



The Effect of the Contemporary Business Environment upon Strategy

An empirical analysis of strategic decisions in three engineering consultancy organisations within the construction industry in UK

Authors: *Frutos-Juarez, Victor*
Osorio, Jose Conrado

Supervisor: *Prof. Markus Hällgren*

Student
Umeå School of Business and Economics
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Summary

The contemporary times that we are living are characterised by volatility, uncertainty, complexity and ambiguity (VUCA); and these define the new normal or context where organisations interact in their business environment. Organisations are open systems and, a bi-directional exchange of information and influence occurs between these and their business environment. Therefore, all organisations are embedded in some sort of societal structure and cannot be understood without the socio-politico-economical-technological-ecological-legal (PESTEL) context where they operate and simultaneously shape.

In order to compete and survive in the business environments against other competitors, organisations formulate strategy. Strategy is a broad term and is articulated at different levels. To narrow the scope and directly link it to the business environment, the concept of strategic decision is used. These are those that position the organisation regarding its environment, also all the operational or administrative decisions that give direction. The strategic decisions can be of two types: content decisions and those that generate change on the planning process.

Despite their importance in economies, limited knowledge exists about consultancy organisations, and particularly about engineering ones. Through in-depth multiple case study, this research describes and explains the effect that the contemporary business environment has on the strategic decisions on both content and planning process, of three engineering consultancy organisations within the construction industry in the UK.

This study proves that the general business environment has a significant impact on the strategic decisions of organisations, although this varies depending on their nature (e.g. size, structure) and context. In addition the interpretation of those individuals managing the organisations is the determinant factor on how their strategic content decisions and strategic planning process is shaped. The findings support the understanding that the strategic planning process is continuously evolving; and that there is a tendency to gain formality.

In other matters, the three organisations are survivors of tough economic conditions by taking strategic decisions and adapting to the new norm. The decisions taken reinforce the statement that strategic decisions require trade-offs. For a managerial perspective, the study emphasises that awareness about the business environment brings opportunities and insulates organisations against threats by formulating contingency plans.

Concept Definitions

Business environment is defined as all the relevant variables within an organisation that might be considered at the moment of taking strategic decisions (Duncan, 1972, p. 314; Jarvidan, 1984, p. 384).

Organisations are “(1) social entities that (2) are goal-directed, (3) are designed as deliberately structures and coordinated activity systems, and (4) are linked to the business environment” (Daft, 2007, p.11). In this dissertation organisation and practice are used interchangeable.

Strategy “is the direction and scope of an organisation over the long term, which achieves advantage in a changing environment through its configuration of resources and competences with the aim of fulfilling stakeholder expectations” Johnson et al. (2008, p. 3).

Strategic planning process is the guidelines followed by organisations that define where to go and how to get there; it includes analysing the organisation’s potential, linking it to its resources and finding the best direction to reach objectives (Rigby, 2013, p.54).

Strategic decisions are those that have a strategic nature: position of organisation regarding its environments, also all the operational or administrative decisions that give direction (Shirley, 1982, p. 263).

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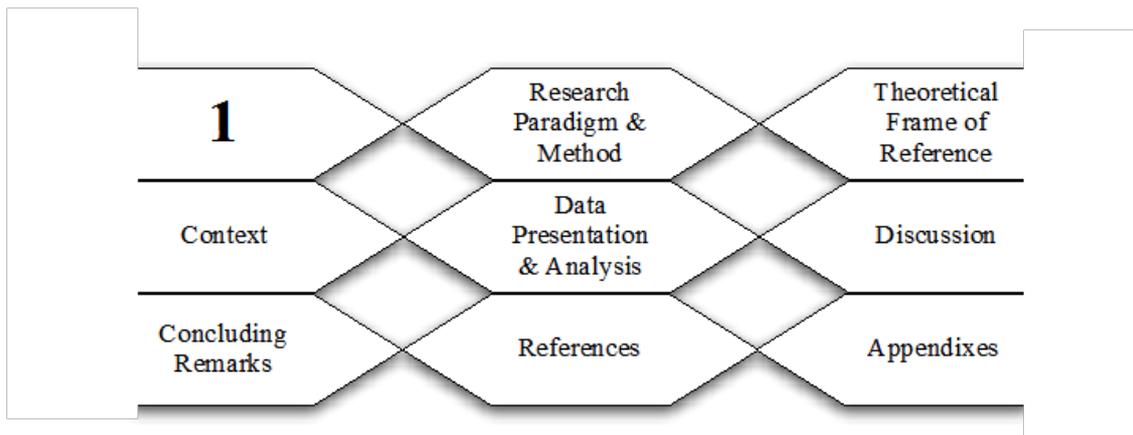
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Introduction

The purpose of this introductory chapter is to make the reader familiar with the topic under investigation and the setting where this takes place. In addition it provides the imperative behind this study, presents basic definitions of the concepts studied and outlines the subsequent chapters. Besides the research question and research objectives are stated. Finally, the authors justify the length of this study.

1.1 Introduction to the Research's Topic

In order to familiarise the reader with the topic of study, the industry and the phenomenon under investigation are outlined. First the contemporary business environment where organisations operate is described. Thereafter, the impact that business environment has on strategy is concisely introduced. To conclude, a brief description of the engineering consultancy sector within the construction industry in the United Kingdom (UK) is presented outlining its importance, main characteristics, and the current state.

The business environments is defined as all the relevant variables within an organisation that might be consider at the moment of taking strategic decisions (Duncan, 1972, p. 314; Jarvidan, 1984, p. 384). It comprises a set of relationships between actors (Mason, 207, p. 10). Organisations are not individual entities in their business environment (Mason, 2007, p.10); their actions influence others either by competition or collaboration (Brandenburger & Nalebuff, 1995, p. 59). The environment is not only influenced by external factors but also by the organisations that compound it (Mason, 2007, p. 11).

The external business environment is divided according to Duncan (1972, p. 314) and Bourgeois (1980, p. 25) into task and general environments. For Dill (1958, p. 424) the task environment is composed of customers, suppliers, competitors and regulatory groups. The general environment consists of all the factors affecting the organisation in a direct or indirect way and that are not contained in the task environment (Bourgeois, 1980, p. 25).

To understand the wider environmental conditions that define the contemporary business environment and that have been briefly described in the previous section with focus in the engineering consultancy sector, it is required to have a historic perspective (Pietersen, 2010, p. xiii). There have been three eras of societal and economical development according to Friedman (2005, p. 10): The first lasted from 1492 - when Columbus set sail, opening trade between the Old World and the New World - until around 1800. The second era, lasted roughly from 1800 to 2000, and was characterised in the first century by the Industrial Revolution with production rising exponentially and multinational organisations and information started to be ubiquitous. Since the mid 20th century, socio-economic changes accelerated at an unprecedented global scale: population grew implying an enormous consumer demand coupled with rapid urbanisation (Ho, 2012, p.82). The current era is globalisation. Chase-Dunn et al. (2000, p. 78) maintains that globalisation is defined as the increased density of international and global interactions relative to local or national networks. This period is also known as *the conceptual age* (Pietersen, 2010, p. xv), where sense-making becomes the battleground. The time we are living favours service economies rather than industrial manufacturing in hyper-competitive markets; encourages decentralisation and outsourcing; promotes new levels of *virtuality*; suggests democratisation of decision making and empowerment of staff; finance becomes so powerful that whole countries are at mercy of debt indicators or risk premiums; old authorities are challenged and decay (e.g. Egypt, Libya); massive layoffs and restructuring occur (Mazzarr, p.139). This co-dependent world is *glocal* (Robertson, 1992, pp. 173-174; Svensson & Wood, 2009, p.335; Svensson & Andersson, 2009 p. 391): global and local in scope simultaneously — global in its reach and local in its focus (e.g. multinationals that tailor their products/service within specific countries). Moreover local changes in the

ecological, economical, or political system can cause a global crisis (Mainzer, 1994, p.1). These factors spread quickly along diverse paths and their consequences are difficult to forecast and control (Kallinikos, 2007, p.48).

This era is defined as “a world order where the threats are both diffuse and uncertain, where conflict is inherent yet unpredictable, and where our capability (...) may be restricted by material and personnel resource constraints. In short, a business environment characterised by volatility, uncertainty, complexity, and ambiguity - VUCA” (Magee, 1998, p. 1). Different factors have contributed to develop the environmental conditions known as the *new normal* (Kinsinger & Walch, 2012). McKinsey Germany, (2010, p. 5) suggests globalisation, deregulation, and accelerating communication had significantly impacted the business environment and contributes towards the idea that local crises escalate globally. Peter Ho (2012, p.83) proposes energy security, global pandemics, sustainable development, and cyberthreats as causes and influencing factors of VUCA. Johansen (2013) adds rapid technological changes, connectivity, climate change, population growth, business model innovation and income disparities create the conditions for the VUCA business environment. The list goes on.

The business environment is constantly changing, and the impact of the business environment upon organisations is significant (Anderson & Paine, 1975, p. 812; Lynch et al., 2012, p. 155); but at the same time the way environment is perceived by the organisations directly influences the way they construct their strategy and take their decisions (Burgeous, 1980, p.33-35). One of the most common activities managers perform in order to keep up with the environment is environmental scanning (Olsen et al., 1994, p. 3), which is the activity of obtaining information (Aguilar, 1967, p.1). However, managers performing in the same environment perceive it in a different way and in a different level; thus affecting the way strategy is adapted in order to survive and avoid falling in a long-term struggle that leads to decline (Camillus, 2011, p. 306; Lynch et al., 2012, p.146). The way business environment is perceived affect the way strategy is framed in the organisations.

Strategy is the link between the organisation and its environment Mintzberg (1979, p. 25). On this sense, Braker (1980, p. 221) notes “business strategy has the following characteristics: an environmental or situational analysis is used to determine a organisation's posture in its field, and then the organisation's *resources* are utilised in an appropriate manner to attain its major goals”. The concept of strategy has been influenced by the need of organisations to survive and remain competitive by achieving their goals (Ansoff, 1957, p. 113; Payne, 1957, p. 95).

Strategy is articulated at different levels. However the problem with strategy, is about semantics (Braker, 1980, p. 219) (“There are almost as many definitions of strategy as there are writers about the subject” Shirley (1982, p. 262)) and its hierarchical levels, is that they do not offer clear and sufficient guidance regarding the scope. There is a need to understand the decisions that are or have a strategic nature: position of organisation regarding its environments, also all the operational or administrative decisions that give direction (Shirley, 1982, p. 263). Hence it is essential to define strategy in terms of decisions. The main characteristic of strategic decisions is that they are significant (Harrison, 1996, p. 46). Five criteria are provided by Shirley (1982, pp.264-265) in order to take a holistic view regarding strategy and understand this as strategic decisions. First the decision must to be related to the relationship between the organisation and its environment. Second, the decision must be holistic and apply to the

whole organisation. Third, the decision for being strategic must include all of the major functions performed in the organisation. Fourth, the decision provides constrained direction for the operational and functional tasks within the organisation. Finally, the decision must be critical to the success of the organisation. The strategic decisions however are also categorised into two: strategic content (decisions *per se*) and those decisions that shape the strategic planning process Johnson et al. (2008, p. 22) and Cummings & Daellenbach, (2009, pp. 239).

