

Delays to Mechanical Services-Type Projects Associated with National Culture in Saudi Arabia

Abdullah Alkharmany¹, Kassim Gidado², and Noel Painting³

Abstract

The aim of this paper is to identify the origin of delays in building projects that are associated with the national cultural factors of Saudi Arabia.

In most major building projects in Saudi Arabia, the various mechanical services components, elements and installations are often designed and manufactured abroad by foreign organizations from various countries with sometimes divergent cultures and installed using a workforce that comes from yet more divergent cultural backgrounds. In such projects, the mechanical services package may be in excess of 40% of the overall cost of the project. The work reported in this paper is a literature-based research that forms part of the early stages of a PhD research that aims to investigate the effect of national culture on the occurrence of delays in building projects, particularly in the delivery of the mechanical services packages in Saudi Arabia.

The paper has established that Saudi Arabia is a highly power distance economy (where most of the decisions are centralized) with a high uncertainty avoidance culture. The origins of delays in building projects have been identified from numerous publications and categorized into eight using the Hofstede's national cultural factors. This provides a basis for further research to evaluate the effect of national culture on the delivery of mechanical services-type projects in Saudi Arabia.

Keywords: Saudi Arabia, national culture, mechanical services, delays.

Introduction

Construction delays are very common in the building construction industry (Albogamy et al. 2012). Most of the delays occur in the early stages of the project the initial conception, designing, planning, and resource arrangement activities (Assaf and Al-Hejji, 2006). Many delays also occur during the construction phase due to problems with contractual and engineering works. Delays in building projects in the Kingdom of Saudi Arabia (KSA) are widespread. A recent study revealed that building services projects worth nearly \$719 billion are either delayed or cancelled due to construction delays in 2011 (Al-Awwal, 2012). It is argued by a number of researchers (Assaf and Al-Hejji, 2006) that such delays are mainly due to socio-cultural factors. The literature on construction delays reveals a range of trigger factors where socio-cultural factors are significantly identified (Al-Ghafly and Al-Khalil, 1999; Assaf and Al-Hejji, 2006; Albogamy et al. 2012). However, none of the authors make any attempt to categorise these factors into a specific national cultural

¹ University of Brighton, Cockcroft Building, Lewes Road, Brighton, BN2 4GJ. UK. Email: A.alkharmany@brighton.ac.uk

² University of Brighton, Cockcroft Building, Lewes Road, Brighton, BN2 4GJ. UK. Email: K.I.Gidado@brighton.ac.uk

³ University of Brighton, Cockcroft Building, Lewes Road, Brighton, BN2 4GJ. UK. Email: N.J.Painting@brighton.ac.uk

elements such that management can establish appropriate mitigating strategies for successful project delivery in the specified national environment. In Saudi Arabia, there is even a greater need for such categorisation because of the different nationalities and backgrounds of the construction workforce in all stages of the project life cycle. Therefore, the aim of this paper is to identify and categorise the origins of delays in building projects that are associated with the national cultural factors of Saudi Arabia.

Construction Delay

A construction delay indicates the difference that occurs between the actual and the planned completion dates. The delay is formally defined by Bramble and Callahan (1987) as “the time during which some part of the construction project has been extended or not performed due to an unanticipated circumstance”. Similarly, Ramanathan et al. (2012) defines delay as “the time overrun either beyond completion date specified in a contract or beyond the date that the parties agreed upon for delivery of a project”. Delays can be classified into three prominent groups: excusable delays, inexcusable delays, and concurrent delays (Bramble and Callahan, 2010; Ibronke et al. 2013). In building projects, delays happen due to either direct or indirect actions of construction stakeholders or because of the external factors that are uncontrollable. Several other studies classify delays into different categories as per their nature or by associating them with the concerned party, such as: owner related, consultant related, contractor and sub-contractor related, project manager related, engineering related, and design related etc. (Marzouk and El-Rasas, 2014). Delays can result in cost overrun, disputes, negotiations, lawsuits, litigation, and abandonment of building projects (Haseeb et al. 2011).

