

Mega Construction Projects in South Africa: Cultural Complexity^{1, 2}

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Abstract

Statistics of struggling and failed mega projects testify that the impact of cultural complexities on mega project implementation over the years has become a talking point that needs a deeper understanding. This is pertinent with mega projects as strategic alliances exacerbate culture and national cultural differences which would require more harmonising to effect utmost success.

The possibility of cultural disruptions in implementing Mega Construction Projects (MCPs) in South Africa using Medupi and Kusile coal plant projects as cases for this study was explored with the intention of enlightening project stakeholders in order to assist developing countries achieve their sustainable development objectives and overcome the challenges that hinder the successful development of MCPs. Based on the findings, the study results reveal that there are cultural disruptions that can be found in implementing mega construction projects, ignoring and mismanaging these cultural differences could lead to massive project.

Key words: mega construction projects, cultural complexities

1. Introduction

There is nothing that illustrates complexity as completely as megaprojects. These are almost synonyms for a construct that is not precise. Project complexity is just one of several concepts, but in the world of construction of paramount importance.

It can be demonstrated that a distinction of different types of complexity helps to understand megaprojects best. One is the overall project complexity, others are task, technologies, social and cultural complexity.

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Normally, literature (Gidado, 2016) has only been concerned about task complexity. If the others are not addressed as well, a megaproject is set for failure. Contractors in megaprojects reply to overall and to task complexity by breaking it down to functional departments, to social complexity by trust and commitment, and to cultural complexity by sense making processes.

As a fairly new democratic developing country, South Africa still faces major challenges of by the socio economic ills of the past regime (Khatleli, 2016).

In order to address these challenges and goals the South African Government adopted a National Infrastructure Plan in 2012. The plan's main objective was to transform SA economic landscape while simultaneously creating significant numbers of new jobs, and strengthen the delivery of basic services.

Mega infrastructure /construction projects which are “large – scale complex ventures that typically cost US\$ 1 billion or more, which take many years to develop and build, involve multiple public and private stakeholders, are transformational, and impact millions of people.” as per Flyvbjerg (2014:11) definition, and investments aim to bring about big changes in the geography of countries and life of people as in the SA's context.

This paper sought to investigate cultural complexities that affect the implementation of Mega construction projects in South Africa's context. The term complexity in the context of this paper as defined by Johnson (2009) is generally used to characterize something with many parts where those parts interact with each other in multiple, while the concept of culture is briefly defined by Hass (2010) as the collection of values, norms, beliefs, customs, institutions, and forms of expression that reflects the thoughts, feelings, actions, and interests of people.

To achieve the aim of this paper together with its three objectives, a qualitative research methodology approach was followed. The following objectives were utilized namely: - 1) To assess the understanding of the concept of culture by workers in SA projects; 2) To establish the existence and level of impact of cultural diversities and practices that is brought about by a project external factors and stakeholders in SA projects and 3) To assess the challenges occasioned by splicing foreign culture into South African culture in projects.

MCPs in SA are always implemented in conjunction with partners from different jurisdictions and backgrounds, mostly alien to the work culture (s) in SA (Ernst & Young, 2013). It is crucial that the disruptiveness of these alien cultures are understood and managed as they could be contributing to the le, (2009) is generally used to characterize something with many parts where those parts interact with each other in multiple, (2009) is generally used to characterize inefficiencies of implementing MCP's in SA.

2. Definition – Mega Construction Project (MCP's)

MCP's are generally defined as large-scale, complex projects that are designed and constructed over a period of time, normally four years or more, at a cost of more than US\$ 1 billion and involve and have an impact on multiple public and private stakeholders (Galloway, P., Kris, P. and Dignum, J., 2014).

Gruno (2004) calls them the “giants” among the projects; Gruno (2004) puts the emphasis on the aspect of multi-organizational enterprises (MOEs) and characterizes these by (I) singularity, (II) complexity, (III) goal-orientation (technical, financial, time) and (VI) the nature and the number of project owners.

According to Fylvbjerg (2014) -one of the most cited scholars in the world on megaprojects planning and management,- the word Mega is derived from the Greek word “Megas” which means great, large, vast, mighty and important. The concept of a project is described as ‘a temporary endeavour undertaken to create a product, service or result’ (Schwalbe, 2015)

Fylvbjerg (2014) defines Mega projects as large-scale complex ventures that typically cost a US\$ 1 billion or more, they take many years to develop and build, they involve multiple public and private stakeholders, they are transformational, and impact millions of people.

3. Mega Construction Projects – Global View.

The importance of infrastructure as a key driver of growth, competitiveness and social well-being is well established, yet a significant number of economically viable infrastructure political cycles, short-term investment horizons, a lack of viable financing structures, inappropriate risk assessment frameworks, implementation complexities and a lack of long-term vision mean that much needed investment does not flow to infrastructure and development – causing a \$1 trillion annual shortfall towards a \$4 trillion demand in infrastructure alone (Mirek, 2017).

Mirek (2017) continues to predict that these problems will worsen, as infrastructure ages in developed economies and new pipelines of projects are needed in the world's fastest growing emerging economies. Unless the private and public sectors can develop new models and approaches to collaboration, progress will not be achieved (Ibid).

Conversely, despite the costs, time overruns, and the fact that 2/3 of megaprojects continue to fail, megaprojects continue to increase in size and number (PWC, 2015).

Historical performance data for megaprojects speak their own language; the performance has been very poor across the globe. In particular MCP's are often over-budgeted and/or behind schedule and, once finished, they deliver less benefits than

planned. Statistics reveals that nine out of ten such projects have cost overruns. Cost overruns of up to 50 % in real terms are common, over 50 % not uncommon (Ernst & Young, 2013).