Mankins and Steele (2005, p. 66; 2006, pp. 81) claim that the strategic planning process has to be continuously linked to the decision making of the organisation. A process is group of activities or events that are progressively executed in order to reach a common objective (Van de Ven, 1992, p.170). The strategic planning process involves different activities: data collection, forecasts, scenario construction, general environment analysis to identify threats and opportunities, or internal analysis to identify strengths and weaknesses (Glaister & Falshaw, 1999, p.108; Williamson, 1999, p. 118). It also includes communication frequency, workflows, or decision making techniques (Van de Ven, 1992, p.170). All these activities, some or none are considered within the different schools of thought regarding the formulation of strategic decisions (Mintzberg, 1998). Each school provides different frames of how organisations can formulate their strategies in order to reach their objectives. Planning and Learning Schools represent two extremes of a continuum of the strategy planning process.

Consequently it is common to question how organisations conduct their strategic planning process. When the business world becomes unstable the organisation strategy should become simple and reachable (Eisenhardt & Sull, 2001, p. 116), but is that happening? Are managers planning strategy through a rational formal process, by an adaptive process that reacts to events or by a mix of both?

The link between the business environment and strategy has been exposed, nevertheless this study focus on elaborating more on this correlation. The additional variable to this research is the industry. The need to choosing a specific industry is critical; given that all entities in the business world have their own business environment and by defect they usually have a direction. The chosen industry for this study is the engineering consultancy within the construction industry in the United Kingdom.

The construction industry is a major economic driver and industry throughout the world, which accounts for a significant proportion of the gross domestic product – GDP – (Crosthwaite, 2000, p. 619). Historically, the UK construction sector has been vital for the economy and a key driver of growth in terms of value added and employment (Department for Business Innovation and Skills, 2013, p. iv). It contributes almost £90 billion to the UK economy in value added, comprises over 280,000 businesses and provides 10% of the total UK employment (Ibid, p. v). In the last years, the UK construction industry has faced and, is facing, tough market and wider economic conditions (Glenigan & Construction Excellence, 2012, p. 3) with continued uncertainty (KPMG, 2013, p. 3) and unprecedented levels of volatility. In early 2012, the construction industry returned to recession for the third time in five years (Department for Business Innovation and Skills, 2013, p. v).

The complexity of the construction industry is greater than most other sectors (Betts & Ofori, 1994, p. 204). It is subjected to a high volatility (Langford & Male, 2001, p. 12; Betts & Ofori, 1994, p. 205), is characterised by a large degree of uncertainty (Murphy,

2013, p. 153) and is extremely fragmented (Garnett and Pickrell, 2000, p. 56; Ng et al., 2001, p. 3; Nitithamyong & Skibniewski, 2004, p. 491; Zawdie, 2012, p. 20). One of the stakeholders of the construction industry are the engineering consultancy organisations.

Consultancy organisations are “becoming ever more pronounced in economies the world over” (Delong & Nanda, 2003, p. ix) and are “those whose primary assets are highly educated professionals and whose outputs are intangible services encoded with complex knowledge” (Greenwood et al., 2006, p. 661). These are knowledge based (Winch & Schneider, 1993, p. 923). Another characteristic is that they are typically project-based organisations (Maister, 1982, p. 16; Sheikh & Lim, 2011, p. 1123) and standardisation is difficult to apply, as each client/project requires a high degree of customisation (Ibid, p. 35; Maister, 1982, p. 15; Sheikh & Lim, 2011, p. 1126). Lastly there is a significant component of interaction with the client (Ibid, p. 35).

Furthermore the economy of the industry is still considered as uncertain. Organisations are concern about margins, staff retention and development, and salary pressures. However the biggest challenge given the current competition within the market is to keep a continuous work stream securing new local and overseas clients (ACE, 2012, p. 11). All these are characteristic and effects of the consulting engineering sector within the construction industry, which comprise the business environment this study investigates.

1.2. Relevance and Motivation of the Study

Historically, the concept of strategy has evolved by the need of organisations to survive and remain competitive by achieving their goals, rather than pure development of theory (Ansoff, 1957, p. 113; Payne, 1957, p. 95). Strategy is articulated at different levels, and despite the extensive literature about strategy; few studies explain how managers develop strategy (Mintzberg, 1994, p.110) – strategic content decisions - and how these are formulated within a strategic planning process in order to survive (Casadesus-Masanell & Ricart, 2010, p 195). Strategic decisions are those that have a strategic nature: position of organisation regarding its environments, also operational or administrative decisions that give direction (Shirley, 1982, p. 263). In addition, strategic decisions involve trade-offs (Porter, 1996, p. 3) in order to survive. Specifically, it is stated that long term organisational survival of construction organisations depends upon effective strategic planning (McGeorge & Zou, 2012, p. 14), and that this has become critical due to the volatile, uncertain and complex business environment of the construction industry (Betts & Ofori, 1994, p. 205; Junnonen, 1998, p. 107). This research aims to gain understanding about how engineering consultancy organisations formulate their strategic decisions, which are embedded into a strategic planning process; and by doing so stay resilient through tough economic times.

1.2.1. Research Gap

Literature is extensive about strategy and business environment. However, contrary to what one may believe, there is not enough evidence about *how* organisations shape their strategy taking into consideration the contemporary business environment as an influential factor in contemporary times (Grant, 2003; Nauheimer, 2007; Mason, 2007). Phua (2007, pp. 753-754) builds on this by stating that the relationship between the business environment and the strategic planning is difficult to assess empirically.

This is not however in broad terms the only virgin territory that produces an imperative for this research (Sandberg & Alvesson, 2011, p. 30). By comparison with other industries, the strategic planning of the construction industry has been discussed in a limited number of research studies and books (McGeorge & Zou, 2012, p. 14; Murphy, 2013, p. 151). According to McGeorge & Zou (2012, p. 14) the two more comprehensive books about strategy formulation in the construction sector are Langford & Male (2001) *Strategic Management in Construction* and Fellows et al. (2002) *Construction Management in Practice*

Moreover, little empirical research has been conducted to analyse how the general business environment impacts the strategic planning within the construction industry (Phua, 2007, p. 753). The fragmented and broad nature of the strategic management discipline coupled with the complexity of the construction sector may explain this shortfall while reinforces the need to contribute to the accumulation of knowledge (Murphy, 2013, p. 154).

Consultancy organisations are worthy of research because they constitute a significant sector of the economy, and despite their significance, little is also known about their strategic planning (Greenwood et al., 2005, p. 661). This study focuses on the consultancy engineering sector, one of the many that integrates the construction industry (Betts & Ofori, 1992, p.512). Within this narrow sector, research is even more limited. To the acknowledgement of the authors there is just one published paper that covers strategy in the consultancy engineering within the construction industry: Yisa (2002) *Evaluation of Business Strategies in the UK Construction Engineering Consultancy*. The paper by Yisa is 11 years old and covers different aspects than those discussed on this thesis; in addition it was conducted at a time where the environmental conditions were considered more stable than the current setting.

It is stated that long term organisational survival of construction organisations depends upon effective strategic planning (McGeorge & Zou, 2012, p. 14), and that this has become critical due to the volatile, uncertain and complex business environment of the construction industry (Betts & Ofori, 1994, p. 205; Junnonen, 1998, p. 107).

This adds another dimension to this thesis. It is known that the nowadays business environment is characterised by volatility, uncertainty, complexity and ambiguity: VUCA (Johansen, 2013, p.11). VUCA world periods existed before (Ibid). However the difference between the past and the present VUCA environment is the speed and breadth of interactions and the multiplication of linkages among elements (Duit & Galaz, 2008, p.311) in unpredictable ways with multiple impacts (Gray, 2012, p. 13). This simultaneously influences more people, with a more likely potential of disruption in terms of intensity and scale (Friedman, 2005, p.46). Literature is extensive about the impact of volatility (Bourgeois & Eisenhardt, 1988; Eisenhardt, & Bourgeois, 1988; Eisenhardt, 1989; Grant, 2003), uncertainty (Khandwalla, 1972; Milliken, 1987; Courtney et al., 1997), complexity (Tung, 1979) and even ambiguity (Mosakowski, 1997) in the strategy of organisations. Nevertheless there are not studies that have considered the four variables, the holistic view of VUCA; firstly as context and background where the decisions are taken; and second as a single entity due to its interdependent character (Kallinikos, 2007, p.48). The few researches that cover the acronym VUCA are focus on leadership, like Johansen (2007) *Get There Early: Sensing the Future to Compete in the Present* or Jacobs (2005) *Strategic Leadership*, but not in strategic management.

In summary, this research aims to contribute to the existing and multiple knowledge gaps identified previously by understanding how engineering consultancy organisations within the construction industry in the UK have adapted to the current environmental conditions (VUCA) when formulating strategic decisions within a strategic planning process. Figure 1-1 summarises the identified and already explained research gap.

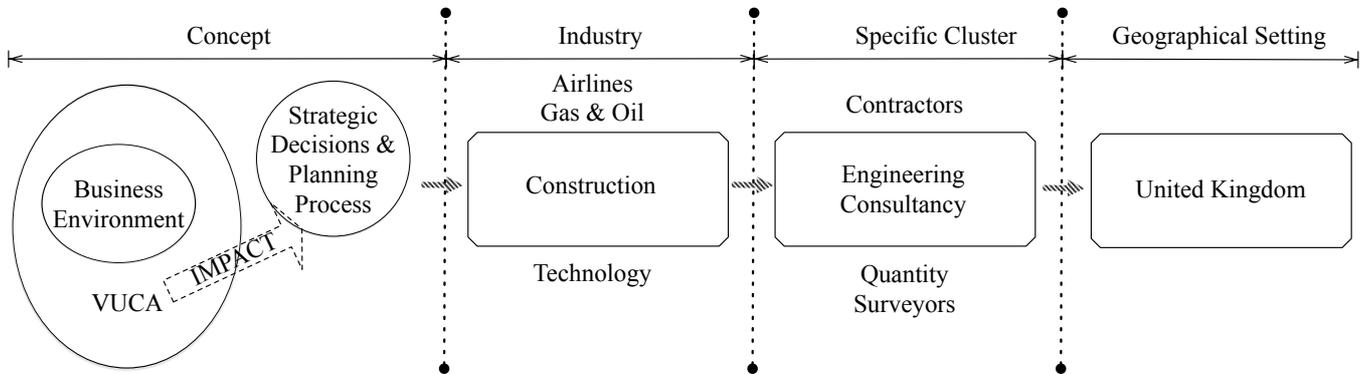


Figure 1-1. Overview of identified research gap

1.2.2. Research Question

With regards to the research gap previously presented, this dissertation seeks to provide insight and empirical data to answer the following question:

How the strategic decisions of engineering consultancy organisations are affected by the general business environment?

1.2.3. Research Objectives

The question highlighted above is important when considering the changes in the market conditions following the economical crisis in 2007-08. The impact this crisis, coupled with other interlinked external factors, had have and is having in engineering consultancy organisations of different size. In the current VUCA business environment the ability of organisations to formulate strategic decisions appears to be critical for organisational survival.

By answering the research question presented previously, the authors' objectives are:

First, contribute towards knowledge accumulation by filling the research gap outlined. In order to do so, the authors aim to gain deep understanding of strategy, business environment and the consultancy engineering sector within the construction industry.

Second, the investigator's aim to provide insights into the effect the business environment has on strategy at two different levels: planning process and decision making through describing and explaining the case of three engineering consultancy organisations within the UK construction industry.

Third, the authors consider interesting to understand if the strategic planning process is static or evolves when an environment characterized as VUCA becomes the *new norm*.

In summary, the researchers' objective is to gain understanding by capturing reality through the managerial perception of the participants.

1.3. Outline of Research

The introductory chapter has presented the background of the study and the rationale behind the importance of it. Based on this, the research questions and objectives have been established.

The research paradigm and method chapter discusses the authors' philosophical stands and provides a detailed overview about the research strategy and approach, followed by data collection and method analysis. Issues related to quality measures and ethics are also discussed on this chapter.