Building Mechanical Services in KSA

There are three main divisions of building engineering services: electrical engineering, mechanical engineering, and public health engineering. All these categories are classified into further subcategories including: ventilation, air-conditioning, refrigeration, alarm and security systems, fire detection systems, natural and artificial lighting, lifts and escalators, communication mediums such as the telephone and information technology networks, heating systems, electricity and gas renewable sources, switchgear, distribution boards, low voltage, water drainage and plumbing systems etc. (Chow, 2009). In the past two decades, mechanical services have faced challenges and opportunities due to the emergence of new roles in the areas of energy management, low carbon technologies, sustainability, and renewable energy (Tymkow et al. 2013).

Heating, Ventilation, and Air-conditioning (HVAC) systems are the primary components of building mechanical services in the KSA (Fasiuddin and Budaiwi, 2011; Ventures Middle East, 2012; Budaiwi and Abdou, 2013). Saudi Arabia is the third biggest market in the world in terms of HVAC systems. The country has also led in the Gulf Cooperation Council (GCC) HVAC industry and is expected to grow rapidly in the coming years due to its huge investments in mega building projects and development plans concerned with education and social housing between 2010 and 2015 (Ventures Middle East, 2012). The HVAC market in Saudi Arabia accounts for nearly 24 per cent of the entire construction industry. In 2011, the HVAC market in Saudi Arabia was approximately US\$ 3.1 billion and its annual growth rate was estimated nearly 3 per cent (Ventures Middle East, 2012). Saudi Arabia is a warm country and this is the reason that ventilation and air-conditioning equipment account for two-third of HVAC market and heating system comprised of one-third.

Culture Dimensions of Saudi Arabia

Hofstede (1991) and Hofstede Centre (2014) identified six cultural dimensions: power distance, masculinity-femininity, uncertainty avoidance, individualism and collectivism, Pragmatic versus Normative, and Indulgence versus Restraint.

Hofstede and Hofstede (2005) define power distance as “an extent to which the less powerful members of society and organisations within a country or community expect and accept that power is distributed unequally” (p. 46). This concept also applies to institutions and organisations where power and decision making are either centralised or decentralised. Hofstede (1991) shows a greater amount of decentralisation in the lower end of the cultural scale to those in more senior positions.

In the second dimension, masculinity describes the perception of members within the society in terms of competition, assertiveness, and achievement. In contrast, femininity (also part of Hofstede’s second dimension) refers to the degree in which relationships, care, traditions, social values, and quality of life are preferred. A “society is called feminine when emotional gender roles overlap: both men and women are supposed to be modest, tender, and concerned with quality of life” (p. 120). “A society is called masculine when emotional gender roles are clearly distinct: men are supposed to be assertive, tough, and focused on material success, whereas women are supposed to be more modest, tender, and concerned with the quality of life.”

The third dimension; uncertainty avoidance is “the extent to which the members of a culture feel threatened by ambiguous or unknown situations” (Hofstede and Hofstede, 2005, p.167). This shows the circumstances where an individual or group of people feel ambiguous, insecure, uncertain, and uncomfortable about something particularly in order to uphold institutions protecting conformity.

The fourth cultural dimension is individualism or collectivism which is described by Hofstede and Hofstede (2005) as “individualism pertains to societies in which the ties between individuals are loose: everyone is expected to look after himself or herself and his or her immediate family. Collectivism pertains to societies in which people from birth onward are integrated into strong, cohesive groups, which throughout people’s lifetime continue to protect them in exchange for unquestioning loyalty (p.76).

In 1991, a fifth dimension was added by Michael Harris Bond, supported by Hofstede, who conducted a further international study among students with a survey tool that was established together with Chinese professors. The dimension was created on Confucian thinking and was originally called Long-Term Orientation (LTO). The Hofstede Centre refers to the fifth dimension as Pragmatic versus Normative (PRA) (Hofstede Centre, 2014).