Recent examples include: - the cost overrun for the Channel tunnel, the longest underwater rail tunnel in Europe, connecting the UK and France, was 80 % over budget in real terms; Denver International Airport, 200 % cost overrun; Boston's Big Dig, 220 %; the UK National Health Service IT system, 400-700 % and lastly the Sydney Opera was 1,457 % over budget and 10 years late (Ernst & Young, 2013) .

Sadly, cost overrun is a problem experienced both in private as well as public sector projects, and things are not improving; overruns have stayed high and constant for the 70-year period for which comparable data exists. While as stated above that developing countries seem to perform the worst in implementing MCP's; all countries and continents for which data is available are not immune to cost and time overruns.

4. Mega Construction Projects in Africa

"The total demand for infrastructure investment and maintenance from developing countries is estimated at more than US\$ 900 billion a year, with greatest needs in Africa and Asia (Khatleli, 2016:3). According to Khatleli (2016) Africa's economic growth for 2013 averaged 4% as opposed to the global economic growth of 3%. Africa's economic growth inevitably had a great contribution from the implementation of megaprojects.

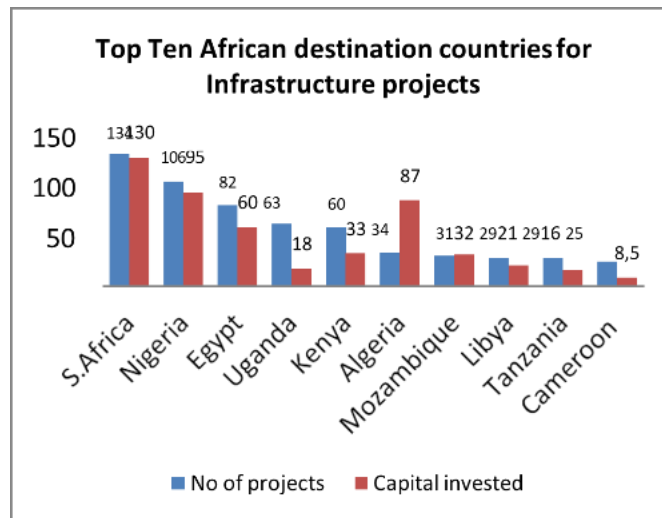
The present performance picture of the construction industry in Africa is also not a desirable one, uncertain global macroeconomic conditions and domestic challenges have led to lower growth projections for sub-Saharan Africa (SSA) as a whole. Growth in SSA fell to 3.5% in 2015, significantly below the 5 -7% average experienced by the region over the last decade. SSA's 2016 growth forecast was even lower at only 1.4%, the first time that the region's growth has been lower than the world average since 2000 (Ernst & Young, 2013).

According PWC (2016) the total number of infrastructure construction projects in Africa that had broken ground by 1 June 2016 is 286 and are valued at US\$50m or above, collectively, these projects are worth US\$324bn. As a region, West Africa had the most number of projects with 92 projects and also the most in terms of value at US\$120bn. However, South Africa was the single country with the largest number of projects (41) followed by Nigeria (38).

A noticeable positive growth is from North Africa, whereby North Africa saw a significant jump in the number of projects. The number of projects in North Africa increased by 44.8% and the value of projects increased by 195%, signifying an increase of confidence in the region (PWC, 2016).

The Deloitte and Touche (2016) confirms Ernest and Young survey report that South Africa had the most infrastructure projects (with a combined value of close to US\$130 billion) in 2013; refer to Figure 3 below.

Figure 1: Top ten African destination countries for Infrastructure projects



Source: (Ernst & Young, 2013)

5. Mega Construction Projects - The South African Construction Industry

Mega Construction Projects have a brief history in South Africa; The South African Government uses MCP's as one of its economic vehicle to transform economic landscape while simultaneously creating significant numbers of new jobs, and strengthen the delivery of basic services (Babatunde Y. and Wang Y., 2015).

Numerous megaprojects have been implemented in South Africa to meet different objectives ranging from Energy, Transport and Sport etc. For example GFIP e-toll project in 2011 to alleviate traffic congestion in Gauteng as well as the construction of stadiums for the 2010 Soccer World cup (Babatunde Y. and Wang Y., 2015).

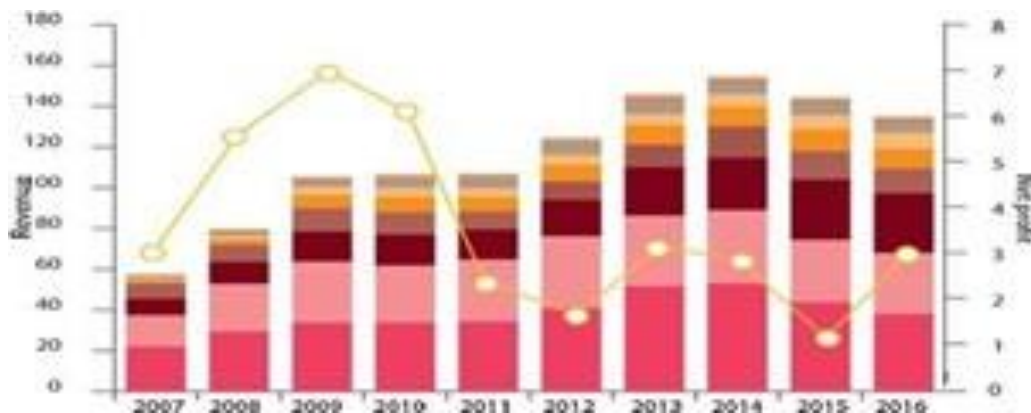
South Africa is not yet at a level of a developed country, therefore MCP's are used as a means to address the infrastructure backlog and enhance economic competitiveness (Khatleli, 2016). The country is however confronted with numerous challenges in implementing MCP's which includes among other things; the skills shortage or skills misplacement, restive labour force, the perceived political interference and influence, the poor level of planning and poor stakeholder analysis and engagement thereof (ibid).