The theoretical frame of reference chapter aims to establish an understanding of the terms strategy (process and decision), and business environment; and the relationships between these two concepts, in order to familiarise the reader with the framework of reference.

Chapter four provides the context where this research sits. First the characteristics that define the contemporary business environment: volatility, uncertainty, complexity and ambiguity (VUCA). Second, an overview and background of the engineering consultancy sector within the construction industry in the UK.

The empirical data gathered is displayed and analysed on chapter five. The data is presented for each of the three participant organisations in isolation following the same structure: overview of organisations, strategy, general environmental factors and internal areas (knowledge, winning work and projects).

In chapter six, a cross-case discussion is conducted linking general environmental factors to strategy at three levels: process, corporate and operations. The cross-case discussion focuses on differences and similarities drawing conclusions with literature review and context chapter. A recapitulation of the major findings in response to the research questions is provided in the final chapter. Moreover, the authors highlight the limitations of this study and further research areas are outlined. Figure 1-2 illustrates the outline of this research.

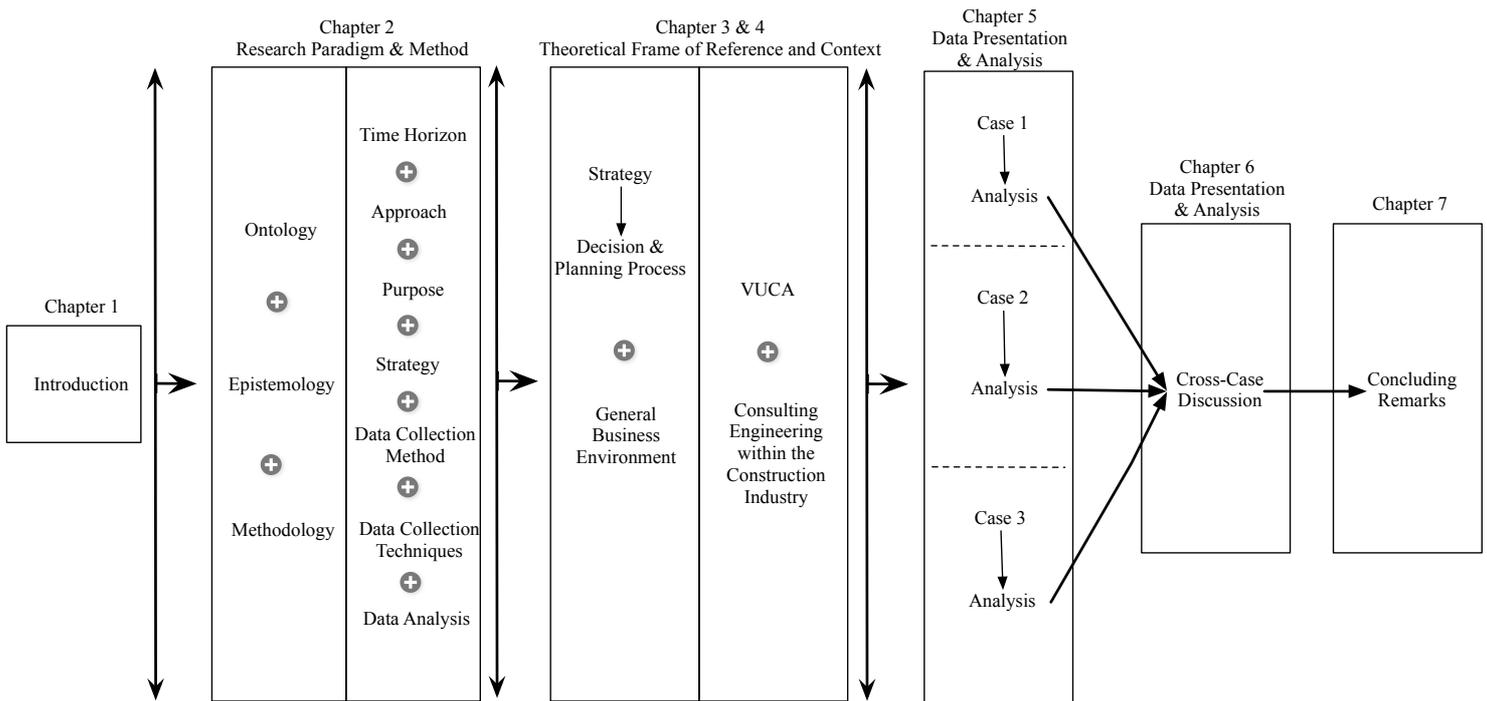


Figure 1-2. Outline of Research

1.4. Research Length Justification

The authors are aware of the extension of this research. Efforts have been made to reduce its length and leave it on the presented form; however, the readers should take into account several factors that justify the need of its length and level of detail.

The purpose of this study is to describe and explain. In such way that in order to explain there is a need first to describe in detail. The purpose and the research paradigm are aligned with the above stance and supported by Yin (2009, p. 56) a case study needs to cover the context and the phenomena of interest in favour of providing understanding and not losing meaning.

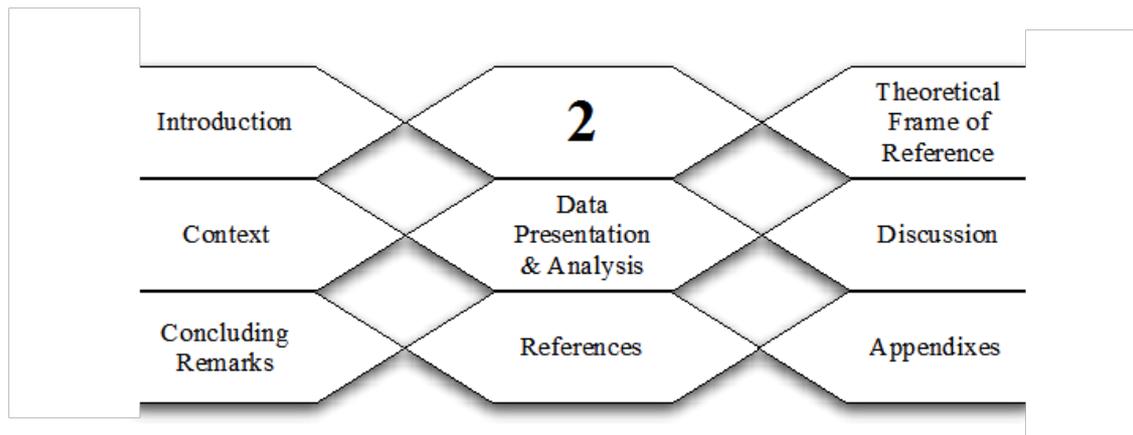
Besides a narrative approach to present data is used. Saunders et al. (2009, p. 497) claims that a narrative approach is essential in maintain the social constructions and meanings of the research participants. This converges with the research paradigm and method followed on this research.

Moreover, the topics treated are extensive in themselves. As an example, a web search using Umea University library search engine accessed on 02.01.2014 found 7,036,206 documents using the term strategy. To narrow down strategy into an operational term is challenging. In addition, if the reader takes into consideration other main terms such as business environment, and other satellite ones like complexity; one can imagine that the document can only be extensive.

Another point that justifies the extension of this dissertation is that the authors have limited the information contained on the appendixes to only a few pages. The researchers are of the idea that to engage with the reader the text must flow and all the

information must be contained within the main body text. In addition, the analysis techniques used are based on diagrams and tables increasing the length of the study.

It is therefore the idea of the authors' that failing to capture the context, and being exhaustively descriptive in the methodology and the collected data, would have meant to loss the essence of this research, risking not capturing its whole meaning and being unable to provide useful explanations.



Research Paradigm and Method

The aim of this chapter is to introduce how the researches have approached the phenomena under investigation. A first part provides the worldview of the researches through a preconception statement and the identification of the research paradigm. Afterwards, the authors present the method that is formed by the time horizon, research approach, purpose and strategy. These elements are the links between the research paradigm and the data. The research strategy used in this research is case study, subsequently detailed information is provided regarding the sample criteria and non-response analysis.

A third part of this chapter is formed by the data collection. A qualitative multi-method approach composed by semi-structures interviews and documentary data is employed in this study. Collecting and analysing data are two interrelated processes; therefore the next section of this chapter describes the analytic techniques use to frame the research: *template analysis*, *data display and analysis*, *within case analysis* and *cross-case discussion*.

The last part introduces the measures taken by the researchers to ensure quality and rigour, in conjunction with ethical considerations.

2.1. Preconceptions

To strengthen the reliability and contribution of this thesis, the authors would like to expose their preconceptions. These may influence the research by increasing the level of subjectivity of its analysis, discussion and conclusions. Therefore, by exposing them, the authors' attempt is to show their awareness and remind their constant reflection upon them in order.

One author has a business background at an undergraduate level, while the other has an engineering background at both undergraduate and graduate levels. Both of the authors have a significant work experience, one in banking and the other in the engineering consultancy sector. One of the researchers has worked on two of the organisations used in this research, and personally knows the directors of the third one. The researchers have a broad interest in the historic and contemporary political, economical and social agendas. Both have a mutual interest on venturing into the consulting industry as a future career. The sum of all the above elements has led the researchers to find a topic that combines these factors into a single research study.

Much is known from a theoretical perspective about strategy, how this is formulated and its importance to organisational performance. Literature is also extensive about the relationships between strategy and business environment. The authors believe that the business environment is nowadays characterised by four variables arranged under the acronym of VUCA: volatility, uncertainty, complexity and ambiguity. VUCA is descriptive, an adjective, of the business environment. Recent historical events like the financial crisis in 2007-08 and the side effects that have occurred as consequence of the economic downturn support the view of the authors. However, not attempt has been made to cover all the remarked topics and their aspects in this dissertation. Even the extensive bibliography at the end of this research is anecdotic if compared with the vast literature on these subjects, and only scratches the surface of possible references on all potentially related areas.

The interest for researching the effects of the business environment upon strategy on organisations initiated from lectures on strategic management during the masters, and it was nurtured during the following months by reading articles of diverse nature, newspapers and learning from practitioners and scholars that the effect of the business environment into organisations is increasing. This preconception raised the interest to learn from *decision makers* about how they perceive the environment where they operate, and how their strategic decisions adapt in order to maintain competitiveness within their industry.

The authors have tried to document the analysis and present the conclusions with meticulousness and thoroughness, following the style setup by Quinn (1980b). The researchers do highlight these preconceptions as they may influence the subjectivity and reflections of the writing, also the framework of reference used. With this the authors would like to encourage the readers to keep these preconceptions in mind when examining this study, and encourage other researchers to look at the gathered data and see whether they could propose other framework for analysis or conclude otherwise.

2.2. Research Paradigm

One of the most important aspects of conducting a research is to explain and clarify the paradigm adopted by researchers in order to expose their beliefs and strength the research contribution. Guba & Lincoln (1994, p. 105) suggested that any questions of method are secondary when compared to the importance of defining the research paradigm. A paradigm is a set of basic beliefs that represent the *worldview*, consisting of three elements: ontology, epistemology, and methodology (Ibid, pp. 107-109). Moreover Guba & Lincoln (Ibid) advise that the research paradigm should be addressed in a certain order, first ontology, then epistemology, and finally methodology, since a selected ideal may create conflict with another element of the paradigm (Bakker, 2010, p. 287). Accordingly, the authors follow this view to ensure alignment and coherence among the three elements that define the research paradigm:

$$\text{Ontology} + \text{Epistemology} + \text{Methodology} = \text{Research Paradigm}$$

2.2.1. Ontological Considerations

Ontology concerns the nature of reality; the way researchers view the world (Saunders et al., 2009, p. 108). It consists of two streams of thought, objectivism and subjectivism. The first positions social entities in a reality separated from any influence of external social actors concerned with their existence. The latter states that social phenomena are influence by the perception and actions of external social actors concerned with their existence (Saunders et al., 2009, p. 110). The ontological philosophy for this research is subjectivism. Individuals (e.g. the authors and respondents participating in this research) are influence from their subjective views of reality, that affects their understanding of concepts and influence their actions (Remenyi et al., 1998) creating, in parallel, multiple realities based on their perceptions (Morgan & Smircich, 1980, p. 492; Saunders et al., 2009, p. 110). Demirdirek, (2010, p. 905) sustains that subjectivism is an important approach for studies that aim to thoroughly understand the perspectives of those involved in the research in order to explain their insights properly in the final analysis.