A sixth dimension was added in the 2010 edition of *Cultures and Organizations*, based on Michael Minkov's analysis of the World Values Survey (WVS) data for 93 countries. The sixth dimension is called Indulgence versus Restraint (IND) (Hofstede Centre, 2014).

The Kingdom of Saudi Arabia (KSA) is the thirteenth largest country of the world and has pure Arabic Muslim culture. Religion is the first priority for KSA people and it majorly influences their social behaviour, routine lives, businesses, and even politics. Islamic laws, beliefs, values and customs are more important for individuals and families.

The application of the Hofstede' six cultural dimension frameworks on Saudi Arabian culture reveals some interesting insights about the Kingdom. Fig 1 shows the score of each dimension and its cultural relevance to other cultures.

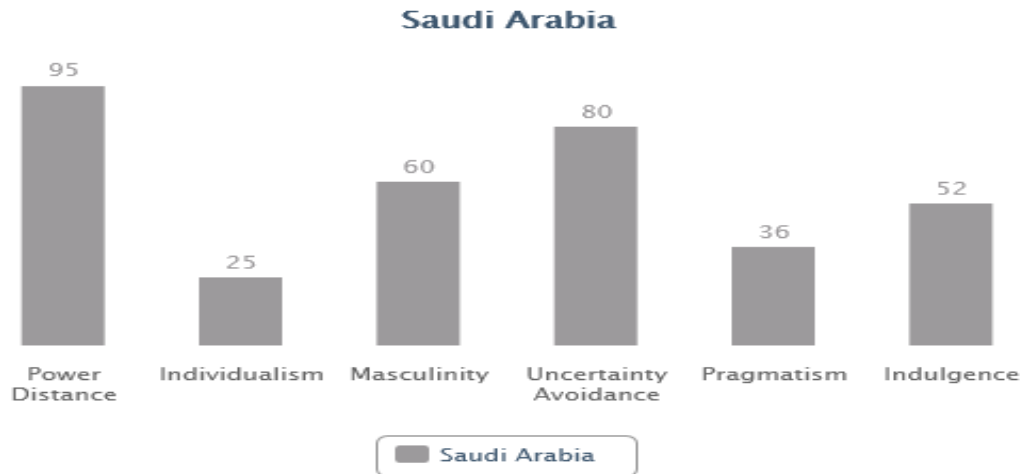


Figure 1. Hofstede's cultural dimensions of Saudi Arabia (Hofstede Centre (2014))

Saudi Arabia's score for Power Distance (PDI) of 95 is extremely high, which demonstrates a hierarchical order system where each individual is placed on their particular position and requires no further justification. In fact, the organisational hierarchy in the KSA often reflects centralisation and intrinsic inequalities. Subordinates are expected to strictly follow the instructions of their bosses in a benevolent way (Hofstede Centre, 2014).

Similarly, the individualism (IDV) score of 25 indicates that Saudi Arabia is a collectivist society. This means that individuals give value to extended family, strong relationships, group sittings, and long-term commitments. One of the major features of a collective culture is loyalty which overrules other cultural aspects and societal rules and regulations (Livermore, 2009). The society in a collectivist culture develops solid affiliations among members and each member takes the responsibility to take care of other members. Unethical organisational behaviour in a collectivist culture is treated as a serious offence which leads to punishments, and downgrading of employees. Similarly, ethical and formal behaviour throughout a certain period may result in promotions, incentives, or other social and economic benefits (Mitchell, 2008).

A fairly high score of 60 on masculinity/femininity (MAS) dimension indicates that Saudi Arabia embraces masculine culture where men are supposed to work to support their families. From an organisational point of view, managers are usually assertive and decisive and like to take critical decisions without involving other people or subordinates. In masculinity culture, competition is given high importance and conflicts are reduced by finding appropriate solutions (Hofstede, 1991).