Khatleli (2016) also mentions few more examples of these mega project failures in SA,

namely; the implementation of the Gauteng Freeway Improvement Project (GFIP) and Eskom Medupi Coal Plant Project recently , which resulted in unpleasant kickbacks due to lack of meaningful public participation.

As can be seen in Figure 2 below, there has been exponential growth in the SA construction in terms of revenue generated from 2011 to 2014, followed by downward trend in 2015 and 2016, (PWC , 2016).

Figure 2: SA Construction growth patterns.



Source: (PWC, 2016).

Eskom, Transnet and SANRAL have been reliable sources of public sector expenditure over the years. Figure 6 reflects a 14% decrease in total capital expenditure in 2016 to R98 billion. The bulk of this decrease is attributable to the decrease in capital expenditure by Eskom, which shrank by 19% to R57.3 billion in 2016. Expenditure by SANRAL also declined in 2016, with a marginal increase in expenditure by Transnet being noted (PWC, 2016).

Government has remained committed to significant capital expenditure in the construction of the Medupi and Kusile power stations. Unfortunately though, over-expenditure on Eskom projects and the funding debate at SANRAL has detracted from real growth in public sector infrastructure.

The private sector also plays a significant role in the constructions industry, the key active industry players includes; The Group Five, WHBO, Murray and Roberts and Aveng etc. PWC analysis report also reflects a decline in construction growth and expenditure in the private sector. This decrease in expenditure underlines the challenges experienced by the industry.

Summary

The reviewed literature reveals that MCP's have become a popular form of work in modern organizations both in developed and developing countries. It is therefore not a surprise that mega construction projects have received considerable attention in literature in recent years.

The reviewed literature also reveals that even though infrastructure megaprojects generally have great potential to generate wealth and benefit society, projects often fail to materialize or, when completed, are unable to meet expected performance targets. However, it is not all doom across the African continent; there are positive signs of future growth in the industry as suggested by historical evidence.

Sadly, the concept of project complexity has received little detailed attention in project management literature. The next section will review the literature on project complexity relevant to project management with emphasis towards the construction industry and the establish the existence of cultural disruptions in implementing Mega Construction Projects in South Africa.

6. The concept of Complexity

The first important aspect regarding complex project is the definition of the word complex and its distinction from complicated. Understanding the differences is an important baseline for its implication on managing projects.

According to the Webster Dictionary, 'complex' is defined as "composed of two or more parts; involving many parts" – whereas complicated is something "difficult to analyze or understand". The difference relates to the interconnection between parts. In complex parts, there is interdependency between different parts. In complex systems there are interactions amongst parts of the system producing neither linear nor predictable outcomes (Maylor et al., 2008). Further expanding this concept, Whitty and Maylor (2009), states that "a complex system is a system formed out of many components whose behavior is emergent". The outcome of the complex system cannot be inferred from the behavior of its components.

Complexity is an attribute that does not depend on the observer in opposition to complicatedness. According to Browning (2014), complexity is an objective characteristic of the system and complicatedness is a subjective one. Complicated may be related to the number of stakeholders involved.

In complicated projects, complication can be managed with expertise, a better understanding of the parts that constitutes the system. Weaver (2007) supports (Maylor's et al., (2008) description of complexity. According to Weaver (2007), the stem of the word complexity i.e. Complex is composed of the Latin words com (meaning: "together") and

plex (meaning: woven). This is best contrasted with Complicated where plic (meaning: folded) refers to many layers. A complex system is thereby characterised by its inter-dependencies, where as a complicated system is characterised by its layers.

According to Johnson (2009), complexity is generally used to characterize something with many parts where those parts interact with each other in multiple ways, culminating in a higher order of emergence greater than the sum of its parts. Johnson (2009) further explains that the term complexity is used to describe the behaviour of a system or model whose components interacts in multiple ways and follow local rules, meaning there is no reasonable higher instruction to define the various possible interactions.

The crucial question therefore is “what makes a project complex?” and also why mega construction projects are regarded as complex?

Complex projects according to (Lopez, et al., 2015) are those projects that are:-

- Are characterized by uncertainty, ambiguity, dynamic interfaces and significant political or external influences; and/or
- Usually run over a period which exceeds the technology cycle time of the technologies involved; and/or
- Can be defined by effect, but not by solution

Lopez, et al., (2015) further notes that some of the causes of project complexity in detail to include:

- Details – number of variables and interfaces
- Ambiguity – lack of awareness of events and causality
- Uncertainty – inability to pre- evaluate actions
- Unpredictability – the inability to know what will happen
- Dynamics – rapid rate of change
- Social structure – numbers and types of interactions
- Interrelationships – many interdependencies and interconnections exist

As projects become more complex, managing these projects becomes more challenging,

implying that a high degree of managerial acumen will be required in managing these.

Project complexity affects the way projects should be managed. According to Baccarini (1996), complex projects require a greater managerial effort during their execution. This author defines project complexity as “consisting of many varied interrelated parts and operationalized in terms of differentiation and interdependency”. Therefore, project complexity can be applied to different dimensions of the project management process, like organization, technology, decision- making, and environment. In such a way, when defining project complexity, one needs to state for which dimension the concept is being used (Baccarini, 1996).

Complexity is a measure of the difficult to achieve the desired understanding of a complex system –although high levels of uncertainty are a fundamental aspect of complex projects, it is not an exclusive definition. In this sense, complexity is a variable and not a qualitative concept (Maylor, 2009).