2.2.2. Epistemological Considerations

Epistemology defines what constitutes acceptable knowledge in a particular field of research (Remenyi et al., 1998, p. 103; Bryman, 2008 p. 13). Three main streams of thought commonly characterise epistemology: positivism, realism and interpretivism (Saunders et al., 2009, p. 113; Bryman & Bell, 2011, pp. 15-17). Positivism supports natural science procedures, based on empirical, logical and mathematical data, which results can be law-like generalised (Remenyi et al., 1998, p. 32; Saunders et al., 2009, p. 113). When adopting positivism, researchers detached themselves from any possible interpretation that could affect the results of the study and follow high structured methodologies in order to allow replication of the study (Saunders et al., 2009, p. 111).

Interpretivism focus is on claiming that the researchers understanding is not detached from the research, thus knowledge is generated by the interaction between the researcher and the respondent (Guba & Lincoln, 1994, p.111; Snape & Spencer, 2003, p. 13). Therefore the researcher develops and empathetic stance (Saunders et al., 2009, p. 116), in order to understand and reconstruct (Guba & Lincoln, 1994, p. 113) the

influence and role human beings have as social actors in social phenomena (Schwandt, 1994, p. 118).

Realism is considered to be form from traits of both, positivism and interpretivism (Easton, 2010, p. 119). It takes aspects similar to those of positivism, by acknowledging the existence of reality separated from human interpretation, in order to generate theories; similar to interpretivism because it acknowledges that human beings are actors influencing reality (Saunders et al., 2009, p. 115; Easton, 2010, p. 120).

This research seeks to describe and explain how social actors (e.g. directors – decision makers) perceive and react to the effect the business environment has on the engineering consultancy organisations within the construction industry. Therefore interpretivism allows the authors to reconstruct and understand the social construction of reality (Morgan & Smircich, 1980, p. 494) through the interpretation of the worldviews of those individuals involved in the research (Guba & Lincoln, 1994, p.113; Schwandt, 1994, p. 118). Positivism and realism characteristics would be in conflict with this research intent; presenting constraints to properly generate research findings due to their detachment from the individuals' involvement in the investigation, methodological approach and focus to produce generalisable and replicable studies.

2.2.3. Methodology

Methodology refers to the theory of how research should be undertaken (Saunders et al., 2009, p. 3). Interpretivism constructs and accumulates knowledge through hermeneutical discussions (Guba & Lincoln, 1994, p. 114). Hermeneutic means to interpret or make meaning (Brogden, 2010, p. 322) also to clarify (Hope & LeCoure, 2010, p.435) not as “a narrowly defined method but as a broad epistemology and philosophy of understanding” (Prasad, 2002, p. 23). This encourages the researchers to critic and read between the lines of the data, and it is particularly useful when deep understanding is pursued (Hope & LeCoure, 2010, p.435). Additionally, the hermeneutic methodology emphasises the importance of the context when interpreting data (Bakir & Todorovic, 2010, p. 1039) in such way that the process of research must start with comprehensiveness and understanding of the topic under study. This concept takes weight because the findings of this study are first interpreted by the participants and latter by these authors: *double hermeneutics*.

2.3. Method: Time Horizon; Research Approach, Purpose, and Strategy

Method is defined by Saunders et al. (2009, p.3) as the procedures follow to obtain and analyse data. This section also outlines the time horizon, research approach, purpose and strategy, which are the links between the research paradigm and the data. The research strategy used in this research is case study, subsequently detailed information in provided sampling regarding sample criteria and non-response analysis.

2.3.1. Time Horizon

Saunders et al. (2009, p. 155) divides the design time periods a research can be elaborated in cross-sectional and longitudinal. Cross-sectional designs are *snapshots* of time (Ibid): data is collected at one specific period of time (Shanahan, 2010, p. 267). On

the other hand, a longitudinal study collects data at several periods of time, during a long phase in order to identify changes in the life cycle of a phenomenon (Aaltio & Heilmann, 2010, p. 69). This study follows a cross-sectional design.

2.3.2. Research Approach

According to Saunders et al. (2009, p. 124) and Bryman & Bell (2011, p. 11) they are two fundamental ways to approach research: deductive and inductive reasoning. Deductive reasoning is considered to test theory, meaning that research is guided by previous theory (Patton, 1987, p.15; Hyde, 2000, p. 86). This approach allows the researchers to test existing theory leading the results to prove confirmation or falsification of their validity. This approach explains cause and effect relationship between variables; provides measurement scales that permit testing (usually quantitative methods); uses highly structured methodology; and allows generalisation (Saunders et al., 2009, pg. 125).

Induction on the other hand is considered to build theory instead of testing it (Patton, 1987, p.15; Hyde, 2000, p. 86). Induction allows the research to focus on the contexts in which an event takes place, favouring the development of alternative and multiple explanations regarding the usage of small samples (Saunders et al., 2009, p. 126).

Thus, deduction and induction differ in the way they shift between data and the way they develop concepts. The deductive approach provides the concepts relevant to the data that the researcher should focus on (Yin, 2011, p. 94), moving from specific towards general (Aaltio & Heilman, 1994, p. 69). While, the inductive approach allows the data to lead the emergence of concepts (Yin, 2011, p. 94), allowing transitions from general to specific (Aaltio & Heilman, 1994, p. 69). This research uses three cornerstones: theoretical frame of reference, context and data analysis. The same three cornerstones that Patton (1987, p. 63) claims a research should be founded on in order to approach a detailed investigation.

The theoretical frame of reference and the context provide adequate prior knowledge to facilitate a deductive approach (Easton, 2010, p. 124), whereas the collected data follows an inductive analysis by nature (Aaltio & Heilman, 1994, p. 67). Considering these aspects, the authors consider that neither approach fully covers its research intent. However pairing the characteristics of both, deduction and induction, strengthens the study and maximises the opportunity of effectively describing and explaining the research intent. This continuum between deductive and inductive allows a holistic use of resources and analysis (refer to Figure 2-1).

2.3.3. Research Purpose

There are three independent alternatives, and their combinations, from which to classify the purpose of a research: exploratory, descriptive and explanatory (Bleijenbergh, 1994, pp. 61; Berg, 2001, p. 230; Saunders et al., 2009, p. 139). An exploratory study concerns the search to identify and maximise the opportunities of developing concepts and theories that explain new phenomena (Bleijenbergh, 1994, pp. 61; Robson, 2002, p. 59). Descriptive studies are concerned in providing a detail depiction of phenomena being studied (Bleijenbergh, 1994, pp. 61). Explanatory studies focus on providing

understanding between the relationships of variables in the studied phenomena (Saunders et al., 2009, p. 140).

The purpose of this research is to explain the effect that the business environment has on the strategic decisions and process of engineering consultancy organisations within the construction industry in the UK. Yin (2011, p. 216) claims that research explanations always occur through descriptive interpretations. Saunders et al. (2009, p. 140) also emphasises that for a study to be clearly explained, it has to first be described. In such way that descriptive studies usually are precursors of explanations. Accordingly, this research stands within a descripto-explanatory purpose (Ibid).

Figure 2-1 explains that both the theoretical frame of reference and the empirical data, following the previously identified research approach, contribute to describe and explain the purpose of this research. The theoretical frame of reference in conjunction with the context provides description of the involved variables and explanation of their relationships. While the empirical data analysis provides a descriptive interpretation of the participant's organisations reality, the involved actors' perceptions (e.g. researchers and respondents) and, it also explains through the captured examples the correlation between the variables exposed in the research purpose.

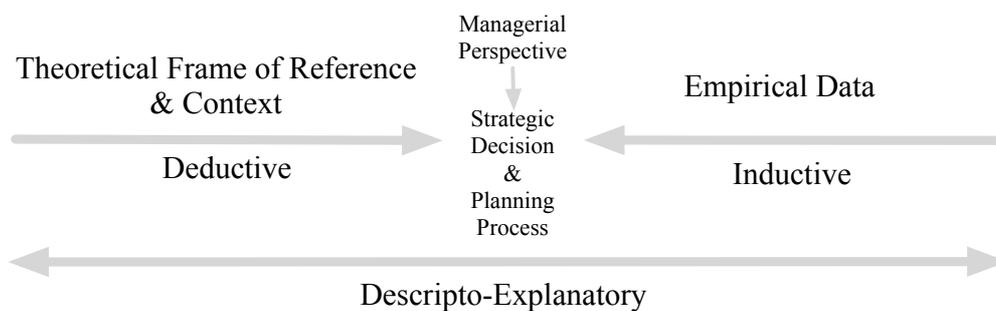


Figure 2-1. Research Approach & Purpose

2.3.4. Research Strategy

The research strategy is known as the method to conduct a study. Some of the different strategies are experiments, surveys, case studies, grounded theory, archival research, and action research (Saunders et al., 2009, p. 41; Yin, 2009, p. 2; 2011, p. 17). However none of these strategies is bound to any specific research purpose (Yin, 2009, p. 7), mutually exclusive and none is superior or inferior to the other (Saunders et al., 2009, p. 41). Yin (2009, p. 8) suggests that the selection of the research strategy depends of two main conditions. Firstly it has to be able to answer the type of research question (e.g. how, why, what, etc.). Secondly, it requires the researcher to have control of events. Nevertheless no matter which research strategy is pursued it should allow the researcher to answer the research question and cover all the required objectives (Saunders et al., 2009, p. 41).

The aim of this study is to understand contemporary events in which the researcher has no control over the studied phenomena. Thus the research question is framed with the *how* interrogative and follows a case study strategy, which according to Yin (2009, p. 13) provides a suitable structure, granting that all the research strategy criteria are fulfilled by this study intent. Additionally, the variables involved in the study are of

complex nature (e.g. strategy), meaning that to be fully understood an in-depth case study is required (Ramanujam et al., 1986, p. 348).

A case study is defined as an in depth empirical inquiry of a contemporary event within its real-life context (Hyde, 2000, p. 84; Yin, 2009, p. 18). It is characterise as a single instance (Easton, 2010, p. 119), unique by nature but not isolated from the research context (Aaltio & Heilman, 2010, pp. 66, 68), and capable of providing multiple sources of evidence (Robson, 2002, p. 178; Yin, 2009, p. 11). Moreover, case studies objective is to understand the dynamics of variables within phenomena (Eisenhardt, 1989, p. 534), exposing unexpected issues (Aaltio & Heilman, 2010, p. 66), while providing an in depth contrast of perspectives (Lewis, 2003, p. 52). Bakker (2010, pp. 487, 491) also builds on the importance of analysing perspectives by arguing that a case study without interpretation of human meaning lacks sense. Eisenhardt & Graebner (2007, p. 25) explain that case studies are ideal to find links between detailed inductive to general deductive data. In summary, *idiographic* case studies (Aaltio & Heilman, 2010, p. 69; Bakker, 2010, p. 486) describe and explain observations in their real life context (Yin, 2009, p. 20), aligning with the researchers intention of analysing how each participant organisation formulates their strategy in order to sustain and counteract the effects of their business environment.