The score of 80 on uncertainty avoidance (UAI) index illustrates a high degree of intolerance in Saudi national culture. This shows that in Saudi Arabia, people are rigid in following traditional codes of beliefs, ideas, and in rejecting unorthodox behaviour. In fact, the cultures like Saudi Arabia give great importance to rules, and it does not matter if these rules work or not. In such environments, innovation may be resisted, truth and regularity are the norms, security is important, and people like to work on their own rather than working in teams (Hofstede and Hofstede, 2005).

Pragmatism dimension identifies how a person's past and current situation cannot be clarified. In cultures with a normative orientation, most people have a strong wish to describe as much as possible. In cultures with a pragmatic orientation most people do not

have a need to describe the whole things, as they have faith in that it is impossible to understand wholly the difficulty of life. The task is not to know the truth but to live a righteous life (Hofstede Centre 2014). KSA scores only 36 in pragmatism, suggesting that it tends more towards normative orientation. People in such cultures have a strong anxiety with seeking the absolute Truth; they are normative in their thinking. They display great respect for traditions, a fairly small tendency to save for the future, and an emphasis on accomplishing quick results.

Indulgence dimension is defined as ‘the extent to which people try to control their desires and impulses, based on the way they were raised’ (Hofstede Centre 2014). Weak control is named “indulgence” and strong control is named “restraint”. Cultures can, consequently, be defined as indulgent or restrained. The KSA score in Indulgence dimension is 52; this indicates that people in KSA have balance between indulgent and restrained orientations.

How Saudi National Culture Causes Delays

The term ‘national culture’ is explained by a number of theorists and experts (Hofstede, 1980, 1991; Hofstede and Hofstede, 2005; Shore and Cross, 2005; de Bony, 2010; Rees-Caldwell and). These studies are divided into two groups: firstly single dimensional vs. multidimensional constructs; and secondly heterogeneous vs. homogeneous programming Young and Nie (1996). The single dimensional studies are suitable for organisational analysis only whereas multidimensional constructs can be truly applied on entire national culture for detailed and comprehensive analyses. On the other hand, both heterogeneous and homogeneous concepts are applied to both organisational and national cultural analysis because they both perceive consistency or regularity from the cultural perspective. Heterogeneity is the state of being heterogeneous.

Heterogeneity in any society refers to individuals or a group of people who are different in terms of their cultural backgrounds, ages, sexes, or ethnicities. In contrast, homogeneous assumes that all people or group are similar in qualities and other aspects which are not true in today’s case of national culture. This is the reason that Hofstede considers heterogeneity to conceptualise national culture and then named it as “collective programming” of mind that differentiate people of one society from that of another (Hofstede, 1980). The term collective programming is used by Hofstede to indicate the experiences, values, beliefs, traditions, religious patterns, family structures, legal systems, and languages of the inhabitants and expatriates living in any country.

The first aspect to consider is the language, which is one of the major influencing cultural factors in Saudi Arabia. The language of most of the contracts is Arabic which is often translated into English for foreign employees, consultants and contractors. The dilemma is that engineers and other related professionals wish to communicate in their mother language and they do not employ any qualified translators. This has an impact on the quality and progress of the construction projects (Ren et al. 2008).

In addition, some Islamic traditional words like “In Sha Allah” are quite familiar and most of the local construction participants and site engineers use this word as a promise of finishing work. In English “In Sha Allah” means ‘When God Wants’ and foreign engineers often do not understand such words and take different meanings from it. This develops an uncertain situation which causes disputes during different stages of building projects (Ren et al. 2008). As evidenced when speaking to a number of contractors in Saudi Arabia compared to those of foreign decent. In addition to that many foreign professionals are not aware of Sharia Law which is the backbone of Islamic rules and regulations in Saudi Arabia and Saudis like other Muslims do not compromise on these regulations. The lack of

awareness of these domestic and customary laws in terms of 'do's and don'ts' cause delays in construction projects.