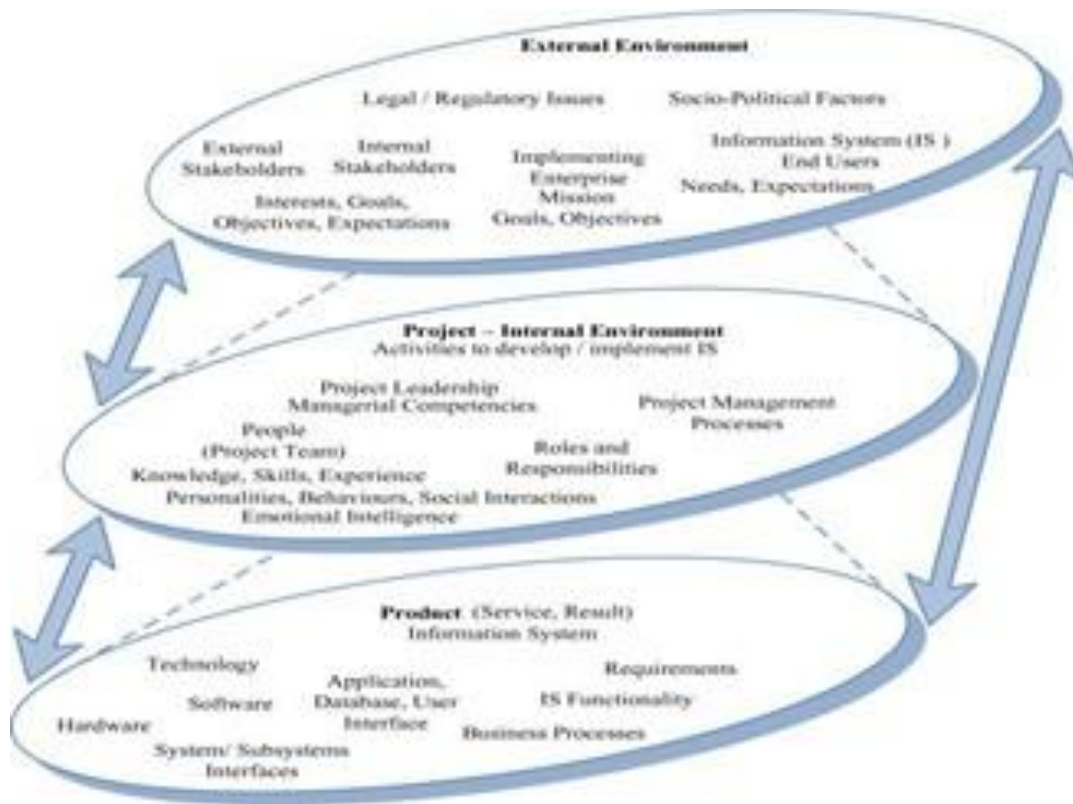
6.1 Complexity in Mega construction projects

Complexity is an intriguing characteristic of construction projects. It is the degree of complexity that determines the overall approach to a project, specifically the required resources as well as tools and techniques.

It is crucial to note, that over the years discussion on complexity has progressed from just considering the technical complexity to include other categories, for example Baccarini (2016) distinguishes between organizational and technological complexity. Baccarini (2016) Introduces task, social and cultural complexity, Task complexity combines technological and parts of organizational complexity, especially planning and organizing. It excludes leadership which is part of the social complexity. There can be little discussion that the number and diversity of stakeholders in a project along with the strength of their impact (interest and power) increases its complexity.

Stakeholders’ cultural diversity may influences project outcome to a large extent. The more cultures meet in a project, the more complex it becomes since it requires coordination of an increasing number of different cognitive maps (Brockmann 2009) (Brockmann, 2009); this we term “cultural complexity”. Figure 8 below summarises different forms of complexities that can be found in construction projects.

Figure 3: Mega Construction Project Complexity



Source: (Brockmaan, 2009)

6.2 Complexity in multinational projects

As companies leverage their operations across national borders to take advantage of multinational sourcing, joint ventures, and alliances, their business practices need to be more effective in managing cross- cultural issues and challenges.

Managing cultural issues and challenges necessitate guidelines and unified direction toward project objectives, technology transfer and project integration to be “synthesized and orchestrated” centrally and translated across borders into the cultures of the local operations (Martinez, 1995).

Linkages among individual work components also need to be developed and effectively “managed” across geographical areas and organizational cultures. Thus, multinational project teams need to be integrated not only across the miles, but also be unified among different business processes, management styles, operational support systems, and organizational cultures (Bahrami 1992, DeMaio 1994, McFarlin 2008).

6.3 Complexity in working in different cultures

Today's global market has impacted projects and programs in no lesser way than it has processes. Indeed, one can argue that multiculturalism has a more profound effect on projects simply because projects involve multiple parties or organisations, which necessitates the building of temporary working relationships with people who may come from a different corporate culture. This requires specific skills in cross-cultural communication and trust building. Culture cannot be summarised in a short list of rules, neither a lists of cultural dos and don'ts cannot provide the critical thinking skills necessary to build trusting relationships (Brockmann, 2009).

Culture itself can be complex especially in the construction of mega projects which involve multi different stakeholders. Section 3.6 below will unpack the concept of culture in more detail and look at how cultural complexities relates to the construction of mega projects.

7. The Concept of Culture

When invoking a study involving different aspects of cultures, one must first answer the questions: What is culture?

The meaning of culture has been much debated by many anthropologists and sociologists, and definitions vary according to the context in which the term is used. This study will therefore present a specific definition of “culture” as it applies to this paper.

Culture is a unique aspect of mankind. It reflects how people differ from other people as well as from the animal world. Human behaviour is the product of a very complex learning process that takes place within a cultural context (Springer, 2012).

Culture is not a characteristic of an individual; it encompasses a number of people who were conditioned by the same education and life experiences. These include the culture of a group, a tribe, a geographical region, a national minority, or a nation, culture refers to the collective mental programming that these people have in common; the programming that is different from other groups, tribes, regions, minorities or majorities, or nations (Barthorpe, 2006).

Culture does not only exist in the minds of people; however, it does become crystallized in the institutions these people have built together: their family structures, educational structures, religious organizations, associations, forms of government, work organizations, law, literature, settlement patterns, buildings, and even scientific theories. All of these reflect common beliefs that derive from the common culture (Hass, 2010).