Case Study Strategy Design

According to Yin (2009, p. 24) two of the most significant identified criteria for the design of case studies is deciding if the case is single or multiple, and within this if it is holistic or embedded.

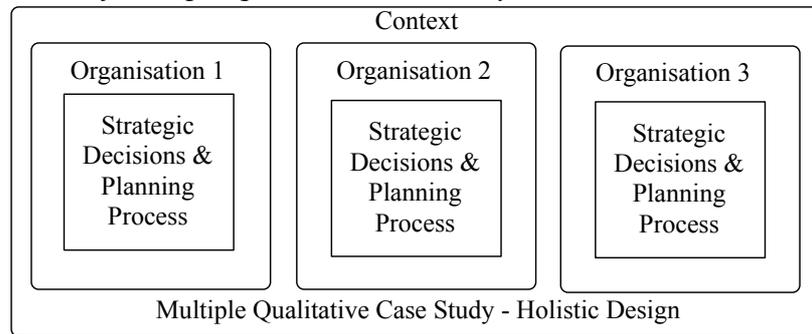
The rationale for selecting a single case study is when the intent of the research is to analyse phenomena with the following characteristics: unique case, it adequately tests theory, describes a typical situation, it exposes new phenomena or the event needs to be studied over a long period of time (Yin, 2009, pp. 47-49; Saunders et al., 2009, p. 146; Bleijenbergh, 2010, pp. 61-62). On the other hand, multiple case studies (e.g. two or more cases) rationale is base on the ability of replicating the analysis in the selected cases (Saunders et al. 2009, p. 146) in order to obtain either a literal replication (similar findings) or a theoretical replication, meaning contrasting findings from the selected cases (Yin, 2009, p. 59; Hak & Dul, 2010, p. 804). In addition multiple case studies allow a substantial analysis (Yin, 2009, p. 61), iterative model building and comparison of findings (Campbell, 2010, p. 175).

As previously stated the second design criteria for the case study strategy focus on the number of units of analysis within the selected case(s). A holistic design refers to one unit of analysis: a global picture of the research case(s). The embedded design concerns about two or more units of analysis within the research case(s) (Yin, 2009, p. 50; Saunders et al., 2009, p. 147). Both holistic and embedded can be applied to both single and multiple case studies.

This research studies three engineering consultancy organisations within the construction industry in the UK. Additionally it focuses on describing and explaining the effect their respective business environment has on the strategic planning process and strategic decisions. Therefore, following the previously described design criteria this research stands within a multiple holistic case study design (refer to Figure 2-2). Multiple case studies provide the research with more extensive descriptions and

explanations (Eisenhardt & Graebner, 2007, pp. 25-27; Chmiliar, 2010, p. 583) of reality (Yin, 2009, p. 61).

Figure 2-2. Outline of multiple qualitative case study used in this research based on Yin



(2009, p. 46)

Several academics support that case studies are an adequate method for business and organisational research because they provide insight in their behavior and factors affecting the organisation within its context (Berg, 2001, p. 225; Yin, 2009, pp. 4-5; Aaltio & Heilman, 2010, p. 66). Additionally, academics such Eisenhardt & Buorgeois (1988), Eisenhardt (1989), Brown & Eisenhardt (1994), De Geus (1998), Grant (2003) have conducted multiple case studies as research strategy, in order to understand the relationship of variables within a context.

Organisations and Respondent Sample Criteria

Fletcher & Plakoyiannaki (2010, p. 839) state that case study samples for qualitative studies need to be about purpose and availability of data, rather than large samples representing a population as needed in quantitative studies. Purposive sampling occurs when the sample is chosen in a deliberate way, in order to reach the specific study units that provide the most relevant data to answer the research questions (Eisehardt & Graebner, 2007, p. 27).

The sample for this study was selected with the purpose of obtaining organisations with different sizes, one of the most popular methods to measure organisations (Smith et al., 1989, p. 66) to describe the consultancy engineering industry from a holistic perspective. The ideal sample would comprise organisations from four different sizes (micro, small, medium and large) as identified by the European Commission guide for SME – Small and Medium Enterprise (2013, p. 14). Nevertheless, a medium size organisation is not available on this research (refer to non-response analysis section). One of the reasons is that medium size organisations represent only 8% of the total number of engineering consultancy organisations that are part of the Association of Consulting and Engineering (Pontin, 2014). 87% are micro and small.

The sample of this research contains organisations from the micro, small and large sectors. The diversity of size forming the sample allows the research to provide a wider range of viewpoints (Ritchie et al., 2003, p. 83) of how the business environment affects organisations regarding their size and capacity in the industry (Grinyer & Yasai-Ardekani, 1981, p. 474). Other criterion of this research is that all participant organisations had to be located in the same country, in order to study organisations that were not only in the same industry but affected by the same business environment to strengthen control and validity (Smith et al., 1989, p. 67).

The industry of focus of this research is the engineering consultancy within the construction industry in the UK. 10 organisations were contacted. A personalised email (general template available in the Appendix 2) was sent to ask for collaboration. In addition to requesting and explaining the role the organisation will play in the study, the thesis proposal was also attached to provide further insight.

Within the participant organisations a critical aspect was to obtaining the collaboration of key players in the strategic planning process of each organisation (Segars, 1999, p. 207). This study counts with executive managers involved in the strategy formulation and in the day-to-day decision making, which results on highly knowledgeable, detailed and concise responses (Ramanujam, 1986, p. 354). Snow & Hrebiniak (1980, p.320) suggest that the “top managers have the best vantage point for viewing the entire organisational system”. Moreover, Dutton & Duncan (1987, p. 103) and Ramanujam (1986, p. 354) denote that to gain a better insight about strategy, managers or high-level executives need to be approached. Nandakumar (2010, p. 930) also builds on this by claiming that in strategic management research is the feedback provided by high-level executives (e.g. Founding-Directors, Chairmans, etc.) the most reliable and accurate. Therefore the research follows a managerial perspective. Table 2-1 provides a summary of the participant organisations, respondents’ roles and information regarding the interviews.

Non-Response Analysis

In addition to the participant organisations, several other organisations were contacted in order to obtain a larger sample of cases to analyse. (Refer to Appendix 1). The organisations that decided not to collaborate directly rejected the offer or not responded at all. One of the reasons for the lack of participation is the required respondent criterion. As previously mentioned, the respondent role in the organisation has to be essential to the organisation direction, a key player in the strategic planning process and decision making (Segars, 1999, p. 207).

If more organisations would have participated in this study a broader picture of the industry could have been developed. This implies that this study cannot be considered as a representation of all the engineering consultancy industry. It has to be assessed as a specific illustration and interpretation of the context of three engineering consulting organisations with different sizes: micro-entity, small, and large; a medium organization was difficult to reach due the small percentage they comprise from the overall industry. However the purpose of this thesis is to describe and explain the effect of the business environment has upon the context of the participating organisation, rather than presenting findings that can be generalised.

2.4. Data Collection

To provide in-depth insights regarding strategy within the organisations and context under investigation, two qualitative data collection techniques have been used: semi-structured interviews and documentary data; therefore holistically this constitutes a multi-method approach. Following an explanation of this choice, detailed information regarding the interviews is described in this section.

2.4.1. Data Collection Method

There are two types of methods to collect data: quantitative and qualitative. The difference between them derives from the nature of the words itself. Berg (2001, pp. 2-3) explains that quality refers to the nature of things, while quantity refers to the numeric value of things. Thus, qualitative research can be defined as the description of things regarding their meaning, characteristic and interaction with their environment; and quantitative research objective is to measure and count data (Berg, 2001, p. 3; Saunders et al., 2009, p. 151).

Quantitative data is based on empirical-analytical observation (Korzilius, 2010, p. 760). It attempts to categorise and generalise the characteristics of a large sample of the population being studied through statistical calculations (Ibid, pp. 761, 763). The type data used by quantitative methods requires the ability to generate numerical findings, such as listing, questionnaires and surveys among others (Saunders et al., 2009, p. 151). Berg (2001, p. 3) describes that quantitative data fails to take into consideration the aspect behind social actors that affect and interpret phenomena.

On the other hand qualitative data aims to understand how social actors make sense, understand and interact in the world they live in (Berg, 2001, p. 7; Eisenhardt & Graebner, 2007, p. 28), resulting on an interpretivism view of the findings (Korzilius, 2010, p. 760). Building on these description, Yin (2011, pp. 7-8) lists five characteristics of qualitative research: it studies the meaning of people's life on real-world setting; it represents the views of the involved actors (e.g. respondents); describes the living conditions of people; it adds value to existing or emerging concepts that explain human behaviour; and it encourages the use of multiple sources of data. Furthermore the qualitative method is grounded in any type of collection data technique (e.g. interviews, documents, etc.) that generates non-numerical findings (Saunders et al., 2009, p. 151).

In relation to this study, a qualitative method allows in depth description and explanation of the participant organisations' strategic planning process and strategic decisions through the subjective interpretation of the world of the involved social actors (Berg, 2001, p. 7; Easton, 2010, p. 124); while a quantitative method would fail to capture the richness and complexity required by this study (Grant, 2003, p. 496).

Saunders et al. (2009, pp. 151-152) explains that qualitative and quantitative studies can be approached through one, more than one or a mix between the data collection method and technique. A mono method is defined as single approach and its respective technique, either qualitative or quantitative (Kitchenham, 2009, p. 562). Multiple methods apply two different data collection techniques within one data collection method (e.g. interviews and documents, both qualitative techniques) (Saunders et al., 2009, p. 152). The last approach is the mixed method, mixing both qualitative and quantitative approaches, but divided in two alternatives. The first, the mix-method alternative uses data collection techniques of both methods either in a parallel or sequential way, but not combining its analysis (e.g. surveys analysed quantitatively and interviews analysed qualitatively). The second alternative is the model-method, which also uses both methods, but combines the analysis of their respective techniques (e.g. a questionnaire analysed both quantitatively and qualitatively) (Kitchenham, 2009, p. 562; Saunders et al., 2009, pp. 152-153). Figure 2-3 exemplifies the several data collection methods already described.

Academics such McGin (2010, p. 274), Bhatnagar (2010, p. 585), Saunders et al. (2009, p. 153) and Yin (2011, p. 57) suggest that using the multiple method alternative strengthen and enhances the quality of the research by providing descriptions and explanations that cover different angles and perspectives of the study. Moreover, McGin (2010, p. 274) also notes that a single source of evidence is not enough for researches using a case study strategy. In uniformity with these statements and the purpose of this study a qualitative multi-method approach is applied.

