C: Interview Forms



Appendix A: Online Survey Questions



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Online Survey Questions

The follow 32 questions were placed in the online surveys that where send out to 250 people across the world presenting various countries.

Q1 - Your Age Range?

1. 20 - 30
2. 30 - 40
3. 40 - 50
4. 50 - 65+

Q2 - Country in which most recent or current work project is, being completed?

Q3 - Country where you were born?

Q4 - Select from the following all that are applicable:

1. Worked overseas outside home country for more than 2 year before returning back home.
2. Worked for long periods in another or various countries other than the home country.
3. Worked in home country only and on projects in the home country.
4. Worked in home country only as a Virtual / Offshore team member of overseas projects.
5. Worked in home country and visit other countries on short-term basis regularly.
6. Relocated permanently to another country and is working on various projects in this country.
7. Relocated permanently to another country and is working on various projects in other countries.

Q5 - Select from the following all that are applicable?

1. I managed Virtual offshore team(s) before
2. I managed Local onshore team(s) before
3. I never worked with any virtual offshore team(s) before

Q6 - How many countries other than your home country have you been working in?

1. 1
2. 2
3. 3
4. 4
5. 5+

Q7 - Overall, how satisfied are you with the company you work for?

1. Extremely Dissatisfied
2. Very Dissatisfied
3. Neither Satisfied nor Dissatisfied
4. Very Satisfied
5. Extremely Satisfied

Q8 - How long have you worked at company?

1. Less than 6 months
2. 6 months - 1 year
3. 1-2 years
4. 3-5 years
5. More than 5 years

Q9 - Do you feel that employees are recognized as individuals?

1. Always
2. Usually
3. Sometimes
4. Rarely
5. Never
6. Not sure

Q10 - How flexible is the company with respect to your family responsibilities?

1. Very inflexible
2. Somewhat inflexible
3. Neither
4. Somewhat flexible
5. Very flexible

Q11 - How motivated are you to see the company succeed?

1. Very motivated
2. Somewhat motivated
3. Not very motivated
4. Not at all motivated
5. Not sure



Q12 - Are you involve with Project Management?

1. Yes
2. No

Q13 - What are you highest experience level for Project Management?

1. Post-graduate degree in Project Management
2. Certification in Project Management (PMP, PRINCE2 or equivalent)
3. Diploma or certificate in project management training course
4. Basic understanding of main principles of project management
5. Very limited knowledge of project management

Q14 - How many years of experience do you have in project management?

1. <1 year
2. 1 - 5 years
3. 5 - 10 years
4. 10 - 20 years
5. 20 - 30 years
6. 30+ years

Q15 - Are you familiar with the difference in Critical Path and Critical Chain Project Management and also the Theory of Constraints?

1. Yes
2. No

Q16 - When was the last time you made use of Critical Chain Project Management?

1. Currently in an ongoing project
2. In a previous project completed about 6 months ago
3. In a previous project completed about 12 months ago
4. In a previous project completed more than 12 months ago
5. Have not been using it at all, but know about it only

Q17 - Will you make use of Critical Chain Project Management rather than the more traditional Critical Path Method?

1. Yes
2. Maybe
3. No

Q18 - Do you believe it is important to have a proper understanding of culture (Cultural Intelligence) while leading or being part of culturally diverse teams, or is this not important at all?

1. Important
2. Not important at all

Q19 - How many times on average do you see during a given projects lifecycle that cultural differences impact on team performance (miss-communication, mistrust, conflict, etc.)?

1. It is noticed almost on a daily basis
2. It is noticed about once a week
3. It is only noticeable about once a month
4. It is noticed some times during a period of about 6 months
5. It is seldom noticed during a period of approximately 1 year

Q20 - Do you take in account cultural differences when setting up culturally diverse teams for a new project?

1. Always
2. Regularly
3. Sometimes
4. Not at all

Q21 - Select that of the following are applicable. You may select more than one option.

1. You are familiar with and use online collaboration tools like WebEx, Skype, Lync, etc.
2. You are familiar with and use online project management or other task management tools
3. You are familiar with and use mostly Email and telephone to collaborate

Q22 - Have you noticed any problems with communication and collaboration between people from different cultures?

1. Yes
2. No

Q23 - Did you had any form of cross-cultural training?

1. Yes, completed formal training in cross-culture communication and Cultural Intelligence
2. Yes, completed informal training by attending workshops, seminars or reading
3. No training

NOTE:

For the following questions **Q24 to Q27** the **Cultural Intelligence Scale (CQS)**, as developed and academically validated by **Soon Ang, Linn v Dyne and Christine Koh** [41] were included in the survey. A copy of the original self-assessment questionnaire report is placed at the end of this questionnaire list for reference.