Culture, therefore, is the collection of values, norms, beliefs, customs, institutions, and forms of expression that reflects the thoughts, feelings, actions, and interests of people (Oxford Dictionary, 2016).

Other definitions of culture are:-

“... the act of developing the intellectual and moral faculties especially by education” (Merriam Webster Dictionary, 2016).

“... the ideas, customs, and social behaviour of a particular people or society” (Oxford Dictionary, 2016).

“... the way of life, especially the general customs and beliefs, of a particular group of people at a particular time” (Cambridge Dictionary, 2016).

“... the collective programming of the mind which distinguishes the members of one group or category of people to others” (Hofstede, 2005).

Taylor (1958) is one of the first scholars who coined and defined culture in his work Primitive Culture. Taylor (1958) saw culture as that complex whole which includes knowledge, belief, art, morals, law, customs or any other capabilities and habits acquired by man as a member of society.

Taylor (1958)'s definition captures the exhaustive nature of culture; it is not regarded as an univocal one. Similarly with the concept of intelligence and complexity, there is no absolute definition of "culture"; the only consensus among researchers is that there is no agreement about the specific definition of culture, for culture this could be attributed to the fact that culture is an evolving concept.

The definition of culture differs greatly according to the research fields, according to Hofstede (2005) the word culture originates from the Latin word “colere” which means to inhabit or to cultivate. It is defined as: “The collective programming (thinking, feeling and acting) of the mind which distinguishes the members of one group or category of people from another.

According Hofstede (2005) the term, culture, was introduced to business life in the late 1980's, to refer to the attitudes and behaviour of members of an organization or business unit. The term became more and more popular over the last twenty years as businesses tended to be more active internationally. This is the reason why understanding different cultures has become a business necessity.

Hofstede (2005) identified culture to be the mental programming of the mind: every person carries within him or herself patterns of thinking; feeling; and potential acting which are learned throughout their lifetime. Hofstede (2005) further identified 3 layers of mental programming which are: individual, collective and universal. Based on these 3 layers, Hofstede (2005) constructed a culture triangle.

7.1 Cultural differences that exist in South Africa

South Africa is known for its ethnic diversity and with eleven official languages and eight other recognised languages; the country is a melting pot of cultures. Often referred to as the 'Rainbow Nation', South Africa is home to a fascinating mix of citizens. There are the Nguni (comprising the Zulu, Xhosa, Ndebele and Swazi people), the San people, the Sotho-(Sotho, Tswana & Pedi), the Tsonga and the Venda. Then there are the people of European origin, as well as people of mixed race and Asian descent, the rich culture of each of these groups brings its own vibrancy to SA diversity (Booyens, 2007).

There are also hybrid mixtures of different cultures, and an overarching South African culture which ensures that, no matter what a person's cultural heritage, they are, at heart, proudly South African (Booyens, 2007). Indeed, as South Africa's democracy evolves, it is becoming a more diverse but integrated country and cultural diversity continues to be one of its strongest assets.

South Africa's cultural diversity is expressed in a number of ways; one of the most distinguishing factors is communication and people's behaviour.

7.2 Culture in a workplace environment

Workplace culture is a unique sociological construct. While it may work in much the same way as any other type of culture does in a community (ethnic or religious culture), it differs in one major respect: it is inherently multi-cultural (Hartfield, 2002).

In South Africa this is particularly true, with the average workplace containing employees of all races, genders, religions, political affiliations and many other differentiating factors. This makes the creation and maintenance of a positive and unifying workplace culture all the more difficult – and all the more important.

Handy (2012), an Irish philosopher and a world-leading figure in organisational culture, identified four overarching types of workplace culture.

Power culture

In some organizations, power is held in the hands of very few trusted and authorized decision-makers. These people enjoy special privileges in the workplace and delegate responsibility to the rest of the company. Employees in these types of environments are

expected to follow their superiors' instructions to the letter and do not have the liberty to express alternative viewpoints. Such cultures often suffer in the long run, falling victim to high staff dissatisfaction at the lower hierarchical levels.

In SA context a conflict is likely to arise in situations when a female employee is in a position of power, certain tribes view women to be followers, whereby men may still find it difficult to take instructions from a female employee (Hass, 2010).

Some of the SA community members tend to stereotype women, black people, white people, those with rank, those with different sexual orientations, with disabilities or anyone who we perceive to be part of the so - called "out" groups, this could be attributed to the ills of the past regime (Hass, 2010). This way of thinking still influences how appointments and promotions in organizations are made, how leaders interact with subordinates, how various cultures interact in the workplace and their contributions to the overall organizational.

Task culture

In a task culture, solving problems and achieving the targets of the company are at the heart of the team's interactions. In these types of companies, small teams (generally four to five people) with similar interests and specializations are grouped and expected to contribute equally to the task at hand. These employees tend to remain stimulated and content, and are given the room to innovate and think creatively.

Person culture

In these organizations, the wellbeing of the company takes a backseat to the personal importance of each employee – and eventually suffers for it. When employees place too much emphasis on their own concerns in the absence of a strong sense of teamwork or common goal, productivity, staff satisfaction and loyalty all tend to be low.

South Africa is one of the most diverse nations in the world. To enable a cohesive society, the country have one of the most progressive constitutions in the world that gives protection to the rights of every individual to be valued, respected and not to experience any form of discrimination.

Role culture

In a role culture, every employee is given responsibilities based on their delegated role and their professional specialisation, as well as their educational background and even their personal preference. This is all done in the interest of extracting the best performance out of each individual. In these cultures, power and responsibility are the

results of hard work and proven performance, and employee motivation as well as work performance tend to be higher than average.

According to (Handy, 2012), most companies are hybrids of more than one of the above four cultural overarching types, or even all four. All have their pros and cons, and all are suited to different industries, companies of varying sizes, different sociocultural contexts, and different points in the company's development.