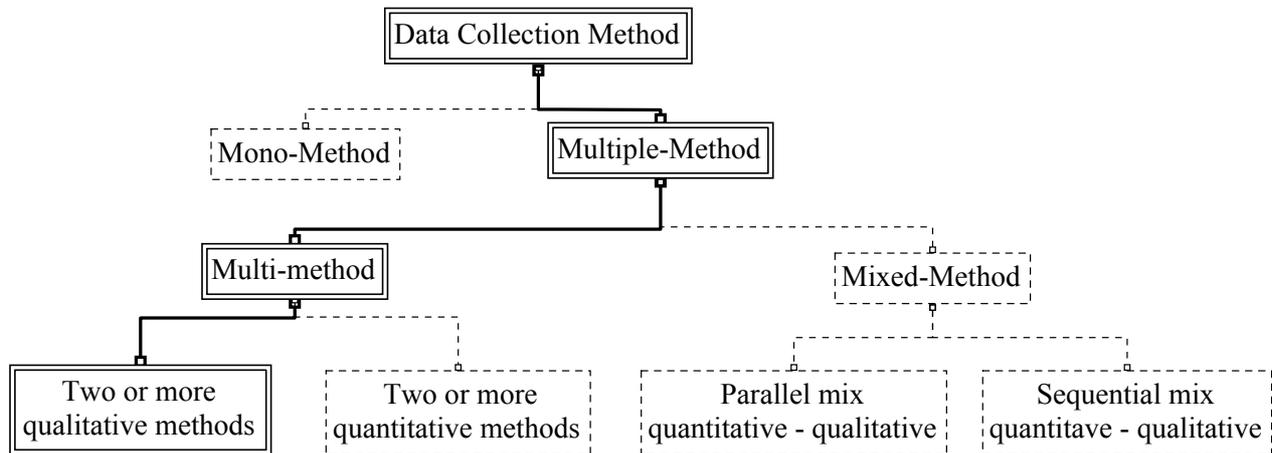


Figure 2-3. Continuous line shows the method used in this study. Image based on Saunders et al. (2009, p. 152)

2.4.2. Techniques Used for Data Collection

Yin (2011, p. 129) claims that they are four main techniques of collecting data: interviewing, observing, collecting and examining materials, and feeling. This study uses two techniques to capture data within the qualitative method: collection and examination of documents (e.g. business plans) and in-depth interviews, which are characterised for their capacity to obtain detail explanation of a specific phenomenon (Lewis, 2003, p. 52, 60). Olson (2010, p. 318) claims that both document analysis and interviews pair to be a main source of data for interpretation and analysis of case studies. Furthermore, various scholars have carried similar studies, using both interviews and documentation techniques to collect data and generate analysis (Eisenhardt & Buorgeois 1988; Eisenhardt, 1989; Brown & Eisenhardt, 1994; Grant, 2003; Graebner, 2004; Gilbert, 2005; Empson & Chapman, 2006). Both methods are described in detail in following subsection of this chapter.

In addition to improve the quality of the findings analysis, the multiple method approach provides the opportunity to corroborate data through triangulation. Triangulation is the application of more than one way to corroborate data through convergent validation of findings (Berg, 2001, p. 5; Saunders et al., 2009, p. 146; Yin, 2011, p. 81, p. 153). Regarding this study data type triangulation is used (interviews and documentary data) to strength the discussion and enhance the quality measures of thee research (Evers & Staa, 2010 p. 750; Cox & Hassard, 2010, p. 945).

Interviews

An interview is based in the collection of data through having a purposeful conversation (Berg, 2001, p. 66; Barlow, 2010, 495) with one or more people, in order to generate knowledge (Barlow, 2010, 495). Interviewing is a technique that generates rich (Eisenhardt & Graebner, 2007, p. 28) valid and reliable data as long as the nature of it is aligned with the purpose, objectives and strategy of the research (Saunders et al., 2009, p. 318). Interviews can be structured, unstructured and semi-structured (Fontana & Frey, 1994, p. 361; Berg, 2001, p. 68); the difference lays in the rigidity of its structure guide and formality of the questioning style (Fontana & Frey, 1994, p. 365; Barlow, 2010, 495).

Structured interviews consist of a formal set of a pre-established rigid guide, or questionnaire (Saunders et al., 2009, pg. 320; Yin, 2011, p. 133), inquired in a nonbiased form to all the respondents to obtain rational emotionless responses (Fontana & Frey, 1994, p. 363; Barlow, 2010, 495; Yin, 2011, p. 133). Moreover it is common for structured interviews to be related to quantitative methods due their capacity of collect quantifiable data (Saunders et al., 2009, p. 320). Unstructured interviews are informal (Ibid) and follow a formless flexible guide to elucidate in-depth responses, which result in complex and non-replicable data (Fontana & Frey, 1994, p. 363; Barlow, 2010, 495). The semi-structured interviews lay in a continuum between structured and unstructured interviews. They provide the researchers with a flexible guide (Saunders et al. 2009, p. 320) and significant level of control over the interview, which consists of a set of themes or questions that can be adapted during the interview in order to understand and compare the respondents' perspectives (Marshall & Rossman, 2006, p. 101; Barlow, 2010, 495). Semi-structured interviews are the technique often used in qualitative studies where the question has a complex or open-ended nature (Saunders et al., 2009, pp. 312, 324).

Furthermore Saunders et al. (2009, pp. 321-322, 324) and Easton (2010, p. 124) suggest that semi-structure interviews are the adequate data collection technique in studies that follow an interpretivism philosophy and attempt to describe and analyse phenomena through implementing a case study strategy. The characteristics of semi-structured interviews adapt to the purpose of this research since they allow flexible discussion with the respondent about the required topics and enabling emergent questions that strength the forthcoming analysis (Arthur & Nazroo, 2003, p. 11). Thus a semi-structured interview form is used.

Interview Guide

The semi-structure interview criteria ensures that all question are open ended, covering a common set of concepts but at the same time leaving room for respondent to describe and explain their interpretation of reality (Empson & Chapman, 2006, p. 151). The questions and concepts for the guide surged from the researchers understanding of what concepts are required in order to provide a significant description and explanation of the research question. The interview questions were framed in such way that avoided sounding confusing, threatening or uncomfortable (Yin, 2003, p.90), and at the same time lead to significant responses. Refer to Appendix 3 for interview structure and questions guide.

Interview Procedures

In order to schedule the interviews at a convenient time for the respondents, the organisations were reached via email (typical email available in Appendix 2). At the same time, the respondents were informed that the optimal interview duration was of 1 hour and 30 minutes. Additionally they were asked if the interviews could be conducted via Skype (audiovisual Internet communication software). All respondents agreed and the respective contact information (e.g. Skype username) was exchanged. The advantage of utilising audiovisual software is that it allows the researcher to reach respondents that are geographically apart (Saunders et al., 2009, p. 349).

All the audio from the interviews was recorded with authorisation of the respondents. Recording allows limitless access to the interviews, which provides flexibility for analysis, while preserving all the transient details (Saunders et al., 2009, p. 341; Cohen, 2010, p. 34). Additionally a transcript of the interview was sent to each respective respondent for the validation of the collected data. Both authors were present during all interviews, taking notes and actively participating in the questioning. There was no formal division of the interview guide; in order to maintain a dynamic interview a collaboration role was shared between the authors.

At the beginning of each interview the respondents were asked how much time they had available, in order for the authors to plan the interview accordingly. When the questioning was finalised an additional explanation of the research objectives and forthcoming process of the study was explained to the respondents. All the respondents were asked if they wanted their personal or organisation's names to remain anonymous, preference that all refused and consensually agreed that all data could become publicly available. To finalise the interviews, the respondents were asked if they could be reach via email in case questions emerge during the data analysis, request that all approved. Furthermore, once each author had revised its notes, an exchange of interpretations and thoughts was conducted prior each interview (Bourgeois & Eisenhardt, 1988, p. 320; Eisenhardt, 1989, p. 547; Empson & Chapman, 2006, p. 151). Refer to Table 2-1 for description of each interview. Once the interviews were concluded, the authors followed the *24-hour rule* (Bourgeois & Eisenhardt, 1988, p. 819). A detailed conversation between both researchers took place after completing each interview and impressions were exchanged to create richer insights.

Table 2-1. Organisational size, respondent name and job title, together with date when the interviews were conducted and duration of these

Organisation	Size (# Employees)	Respondent / Job Title	Date	Total Duration
<i>Buro Happold</i>	1,400	Cook, Mike Chairman & Senior Partner	04.12.2013	01:18:48
<i>Engenuiti</i>	22	Grimes, Paul Director & Owner	22.11.2013 04.12.2013	1:26:20 1:47:21
<i>Structural Solutions</i>	8	Beresford, Peter Director & Owner	28.11.2013	01:14:43

Documentation Collection

Document collection is considered a valuable source of data for qualitative (Yin, 2011, p. 148) case study research (Olson, 2010, p. 318). Documents are useful for things as simple as the details they contain (Yin, 2011, p. 149) (e.g. names, titles, specific dates of events, language, mottos, mission statements, etc.) to providing a dimension of the case (e.g. economic and historical background-forecast of an organisation) far beyond any other source of data (Olson, 2010, p. 318). Moreover the data of the collected documents cannot be altered by the researcher, so before its analysed, it provides an unobtrusive evidence that can be triangulated against data collected through other techniques (Marshall & Rossman, 2006, p. 106).

Documents include a variety of written, visual and physical material that represents human activity over time; although the researcher has to be aware of the different purposes each document was created for (Olson, 2010, pp. 318, 320). All respondents were asked to provide any type of available documentation (e.g. business plan, strategic maps, annual reports, publicity material, published articles and studies, ect.) that they consider that could add value to the research, request that resulted in various documents. In addition the organisations' official websites were also used as a source of data. All the collected documents provided by the organisation are official, some are external documents published and available free on the Internet (Marshall & Rossman, 2006, p. 107) and others are internal and confidential. All documentation exists on an electronic format.

Once a piece of documentation was collected both authors examined it, in order to validate it (Ibid) and avoid using documents that provided a biased perspective or outdated information (Ibid, p. 108). Additionally, exchanged emails with the respondents are also considered as collected documents. Emails were used to clear any doubts that surge after the interviews, and also as a direct method to request additional data (Yin, 2011, pg. 351). Table 2-2 summarises the collected documents from each participant organisation.

Table 2-2. Summary of documentation type employed for this study

Organisation	Type of Document
<i>Buro Happold</i>	Emails; Business Plan; Organisation's Website; Harvard Business Review Case Study; Website Interviews; Journals; Newspapers; Books
<i>Engenuiti</i>	Emails; Business Plan; Organisation's Website; Journals
<i>Structural Solutions</i>	Emails; Organisation's Website

2.5. Data Analysis

One of the most critical parts of a case study research is the data analysis (Eisenhardt, 1989, p. 539). Saunders et al. (2009, p. 488) claims that collecting and analysing data are two interrelated processes, which allow the emergence and recognition of key findings. Although for this to happen the collected data has to be transformed into meaningful and detailed units of analysis, in order to draw significant conclusions from

large amounts of empirical findings (Miles & Huberman, 1984, p. 68). Therefore data analysis is a continuous process of summarising, tabulating, categorising or combining the different type of evidence used to address a previously defined research question (Yin, 2003, p. 109; Evers & van Staa, 2010, p. 749).

This research consists of analysing through an interpretivism stance the qualitative data gathered through semi-structured interviews and documentary data. Nevertheless unlike positivist research, interpretive research base on a qualitative data presents no accepted or standardised (Saunders et al., 2009, p. 490) procedure for analysing data (Bourgeois & Eisenhardt, 1988, p. 820). Accordingly, several analytic techniques that could potentially be paired with the chosen research methodology framework were considered (e.g. pattern matching, explanation building, grounded theory, analytic induction, narrative analysis etc.). These authors frame this research analysis strategy by using, *template analysis*, *data display and analysis*, *within case analysis* and *cross-case discussion*. According to Saunders et al. (2009, pp. 505) these techniques are useful to generate findings that combine standards of inductive and deductive reasoning, mixed approached followed in this research, due to their flexibility and constant generation of findings.

2.5.1. Data Analysis Techniques

In this section the data analysis techniques (e.g. *template analysis*, *data display and analysis*, *within case analysis* and *cross-case discussion*) applied on this research are defined and explained.

Template Analysis

Template analysis is based on developing a template, which is a list of codes or categories that represent the topics revealed from the collected data (Waring & Wainwright, 2008, p. 86). The selected codes or categories are attached to the collected data in order to identify, describe and analyse patterns or relationships. In addition the researcher has freedom of grouping, assigning hierarchical levels or generating new codes or categories if needed throughout the analysis process.