The questions were based on the Likert Scaling Method.

Q24 - How would you rate your Cultural Intelligence Drive (interest in working with people from other cultures)?

	I strongly disagree	I disagree	Slightly disagree	Neutral	Slightly agree	I agree	I strongly agree
I enjoy interacting with people from different cultures in my team.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am confident that I can socialize with locals in a culture that is unfamiliar to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am sure I can deal with the stresses of adjusting to a culture that is new to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I enjoy living in cultures that are unfamiliar to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am confident that I can become accustomed to the shopping conditions in a different culture.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q25 - How would you rate your own Cultural Intelligence Knowledge (knowledge of other cultures you work with)?

	I strongly disagree	I disagree	Slightly disagree	Neutral	Slightly agree	I agree	I strongly agree
I know the legal and economic systems of other cultures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know the rules (e.g., vocabulary, grammar) of other languages.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know the cultural values and religious beliefs of other cultures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know the marriage systems of other cultures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know the arts and crafts of other cultures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know the rules for expressing non-verbal behaviors in other cultures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q26 - How would you rate your own Cultural Intelligence Strategic Thinking (your plan or strategy to use your cultural knowledge in your work place)?

	I strongly disagree	I disagree	Slightly disagree	Neutral	Slightly agree	I agree	I strongly agree
I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am conscious of the cultural knowledge I apply to cross-cultural interactions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I check the accuracy of my cultural knowledge as I interact with people from different cultures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Q27 - How would you rate your Cultural Intelligence Actions (your behaviors and actions to adopt working with other cultures)?

	I strongly disagree	I disagree	Slightly disagree	Neutral	Slightly agree	I agree	I strongly agree
I change my verbal behavior (e.g., accent, tone) when a cross-cultural interaction requires it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I use pause and silence differently to suit different cross-cultural situations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I vary the rate of my speaking when a cross-cultural situation requires it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I change my non-verbal behavior when a cross-cultural situation requires it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I alter my facial expressions when a cross-cultural interaction requires it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q28 - The following is an Emotional Intelligence self-awareness assessment for your workplace. It is closely linked to Cultural Intelligence and reflect a bit more of your personality. Please select for each question the applicable option that relates to your work environment.

	Always	Usually	Sometimes	Occasionally	Rarely
Can you tell when your emotions are affecting your performance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Can you tell when you are starting to lose your temper or when your thoughts are turning negative?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you aware of your strengths and weaknesses?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you open to candid feedback, new perspectives, continuous learning, and self-development?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you able to show a sense of humor and perspective about yourself?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you decisive, able to make decisions despite uncertainties and pressures?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q29 - The following also relate to your Emotional Intelligence in the workplace and reflects on your self-regulation ability in various situations in the workplace. Please select the applicable options for each question.

	Always	Usually	Sometimes	Occasionally	Rarely
Do you manage your impulsive feelings and distressing emotions well e.g. do you just get on with things when you are angry or state your concerns without anger when you are being excluded?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you think clearly and stay focused under pressure or when feeling anxious?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you build trust through your reliability, ethical behavior and authenticity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you admit your mistakes and confront unethical actions in others?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you meet commitments and keep promises?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Are you flexible in how you see events?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you take tough, principled stands, even if they are unpopular?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q30 - The following reflects on your self-motivation ability (part of your Emotional Intelligence) in the workplace. Again please select the options application to the questions.

	Always	Usually	Sometimes	Occasionally	Rarely
Can you kick-start yourself into action when appropriate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you readily make personal or team/group sacrifices to meet a larger organizational goal?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you learn how to improve your performance within the team?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you set challenging goals and take calculated risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you results-oriented, with a high drive to meet your objectives and standards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you bounce back quickly after a setback?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you pursue goals beyond what is required or expected of you?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you persist in seeking goals despite obstacles and setbacks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q31 - The following relates to your social awareness in the workplace and team environment. This also forms part of your Emotional Intelligence. Please select the options applicable to the questions.

	Always	Usually	Sometimes	Occasionally	Rarely
Do you show sensitivity and understand other's perspectives?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you seek ways to increase the team's satisfaction and loyalty?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you attentive to emotional cues and listen well?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you see diversity as an opportunity, creating an environment where diverse people can thrive?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you respect and relate well to people from varied backgrounds?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you offer useful feedback and identify people's needs for development and encourage it?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you acknowledge and reward people's strengths, accomplishments and development in your team?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you challenge bias and intolerance in the team environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you detect crucial social networks in the workplace?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q32 - This last set of questions relates to relationship management as part of your Emotional Intelligence in the workplace and team environment. Please select the options for each question.