7.3 Hierarchy in South Africa

The South African economy is dominated by large corporations with a relatively underdeveloped small and medium enterprise sector. Consequently, the traditional South African organisational structure is a pyramid, consisting of many layers with a strong vertical inclination.

However, due to global management trends of the recent past structures have been flattening. Decentralized decision-making and more responsibility at the lower organisational levels are the results of the globalisation process (Scholtz, 2012).

Scholtz (2012) continue to state that groups within South Africa tend to live side by side rather than merge. For a foreigner, not aware of the strong influences Apartheid still holds for the South African society, this may feel slightly surprising. Nonetheless, South Africans are moving towards sharing a common identity in areas such as sport and some commonalities can be identified in the areas mentioned below.

Strategy

Planning is done on a short-term (one- year) to medium-term (five-year) basis. Nevertheless, a lot of larger and progressive organisations have developed long-term strategic plans and initiatives covering up to ten years or more. Though the country is growing more business-friendly after having ended its long isolation, a foreigner to South Africa's complex legal framework and tax system is well advised to seek the assistance of local professionals.

Meetings in South Africa

Meetings can be rather informal. Be punctual according to schedule, yet do also plan some time in between two meetings in case the other will make you wait. There will be considerable time to engage in small talk at the beginning of a meeting, to greet the participants and exchange business cards. Gift giving in a business context is uncommon in South Africa (Scholtz, 2012).

Negotiations

The most important aspect of conducting business successfully in South Africa is building stable personal relationships because the majority of South Africans want to trust the person they are dealing with. Direct confrontation tends to be avoided. Most South Africans do not appreciate haggling over profit and expenses. Instead, they aim at creating a win-win situation for the mutual benefit of all parties involved (Scholtz, 2012).

Decisions

The responsibility of decision-making is usually passed up the hierarchy. Disregarding this tradition would mean to challenge the established order of things, and is not necessarily an advisable move! Trying to avoid any unnecessary delay, it is prudent to negotiate with the person who actually has the authority to make decisions. Note that a lot of the time deadlines are not really perceived as binding commitments but rather as somewhat fluid. It is therefore advisable to include dates when setting up a contract with your business partners.

Time perception in South Africa

Throughout South African business life it is essential to be on time, especially when attending a meeting. And in this case, being on time means being at the given spot, preferably ten to five minutes before the actual meeting starts according to schedule (Scholtz, 2012).

Appointments

Appointments are necessary for South African business life. Regardless of their cultural background, most South Africans clearly prefer a face-to-face encounter to a telephone call or email contact. Avoid scheduling meetings from mid- December to mid-January or the two weeks surrounding Easter, as these are prime holiday periods (Scholtz, 2012).

Dress code in South Africa

At work business, people are generally dressed more or less conservatively. Do not be surprised, however, to also come across people dressed in traditional African garments at work or during business meetings. This is certainly common during evening gatherings and dinners.

Wining and dining

Business lunches and dinners are very common in South Africa. Also, business

breakfasts are quite popular. Although actual negotiations are not carried out during a meal, business may be discussed.

Business cards

It is common to exchange business cards at a meeting, and it is often done before or at the very end.

“When cultural diversity is created through understanding, performance and communication is enhanced between employees and management. This is vital for the successful running of a company, no matter how big or small.”

Adapting a more holistic organisational culture is the solution to ending cultural segregation, which is especially important in a country like South Africa where the population is made of up individuals from hundreds of different cultures (Scholtz, 2012).

7.4 Organizational Culture

Organisational culture is the set of shared beliefs, values, and norms that influence the way members think, feel, and behave. Culture is created by means of terminal and instrumental values, heroes, rites and rituals, and communication networks. The primary methods of maintaining organisational culture is through the socialization process by which individuals learn the values, expected behaviours, and social knowledge necessary to assume their roles in the organisation (Booyens, 2007).

Organizational culture is defined by Schrodtt (2002) as the underlying beliefs, assumptions, values and ways of interacting that contribute to the unique social and psychological environment of an organization. Organizational culture includes an organization's expectations, experiences, philosophy, as well as the values that guide member behavior, and is expressed in member self-image, inner workings, interactions with the outside world, and future expectations.

Culture is based on shared attitudes, beliefs, customs, and written and unwritten rules that have been developed over time and are considered valid (The Business Dictionary, 2006). Organization culture also includes the organization's vision, values, norms, systems, symbols, language, assumptions, beliefs, and habits (Needle, 2004).

Simply stated, organizational culture is “the way things are done around here” (Deal & Kennedy, 2000). While the above definitions of culture express how the construct plays out in the workplace, other definitions stress employee behavioural components, and how organizational culture directly influences the behaviours of employees within an organization.

Under this set of definitions, organizational culture is a set of shared assumptions that guide what happens in organizations by defining appropriate behaviour for various situations (Ravasi & Schultz, 2006)). Organizational culture affects the way people and groups interact with each other, with clients, and with stakeholders. Also, organizational culture may influence how much employees identify with their organization (Schrodt, 2002).

Denison model on Organisational Culture

The Denison Model recognizes that cultural traits, managerial behaviors, and even organizational strategies can all be linked to a core set of beliefs and assumptions about the organization and its environment (Denison, et al., 2012).

These core beliefs and assumptions lie at the heart of an organization's culture. In the Denison Organizational Culture Model, these core beliefs and assumptions are summarized in terms of four main cultural "traits" that appear, through research, to have an impact on organizational performance (Denison, et al., 2012). They are: -

Adaptability - Translating the demands of the business environment into action.

Mission - Defining a meaningful long- term direction for the organization

Involvement - Building human capability, ownership and responsibility.

Consistency - Defining the values and systems that are the basis of a strong culture.

Figure 4: Denison Organisational Culture - Internal Focus



Source: (Denison, et al., 2012)

As mentioned in the previous paragraph, Denison characterizes the mutual influence of the four cultural factors upon the organization's efficiency. These four traits and three indexes within each trait and provides a powerful graphic representation of an organization's culture and are important and essential affect the organization efficiency.