Moreover at the end of the analysis process the developed template can be revised and even modify again if necessary. The template analysis technique allows the researcher to identify new themes or emergent issues through both the data collection and analysis process that were not considered at the beginning of the research. This approach combines both deductive and inductive approach to qualitative analysis, given that the selected codes and categories can be predetermined (through a priori frame of reference), amended or emergent from the collected data (Ibid). Template analysis differs from similar techniques such grounded theory, because it provides the researcher more flexibility to change the structure and plan of the analysis (Saunders et al., 2009, p. 509). The characteristic of template analysis allowed the researchers to liberally select the categories they interpret as essential for the analysis, and its flexibility allows changes at any point in time in comparison with other alternatives.

Data Display and Analysis

The data display and analysis technique based on the understanding of Miles & Huberman (1994) concerns three parallel sub-processes: data reduction, data display and drawing and verifying conclusions. A characteristic of this technique is that the three sub-processes occur continuously and endlessly before, during and after the data collection process (Ibid, p. 429) allowing the researcher a flexible and permanent analysis of the findings from different perspectives. Data reduction involves summarising, simplifying or deliberately selecting the key themes within the collected data; the objective is to separate and condense the useful data from the general pool (Ibid, p. 10).

Data display concerns on developing diagrammatic or visual displays (Saunders et al., 2009, p. 503) that summarise the scrutinised data from the first sub-process. Miles & Huberman (1994, p. 11) listed an array of methods to build graphic representations (e.g. figures, matrices, networks, flowcharts, charts etc.), which are easy to generate and help the researcher develop analytic streams towards the research. However, Miles & Huberman focus on suggesting the use of matrices and networks, due to their ability to provide a better understanding of the data in a reduced form. In addition they facilitate the comparison through the cross-case discussion phase and the drawing of concluding remarks. The use of visual displays is an advantage because qualitative data produces a vast amount of written information, which presented, as simple text becomes an uneasy and exhaustive way of presenting findings (Eisenhardt & Graebner, 2007, p. 29; Evers & van Staa, 2010, p. 749).

The last sub-process is drawing and verifying conclusions. This research was strengthened and simplified through the use of the matrices and diagrams in the conclusion chapter. Visual displays provide a better understanding of the findings and facilitate the communication of vast ideas; also this process provides a constant data verification either by review or lengthy discussion of the comparison and replication of the findings of the different cases (Miles & Huberman, 1994, p. 11). Eisenhardt and Graebner (2007, p. 29) reinforce that is critical for researchers to develop visual aid to strengthen and intensify the significance of the empirical findings and graphically display the richness of qualitative data. Correspondingly, Eisenhardt (1989), Gilbert (2005), Graebner (2004), and Zott & Huy (2007) are among the several academic that use this technique to enhance their researches.

Within Case Analysis and Cross-case Discussion

A within case analysis allows the examination of each case as a silo, meaning that each case is scrutinised independently to find characteristics regarding the context of each participating organisation (Bleijenbergh, 2010, p. 63). Afterward a cross-case discussion to compare findings between the cases is presented. The cross-case discussion was possible due to the structure that was followed during the semi-structure interviews (Murphy, 2013, p. 156). A cross-case discussion provides a deeper understanding and explanation (Miles & Huberman, 1994, p. 172). It consist of gathering a thick description of one or more cases, finding emergent patterns, commonalities or relations, and lastly reviewing the appearance of the identified alternatives in all the cases (Burns, 2010, pp. 264-265). The data analysis techniques used in this research are pictorially summarised on Appendix 6.

2.5.2. Data Analysis Process

As previously stated, data collection and data analysis processes are interrelated (Saunders et al., 2009, p. 488); therefore the process began with familiarising and at the same time analysing the gathered data through semi-structured interviews and documentary data from the three participating organisations. The produced transcripts and notes from the qualitative data were collected through *data sampling* technique, which Saunders et al. (2009, p. 486) described as the reduction and collection of only data directly concerning the research. The initial method of analysis comprises evaluating each organisation as an independent case (within case analysis, (Bleijenbergh, 2010, p. 63)), to obtain characteristics that excel from the rest. This complements and ensures that the chosen categories cover all identified aspects; and if necessary the categories are adapted.

As a guide at the beginning of the analysis process a provisional template of themes (Miles & Huberman, 1994, p. 58) to consider during the data reduction of each individual case was generated based on the conceptual frame of reference. The provisional template was divided into two main categories, the strategy and the business environment. These two categories were used to initially examine each individual case. Once each case was individually analysed the provisional template was reviewed and from the initial two categories a set of sub-categories emerged, generated from identified themes similar in the three cases. From the strategy category strategic content decisions surged, which are divided in four areas: winning work, project, knowledge and others, consisting of any additional decision that do not fit in the first three predetermined areas. From the business environment category six sub-categories based on the PESTEL elements surged. The PESTEL model identifies trends in the political, economic, social, technological, ecological and legal factors that impacts each organisation and is used to expose the perspectives of the respondents. Figure 2-4 outlines the list of codes that represent the topics collected from the data.

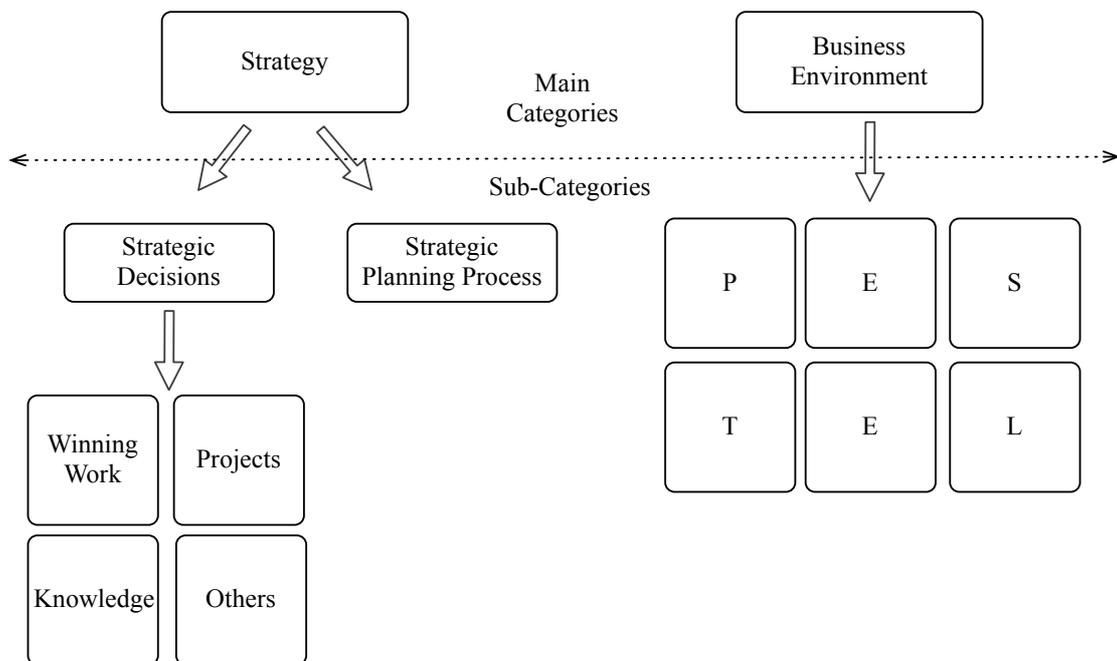


Figure 2-4. Template analysis used for this research

These two main categories and the sub-categories formed the final template that was used for the rest of the analysis. The cross-case discussion, based on a replication strategy, began after the within case analysis (Graebner, 2004, p. 755). The template is cross-paired to each case to find patterns, similarities and key differences among the cases by applying a replication strategy (Yin, 2011, p. 221). Following Miles and Huberman (1994) suggestion, graphical representations are elaborated to represent and facilitate the exposure of the within and cross-case findings regarding the chosen template.

Finally, the template and findings was reviewed in order to verify and validate that the same criteria was applied in all the cases, and avoid unjustified interpretations (Ibid, p. 11). Subsequently concluding remarks were draw from the findings.

2.6 Research Paradigm and Method Summary

Table 2-3. Summary of Research Paradigm and Method

Research Paradigm		Research Method	
<i>Ontology</i>	Subjectivism	<i>Time Horizon</i>	Cross-Sectional
<i>Epistemology</i>	Interpretivism	<i>Approach</i>	Deductive + Inductive
<i>Methodology</i>	Hermeneutics	<i>Purpose</i>	Descripto-Explanatory
		<i>Strategy</i>	Multiple Case Study
		<i>Data Collection Method</i>	Qualitative
		<i>Data Collection Techniques</i>	Semi-Structured Interviews + Documentary Data
		<i>Data Analysis</i>	Template Analysis+Design Case Analysis Within + Cross Case Analysis

2.7. Quality Measures and Rigour

A research that follows a case study strategy must guarantee the quality of its research process and findings. Flyvbjerg (2006, p. 235) argues that the case study strategy allows the researchers to corroborate their preconceptions against the collected empirical observations that unfold in practice. Therefore providing its own method of rigour to validate findings. Accordingly, several authors (Eisenhardt 1989; Yin 2009; Saunders et al. 2009; McGin, 2010, p. 242) confirm that methodological rigour judges the quality of a case study strategy. To establish the quality of research, the case study strategy must be tested against construct validity, internal validity, external validity and reliability in accordance with Yin (2009, p. 40).

Construct validity is based on identifying the correct operationalisation of the concepts being used in the research (Yin, 2009, p. 40). The research selected concepts and processes need to be the adequate ones in order to answer the proposed research question. Construct validity must be reviewed and confirmed at the beginning of the research, but especially during the data collection phase ensuring the proper data is being gathered.

Internal validity is relevant during the data analysis phase and it occurs when the research aims to establish causal relationships. It is concerned in verifying if the findings regarding relationships between variables lead where they were expected, and

are not affected by additional variables (Yin, 2009, p. 42). Additionally internal validity focuses in testing the consistency of the researchers' interpretations of the data, specially resulting from case studies. Internal validity is assured by means of employing thorough explanations, well-supported arguments and clear reasoning.

External validity concerns the ability of the research to generalise findings to other similar studies regarding setting and context (Saunders et al., 2009, p. 158). The replication strategy and the multiple case approach used in this study strength the ability to produce findings that may analytically be generalised (Yin, 2009, p. 43), although it is not the overall purpose of this research.

Reliability focuses in proving that the processes of the study (e.g. data collection, data analysis processes) can be repeating into other cases and produce similar results and conclusions (Ibid, p. 45; Ward & Street, 2010, p. 800). A way to obtain reliability is to present transparent and detailed outlines of the research processes used in the study.