	Always	Usually	Sometimes	Occasionally	Rarely
Do you balance a focus on the task with attention to relationships?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you promote a friendly, co-operative climate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do others see in your team qualities like respect, helpfulness, and co-operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you listen well, seek mutual understanding and welcome sharing of information fully?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are you able to raise morale and make others feel good?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you handle difficult people and tense situations with diplomacy and tact?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you lead by example?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you recognize the need for change and remove barriers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you cultivate and maintain extensive informal networks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Cultural Intelligence Scale (CQS) – Self-Report ^a

Read each statement and select the response that best describes your capabilities.

Select the answer that BEST describes you AS YOU REALLY ARE

Rating (1 = strongly disagree; 7 = strongly agree)

CQ Factor	Questionnaire Items
Motivational CQ: (CQ Drive)	
MOT1	I enjoy Interacting with people from different cultures.
MOT2	I am confident that I can socialize with locals In a culture that is unfamiliar to me.
MOT3	I am sure I can deal with the stresses of adjusting to a culture that is new to me.
MOT4	I enjoy living In cultures that are unfamiliar to me.
MOT5	I am confident that I can get accustomed to the shopping conditions in a different culture.
Cognitive CQ: (CQ Knowledge)	
COG1	I know the legal and economic systems of other cultures.
COG2	I know the rules (e.g., vocabulary, grammar) of other languages.
COG3	I know the cultural values and religious beliefs of other cultures.
COG4	I know the marriage systems of other cultures.
COG5	I know the arts and crafts of other cultures.
COG6	I know the rules for expressing non-verbal behaviors in other cultures.
Metacognitive CQ (CQ Strategy):	
MC1	I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds.
MC2	I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.
MC3	I am conscious of the cultural knowledge I apply to cross-cultural Interactions.
MC4	I check the accuracy of my cultural knowledge as I interact with people from different cultures.
Behavioral CQ: (CQ Action)	
BEH1	I change my verbal behavior (e.g.. accent, tone) when a cross-cultural interaction requires it.
BEH2	I use pause and silence differently to suit different cross-cultural situations.
BEH3	I vary the rate of my speaking when a cross-cultural situation requires it.
BEH4	I change my non-verbal behavior when a cross-cultural situation requires It.
BEH5	I alter mv facial expressions when a cross-cultural Interaction requires it.

^a © Cultural Intelligence Center (2005). Used by permission of Cultural Intelligence Center.

Note: Use of this scale granted to academic researchers for research purposes only.

For information on using the scale for purposes other than academic research (e.g., consultants and non-academic organizations), please email info@culturalq.com



Appendix B: Survey Data

(Separate files)

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Appendix C: Online Interview Form



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Select the Project related to this Online Interview in which you were involved with:

1. Rail Project – Brazil, Mozambique & South Africa
2. Highway Interchange Project - Dubai, UAE
3. Major Highway Projects – Programme Management – Doha, Qatar

Your age range?

1. 20 - 30
2. 30 - 40
3. 40 - 50
4. 50 - 65+

Country where you were born?

How many countries other than your home country have you been working in?

1. 1
2. 2
3. 3
4. 4
5. 5+

Were you involved with Project Management?

1. Yes
2. No

What is your highest experience level for Project Management?

1. Post-graduate degree in Project Management
2. Certification in Project Management (PMP, PRINCE2 or equivalent)
3. Diploma or certificate in project management training course
4. Basic understanding of main principles of project management
5. Very limited knowledge of project management

How many years of experience do you have in project management?

1. <1 year
2. 1 - 5 years
3. 5 - 10 years
4. 10 - 20 years
5. 20 - 30 years
6. 30+ years

Are you familiar with the difference in Critical Path and Critical Chain Project Management and also the Theory of Constraints?

1. Yes
2. No

Which of the following will you relate to Critical Chain Project Management?

1. None of the resources limit the scheduling of projects
2. Resources do limit the scheduling of projects

Do you believe it is important to have a proper understanding of culture (Cultural Intelligence) while leading or being part of culturally diverse teams, or is this not important at all?

1. Important
2. Not important at all

Did you have any form of cross-cultural training?

1. Yes, completed formal training in cross-culture communication and Cultural Intelligence
2. Yes, completed informal training by attending workshops, seminars or reading
3. No training

- **Describe the main cross culture communication issues that you encountered on the project:**
- **Please describe any cross-cultural decision making issues you may have noticed during the project:**
- **Please describe any cross-cultural time management issues you noticed during the project:**
- **Please describe any cross-cultural conflicts encountered and the resolution for it or the outcome:**

Please drag and rank (1 to 4) the following in order of importance on the project in relation to cross-cultural management:

- Decision Making
- Conflict Resolution
- Communication
- Time Management

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