Denison further had studied the organizational culture into two dimensions:-

Dimension 1: Internal focus when attention is given to what is going on inside the organization and external focus when attention is devoted to what is happening outside the organization.

Dimension 2: Stability and control namely, interest in maintaining the existing situation, flexibility and freedom of action, namely interest in changes and development.

Every organisation has a culture that can have a significant influence on the attitudes and behaviours of organisation members. The competencies and values of employees and leaders play a key role in determining the effectiveness and success of an organization.

While there is considerable variation in the definitions of organisational culture, it appears that most contain the following characteristics (Booyens, 2007):-

Observed behavioural regularities - When organisation members interact, they use common language, terminology, and rituals and ceremonies related to deference and demeanour.

Norms - Standards of behaviour evolve in work groups that are considered acceptable or typical for a group of people.

Dominant values - An organisation espouse and expect its members to share major values. Typical examples in schools are high performance levels of faculty and students, low absence and dropout rates of students, and high efficiency.

Philosophy - Policies guide an organisation belief about how employee and client are to be treated. For example, most school districts have statements of philosophy or mission statements.

Rules - Guidelines exist for getting along in the organisation or the ropes that a newcomer must learn in order to adapt to the team in order to become an accepted member.

Climate - This is an overall atmosphere that is conveyed in an organisation by the physical layout and the way in which members interact with clients or other outsiders.

8. Cultural Complexity in Mega Construction Projects

The objective of this section was to investigate, identify and validate the existence of cultural barriers and practices that are brought about by factors that are both internal and external to projects; namely – Internal and External stakeholders and the organisation's corporate culture and the level of impact thereof in implementing Mega Construction Projects in SA context.

Without doubt, mega construction projects are complex in nature; the low success rate could also be largely attributed to the fact that they are risky and time-consuming undertakings that are usually commissioned by governments and delivered by national and international participants with a variety of cultural differences, backgrounds, political systems, and languages (Georgieva, 2012).

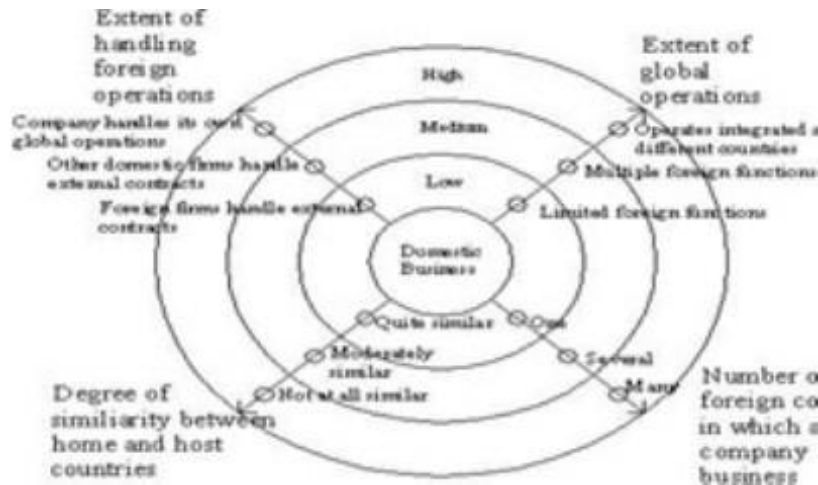
An international construction project extends beyond the one that is undertaken by a construction enterprise outside its home country to include a project that is undertaken in a home country involving foreign firms as participants of project stakeholders (Lopez, et al., 2015).

As such, multinational construction team integration creates challenges for construction clients and managers of projects which in the case of mega projects can be in the form of technical, social, and managerial complexities (Babatunde Y. and Wang Y., 2015).

Babatunde and Wang (2015) also state that in construction projects, technical complexities arise from the design and technologies employed in the design and construction processes; social complexities arise from the inevitable impact of projects on the environment and social systems; and managerial complexities arise from the managerial and governance aspects of projects.

Companies operating globally therefore need to have some form of cultural awareness. Figure 13 illustrates the extent to which a company needs to understand global cultures at different levels of involvement. The further a company moves out from the sole role of doing domestic business, the more it needs to understand cultural differences at a global market space (Hofstede, 1997).

Figure 5: Cultural Awareness and Extent of Global Involvement



Source: (Hofstede, 2005).

According to (Babatunde Y. and Wang Y., 2015); typical cultural risks that are found in the international construction project environment are:-

The list is long and cannot be exhausted, what comes out clearly is that there are many cultural complexities that come into play when managing complex teams with dissimilar cultural norms, complicated contractual agreements, and multiple methodologies.

The question is how the above mentioned cultural risks are respected in different cultures. The conflicts might arise as a result of innate perceptions of how different people to the majority have to be treated. For example gender, disability and age differences are one of the sensitivities and critical topics in SA legislation in the area of equity, which might not be the case in other countries, if such cultural differences are not identified upfront and managed, they might lead to massive project delays.

The literature reviewed within this study provided an in-depth description together with a theoretical framework for this research. Section 9 of this journal presents the data analysis and findings of the research conducted as part of the field work.

It discusses results obtained from the respondents. The research analysis will start by reviewing the collected data. The results present qualitative data results obtained from the distributed surveys and interviews with respect to the study objectives and the first section of the questionnaire explores the general information of the participants taking part in the research. Thematic analysis method was then deployed to analyse the collected data.

9. General Methodology Used

As stated in section 8 above that a participatory approach was adopted to conduct the research. A sample of 2000 potential participants was selected, comprising of all major key project stakeholders namely, Eskom senior management team, the project management team, leading and sub-contractors, consultants, general workforce and surrounding communities.