Experience refers to familiarity or unfamiliarity of the environmental envelope, for example: clients in KSA regularly visit sites and instruct contractors to make amendments in design. The construction participants must obey the orders even if the orders are given outside the contractual terms and conditions (Al-Khalil and Al-Ghafly, 1999). Furthermore, the weather of GCC, especially in summer, is extremely hot and more than 95% of the international workforce is not used to living and working in this environment. Foreign engineers and other contractors require some time to understand the local procedures and systems of any project in a foreign country and struggle with dealing with local culture and the conditions they become faced. This results in a reduction in productivity which consequently affects the project's progress (Al-Momani, 2000). The contractors in Saudi Arabia often employ an international workforce to provide construction and engineering services. People from different countries, religion, and traditions bring their own beliefs, habits, and working methods and are often exposed to conflict during complex building projects (Ren et al. 2008). Similarly, the holidays and festivals of the different nationals delay the process. The consequence of a multinational workforce is a key cultural factor which hinders engineers to provide timely delivery. According to Toor and Ogunlana (2008), the multicultural environment causes several problems where ineffective communication, multiple foreign contractors with mixed nationalities, and the involvement of many foreign professionals in different project phases are rated the highest problematic factor.

The centralised decision making system and red tape culture of the Saudi government delay the processes of obtaining site work permits. For example, working in a free economic zone requires special permits from the government officials; it takes a long time and significant resources to get full access and control of these zones (Ren et al. 2008). Likewise, the visa application processes for foreign nationals and other similar regulations may generate crucial issues which may have critical impacts on the progress of the project. The tradition of working beyond capacity on more than one project at a time is a critical issue. The construction and engineering sector has a shortage of local contractors and this is why existing local engineering firms are over-loaded by working on multiple projects.

The serial sequence nature of traditional procurement method affects speed in projects. Many construction projects in Saudi Arabia adopt traditional procurement methods that are exposed to several shortcomings (Alhazmi and McCaffer, 2000). Companies are reluctant to adopt newly emerging methods that consequently affect the entire process of construction and engineering services. Engaging small contracting firms in Saudi Arabia is common, which often bring delays due to contractors having insufficient capital and little or no experience of working on large projects with complex building services. Their limited resources and abilities hinder them in delivering quality output or to embrace the time schedules.

Construction parties in the KSA do not retain long-term business relationships and this allows construction parties not to follow terms and conditions of the contract with any sense of responsibility (Ali, 2008). Furthermore because there is no proper multitier dispute resolution mechanism there tend to be delays to the construction process if any dispute occurs during the delivery of the project. The blame-culture also causes disputes between the constructions participants. This means that an attempt to evade responsibility is frequent which can adversely affect the project progress.