Data collection techniques employed in the research included interviews and administration of semi-structured questionnaires. Only few face to face interviews were conducted, however all key project stakeholders of the sampled population were covered, with the majority being general workforce and surrounding communities to obtain more clarity on the information provided as they represent the views of the majority of the stakeholders.

The majority of the survey was done using an electronic questionnaire this approach was used to save costs associated with transcribing interviews and travelling. Standard questionnaires were issued to all the sampled population that is Eskom senior management team, the project management team, leading and sub- contractors, consultants, general workforce and surrounding communities to ensure consistency in analysis

The first phase of the study involved the questionnaires and then follow ups interviews, meetings and discussions with key personnel on project sites i.e. Medupi and Kusile.

Data and information collected from the interviews were analysed using the thematic analysis method to bring out consistencies between different sets of data in order to draw meaningful conclusions. Both the Statistical Package for Social Sciences (SPSS) and the Pivot Table of Excel were used to analyse the data collected.

The first task of the data analysis was to ‘display’ the data i.e. put them in an organised form in order to facilitate cross-referencing of findings and aggregation of data. This made it possible for quantification of key responses to the questions asked.

Some initial data cleaning, information gathering and analysis were carried out at various stages of the data collection exercise to fill in gaps that emerged during the initial analysis to allow cycling forth between thinking about the existing data and generation of new strategies for collecting new data.

9.1 Findings and Discussion Re-visiting Study Aim

This research aim was to establish the existence of cultural disruptions in implementing Mega Construction Projects in South Africa.

Re-visiting Study Objectives

The following objectives were utilized to achieve the aim stated above, namely:-

1. Assess the understanding of the concept of culture by workers in SA projects.
2. To establish the existence and level of impact of cultural diversities and practices that is brought about by a project external factors and stakeholders in SA projects.
3. To assess the challenges occasioned by splicing foreign culture into South African culture in projects.

Questionnaires and interviews were held with implementing agencies and key personnel and permission was sought to peruse through relevant documents. Analysis of the qualitative data was performed using content analysis and thematic analysis of transcribed interviews.

The literature review purported the importance of using mega construction projects as a key driver of growth, competitiveness and social well-being is well established. The analysis of literature review revealed the importance of MCP's as a strategic approach to achieving sustainable economic development objectives for both developing and developed countries and concurrently highlighted the complexities found in their implementation.

Part of the literature expressed the existence of cultural complexities on mega project implementation over the years which have become a talking point that needs a deeper understanding. This is pertinent with mega projects as strategic alliances exacerbates culture and national cultural differences which would require more harmonising to effect utmost success.

It is further observed from the research results that the importance of culture and national cultural differences has become more critical especially for companies operating in international markets or having employees from different cultures.

9.2 Addressing the objectives

The first objective to assess the understanding of the concept of culture by workers in SA projects was carried out. The results were however, showed that the concept of "culture" could be confusing at times due to a number of various definitions that are available in literature and it is an ever changing concept addressed. The results confirmed the cultural differences that exist in SA ranging from language, in race, culture, age, gender, religion, abilities, sexual.

The second objective to establish the existence and level of impact of cultural diversities and practices that is brought about by a project external factors and stakeholders in SA projects was achieved. The research results highlighted few examples and the impact thereof on construction projects. The one that could have detrimental impact on the project, which can put a project to a stop, is the impact of surrounding communities.

The degree of strong and meaningful partnerships with the immediate communities and labour unions is of critical importance especially at the initial stages of the project which can be achieved through forums and proper consultation.

The third and the last objective to assess the challenges occasioned by splicing foreign culture into South African culture in projects was carried out. The Researcher established that diversity is increasing in many countries, and globalization is leading to a growing number of international projects. Cultural differences can either be a source of creativity and enlarged perspectives, or they can be a source of difficulties and miscommunication if not identified and managed well.

9.3 Conclusion

Based on the findings, the study results reveal that there are cultural disruptions that can be found in implementing mega construction projects, ignoring and mismanaging of these cultural differences could lead to massive project delays.

Research value add

Mega- construction projects (MCP) are important not only to the stakeholders involved in their development and construction, but also to the societies, economies, and environments impacted by them. Given the importance of MCP and the prevailing trend toward poor performance, the purpose of this paper was to identify and validate the possibility of cultural disruptions in implementing Mega Construction Projects (MCPs) in South Africa. The possibility of cultural disruptions in implementing Mega Construction Projects (MCPs) in South Africa using Medupi and Kusile coal plant projects as cases with the intention of enlightening project stakeholders in order to assist developing countries achieve their sustainable development objectives and overcome the challenges that hinder the successful development of MCPs.

The research has gone beyond any previous generic lessons learned, to enable project teams and all other project key stakeholders to make structured assessments of critical mega construction project cultural factors. Identifying and validating these cultural factors will enable more accurate and thorough mitigation planning for them and, thus, improve mega-project performance.

Recommendations

Based on the findings of this study, the following recommendations were made:

The impact of cross-cultural differences on projects in South Africa cannot be ignored.

Organisations have to consider the concept of culture in their daily businesses to operate successfully in the global market space. Successfully managing cultural differences can enhance organisational effectiveness and give an organisation a strong competitive advantage. On the other hand, failure to manage cultural differences can cause serious problems such as delay of construction.

In today's multicultural global business community, to achieve project goals and avoid cultural misunderstandings, project managers should be culturally sensitive and promote creativity and motivation through flexible leadership.

Future research

Further investigation to establish and quantify the impact of cultural disruptions caused by cultural differences in implementing mega construction projects in SA is recommended.

It is further recommended that future studies be carried out in international construction projects to examine the relationship between mega construction project success and national cultural differences.

Consideration of the information presented above may lead to the question of "What is the level of managerial business acumen required to manage these cultural differences" in implementing mega construction projects.

It would be beneficial to the literature for future research to aim to uncover the barriers or obstacles and other complexities that are found in implementing mega construction projects namely, lack of adequate skills, technological complexities, resources and stakeholder interference.

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