Table 1. Categorisation of origins of delay in construction projects in KSA

Cultural Factors using Hofstede's Collective Programming	Origins of Delay in construction Projects in KSA	Alhazmi & McCaffer (2000)	Al-Khalil & Al-Ghafly (1999)	Al-Momani (2000)	Alyousif et al. (2010)	Assaf & Al-Hejji (2006)	Chan & Tse (2003)	Kivrak et al. (2009)	Ren et al. (2008)	Loughborough University & UMIST (2003)	Toor & Ogumana (2008)
Religion Patterns	Islamic culture (Sharia Law)								✓		
	International workforce with dissimilar religion			✓	✓	✓	✓	✓	✓		
	Local rules, regulations, customs				✓		✓		✓	✓	
Legal Systems	Issues in obtaining work permits		✓						✓		
	Visa application procedures								✓		
	Long working hours							✓		✓	
	Change design & orders		✓	✓		✓		✓			
	Dispute resolution mechanism						✓		✓		
	Local rules, regulations, customs				✓		✓		✓	✓	
	Traditional procurement methods	✓	✓				✓		✓		✓
Traditions	Over commitment of local contractors								✓		
	International workforce with dissimilar tradition.			✓	✓	✓	✓	✓	✓		
	Cultural clash among parties						✓				
	Blame-culture (conflicts due to evade responsibility)		✓	✓		✓				✓	
	Inflexibility and Trust			✓	✓	✓	✓	✓	✓		
	Engaging several small contractors										✓
Languages	Spoken Language					✓		✓	✓		
	Lack of qualified interpreters								✓		
	Lack of communication or information sharing		✓		✓	✓		✓	✓		
Beliefs	Multicultural environment						✓		✓	✓	✓
	Unfamiliar local environment	✓		✓		✓	✓				
	International workforce with dissimilar beliefs.			✓	✓	✓	✓	✓	✓		
Values	No worry to retain long-term business relationships						✓		✓		
	Poor safety tradition	✓			✓			✓		✓	
	Local rules, regulations, customs				✓		✓		✓	✓	
	International workforce with dissimilar values			✓	✓	✓	✓	✓	✓		
	Non-cooperation from local residents						✓				
Family Structures	International workforce with dissimilar cultural backgrounds			✓	✓	✓	✓	✓	✓		
	No challenge to authorities		✓								
Experience	Centralised decision making		✓			✓			✓		
	Weather effects		✓	✓		✓					
	Understanding the culture of staff						✓	✓			

The aim of this paper is to identify and categorise the origins of delays in building projects that are associated with the national cultural factors of Saudi Arabia. A thorough literature review reviewed research on issues to do with delays in construction projects in several countries such as Russia, USA, Kuwait, Nigeria, Egypt, Malaysia, Tanzania, UAE, Hong Kong, Libya, Jordan, Iran and Saudi Arabia. This literature based research identified 175 origins of delay from the various literature and then categorised them into five major groupings established using system thinking methodology: Input (resources); Conversion (technical, managerial, external stakeholders, internal stakeholders); Output (cost, quality, sustainability); Environmental envelope (natural, economic, social, cultural, political, business); and Other (feedback, unknowables). Guided by the Hofstede's cultural dimensions, further analysis of the identified origins was conducted in order to create a

shortlist of those origins that are specifically associated with the Saudi Arabian national culture. 33 origins have been shortlisted and then categorised into the eight groups using Hofstede's collective programming factors (Hofstede and Hofstede, 2005). This makes an attempt to create a linkage between the origins of delay with the eight Hofstede's national cultural factors. This is illustrated in Table 1 indicating the literature source and final categorisation of the origins using the cultural factors. It is important to state that some of the origins of delay may intersect between the categories such as international workforce with dissimilar cultural backgrounds categorised under Family structures may also intersect with the Traditions, Languages, and Beliefs categorised. In such cases, the research applied disaggregates system methodology (Gidado, 2004) and used subjective judgment to decide on the appropriate category to place the origin of delay.

Conclusions

It is clearly evident that there are a number of factors influencing delays in construction in KSA. This research has identified the origins of such delays that are influenced by the effect of national culture. Using the six cultural dimensions as a framework, the paper has shown that culturally, Saudi Arabia is a highly power distance economy (where most of the decisions are centralised) and has a high uncertainty avoidance culture (people are rigid in beliefs and religious codes, innovation may be resisted, truth and regularity are the norms, security is important, and people like to work on their own rather than working in teams).

The Hofstede's eight cultural factors, established using collective programming concept, has been used as a framework to categorise the identified origins of cultural delays in building projects. This categorisation will be used in the next stage of this research project as a basis for the evaluation of the effect of national cultural factors in the delivery of mechanical services-type projects in Saudi Arabia. As part of the next stage, primary data will be collected to verify the 33 shortlisted origins of delay and quantify the importance and significance of their effect. Ultimately, the research project aims to develop a model that can be used by project managers to develop suitable strategies to mitigate or manage the effects of national culture on delays in mechanical services packages in the KSA.

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