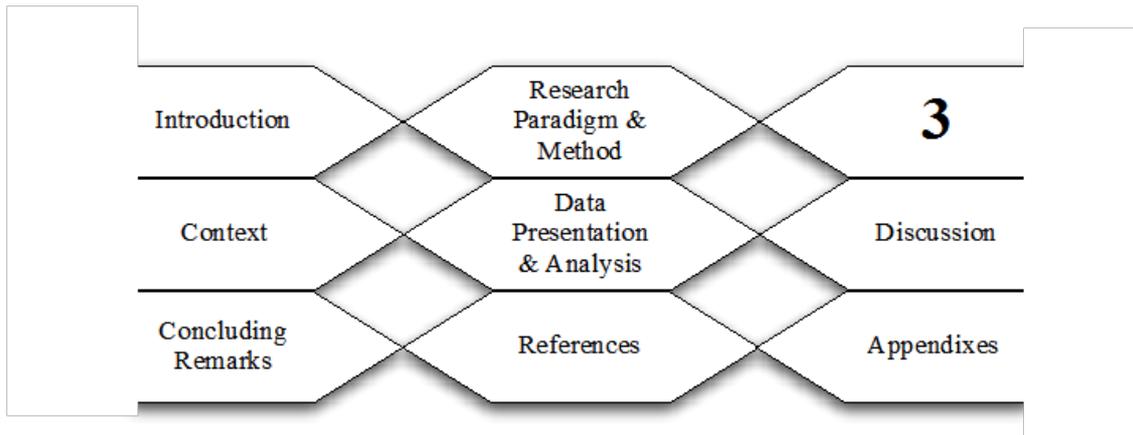
Table 2-4 shows the tactics that these researchers have used in accordance with Yin (2009, p. 41) to ensure quality and rigour

Quality Tests	Tactic Implemented	Research Phase
<i>Construct Validity</i>	Multiple case study (3) Transparent interview procedures Investigator triangulation: both researchers constantly reviewed the data Data triangulation: semi-structured interviews and documentary data Approval of collected data by respondents to avoid misinterpretation by the researchers	Data Collection
<i>Internal Validity</i>	Use of template analysis; categorization to find patterns Use of data display and analysis technique; to build and strengthen explanations Detailed analysis guideline of the process	Data Analysis
<i>External Validity</i>	Replication logic in multiple case studies Cross-case discussion Deliberate sampling to strengthen findings	Research Design & Data Analysis Research Design
<i>Reliability</i>	Documentation of the process used during data collection and data analysis Data triangulation; both semi-structured interviews and documentary data were used Investigator triangulation; both researchers constantly reviewed the data	Data Collection & Data Analysis Data Collection

2.8. Ethical Considerations

In a case study that follows an interpretivism approach, ethics are considered to be intrinsic; given the collaboration between respondent and researcher in order to gain understanding and build knowledge (Guba & Lincoln, 1994, p. 115).

The respondents were informed that the interviews were being recorded and that they had no obligation to answer any question they felt was out of topic or out of what they wanted to publicly expose (Fontana & Frey, 1994, p. 372). In addition, de Roche (2010, p. 336) suggests a set of rules of conduct, that this research and authors complied with: the participation of respondents was voluntary; they were not harmed; they were asked for any privacy consideration, they were all informed about the research and its potential benefit; the data was honestly reported; and quality was ensured. Moreover, and prior the interview, confidentiality was assured by the researchers to the participant organisations.



Theoretical Frame of Reference

This section aims to define the concept of strategy from a historical perspective, the hierarchical levels and the explanation behind the use on this thesis of the term strategic decision. Subsequently, the strategic planning process is defined, and two schools of thought which represent extremes in the literature of strategic planning process are introduced and compared using a set of variables. Finally the concept of business environment with particular focus on the general business environment is outlined.

3.1. Strategy: Historical Background, Definition and Types

Through time strategy has been defined in a variety of ways, although it has always maintains its essence: strategy is a guideline to achieve objectives (Mintzberg, 1978, p. 935). Strategy derives from the Greek word *strategos* meaning general in command, (Evered, 1983, p.58; Bracker, 1980, p. 219); however the concept was first exposed around 360 BC by Sun Tzu in *The Art of War* (Boone, 2006, pp. 85, 159). Therefore strategy has military origins.

Military and business strategy share many principles (Kim & Mauborgne, 2004, p. 80), these range for developing offensive and defensive decisions, gradual response to aggressive initiatives, first mover advantage, etc. but the key similarity is that both evolve in response to the continuous changing environment (Evered, 1983, pp. 57-72; Clemons & Santamaria, 2002, p.3). Apart from its military heritage, the way strategy is understood nowadays was revolutionised by Von Neumann and Morgenstern with the publication of *Theory of Games and Economic Behaviour* in 1944 (Camerer, 1991, pp. 137–52; Bracker, 1980, p. 219). Game theory in strategy represents competitive behaviour and the rules that govern the moves of the different players within an environment (Mintzberg, 1978, p. 935; Brandenburger & Nalebuff, 1995, p. 57). Therefore the actors have to take decisions – trade-offs (Porter, 1996, p. 3) in order to survive; these decisions are both influenced and affected by the competitors' moves and the environment.

The issue with strategy is explained by Shirley (1982, p. 262): “There are almost as many definitions of strategy as there are writers about the subject”. Chandler (1962, p. 13) defines strategy as the course of action and allocation of resources to achieve long-term goals and objectives. Mintzberg (1979, p. 25) defines it as the link between the organisation and its environment. On this sense, Braker (1980, p. 221) notes “business strategy has the following characteristics: an environmental or situational analysis is used to determine a organisation's posture in its field, and then the organisation's *resources* are utilised in an appropriate manner to attain its major goals”. Bourgeois (1980, p. 27) also notes that “strategy has the two primary purposes of defining the segment of the environment in which the organisation will operate and providing guidance for subsequent goal directed activity within that niche”. Whilst, Porter (1996, p. 10) describes strategy as the organisation's factor that creates a unique and valuable position that differentiates them from their competitors through a competitive advantage. Gavetti & Rivkin's (2007, p. 423) define strategy as the understanding a management team has of its organisation's place and interaction with the environment. For Johnson et al. (2008, p. 3) strategy “is the direction and scope of an organisation over the long term, which achieves advantage in a changing environment through its configuration of resources and competences with the aim of fulfilling stakeholder expectations”. Casadesus-Masanell & Ricart (2010, p. 204) understand strategy as a contingency plan.

In summary strategy is a live concept that is constantly been defined and updated, although one thing remains constant, its objective is to serve as a guide of ‘what is going to be done and how is going to be done’ (Mintzberg, 1978, p. 935; Collis & Rukstad, 2008, p.85; McGrath, 2013, p. 70). Another element that remains constant is that strategies exist at a number of levels (Johnson et al. 2008, p. 7). Ansoff (1987, p. 68) defines corporate strategy as being concerned with the overall organisation domain which also overrules all other existent strategies within the organisation. For Langford

& Male (2001, p. 68) “Corporate strategy is concerned with the company as a whole and for large diversified organisations it means: balancing a portfolio of businesses; strategy diversification; the organisations’ structure; and the number of markets or segments within which the organisation competes”. Johnson et al. (2008, p. 7) notes that “corporate strategy is concerned with the overall purpose and scope of an organisation and how value will be added to the different parts (business units) of the organisation”

On the other hand business strategy refers to the organisation domain navigation (Bourgeois, 1980, p. 27), within one particular market, industry or product (Ansoff, 1987, p. 68). Langford & Male (2001, p. 68) understand business strategy about how organisations compete in products, services, industries or markets. This definitions builds on Porter and his idea of competitive strategy, which deals with competition within the market in terms of cost, leadership and differentiation (Porter, 1996); also how to achieve advantage to maximise profits.

Lastly, it is operational or functional strategy that is concerned with how organisations deliver the corporate and business strategy in terms of people, processes and resources Johnson et al. (2008, p. 7). This strategy is much more detailed and focuses on productivity within particular business units (Langford & Male, 2001, p. 68).

However the problem with strategy, its semantic and hierarchical levels, is that they do not offer clear and sufficient guidance regarding the scope. There is a need to understand the decisions that are or have a strategic nature: position of the organisation regarding its environments, also all the operational or administrative decisions that give direction (Shirley, 1982, p. 263). Hence there is essential to define strategy in terms of decisions. The main characteristic of strategic decisions is that they are significant (Harrison, 1996, p. 46). Chandler (1962) suggests that there are strategic (long-term) and tactical (day-to-day) decisions. Ansoff (1965) distinguishes between administrative operational and strategic decisions; these relate the organisation with the business environment. Operating decisions deal with “transforming inputs into outputs” (Langford & Male, 2001, p. 62). On the other hand, administrative decisions are those related to resource allocation and organisational structure (Ibid). Mintzberg (1978, p. 935) views strategy as “a pattern in stream of decisions”. Shirley (1982, pp. 264-265) provides five criteria for considering a decision to be strategic. First the decision must to be related to the relationship between the organisation and its environment. Second, the decision must be holistic and apply to the whole organisation. Third, the decision for being strategic must include all of the major functions performed in the organisation. Fourth, the decision provides constrained direction for the operational and functional tasks within the organisation. Finally, the decision must be critical to the success of the organisation. In summary, strategic decisions are taken at different levels within an organisation at embraces two main streams according to Johnson et al. (2008, p. 22) and Cummings & Daellenbach, (2009, pp. 239): strategic content (decisions *per se*) and those decisions that shape the strategic planning process which is explained in detail on the following section.

3.2. Strategic Planning Process: Definition

A process is group of activities or events that are progressively executed in order to reach a common objective (Van de Ven, 1992, p.170). In order to facilitate the strategic planning process organisations carry a vast range of activities, among the most common

are: data collection, forecasts, scenario construction, general environment analysis to identify threats and opportunities, or internal analysis to identify strengths and weaknesses (Glaister & Falshaw, 1999, p.108; Williamson, 1999, p. 118). It also includes communication frequency, workflows, or decision making techniques (Van de Ven, 1992, p.170).

The strategic planning process and its execution are two different things (Veliyath & Shortell, 1993, p. 361; Hart & Banbury, 1994, p. 251; Mankins & Steele, 2005, p. 65) but its interdependence is clear (Quinn, 1980, p. 145; Mankins & Steele, 2005, p. 69); the strategy cannot be implemented without it being formulated. Furthermore, Hamel & Prahalad (1989, p. 66) suggests that the strategic intent and objectives of organisations have to be clearly communicated to every person involved in the planning process for it to be successful and its execution has to be continuously monitored (Mankins & Steele, 2005, p. 71).

Moreover, Mankins and Steele (2005, p. 66; 2006, pp. 81) claim that the strategic planning process has to be continuously linked to the decision making of the organisation. They state that managers take decisions every day but they rarely align it to the original strategic plan. Therefore the strategic planning process must be seen as a tool that enhance the daily (Mankins and Steele, 2006, pp. 81) decision making capabilities of the management team by aligning their business understanding to the organisation's objectives, rather than simply a tool that formulate plans (Kaplan & Norton, 2000, p. 167; Kaplan & Beinhoker, 2003, p. 72). The strategic planning process should be used as a source of competitive advantage (De Geus, 1988, p. 74; Kaplan & Beinhoker, 2003, p. 72) and contingency plans (e.g. redundancies plan in reaction to a financial crisis) to environmental changes (Casadesus-Masanell & Ricart, 2010, p 205). The strategic planning process should also develop plans to change operations in order to overcome necessary adversities in their environment (Camillus, 1996, p. 6, 10).

The planning cycle varies and generally consists of sharing information and knowledge, usually in one or more meetings held annually or when necessary between all those involved in the strategic planning (Kaplan & Beinhoker, 2003, p. 72). Mankins & Steele (2006, pp. 79) claim that better strategic decisions are made when more strategic meetings are held within a year. However, Perrot (2008, p. 23) states that it's the rate of change in the organisation's environment what dictates the amount of review and elaboration time given to strategy; in unstable and fast changing environments the shorter the time frame in between strategic planning results in better reaction to changes by the organisation (Bourgeois & Eisenhardt, 1988a, p. 829). The strategic decisions generated in the strategic planning process can extend for different periods of time, depending on the organisation's objectives, although planning for a five years period is common within organisations of all sizes (Glaister & Falshaw, 1999, p.109). A formal document or strategy map (Kaplan & Norton, 2000, p.168) may be created to keep record of the strategy and also as a method of communicating the strategy. Although Kaplan & Beinhoker (2003, p. 72) argue that the best method of communicating the strategy is through informal conversations (Jacobides, 2010, p. 79) rather than formal methods.

As organisations mature, their strategic planning processes may become more systematised and usually follow more extended elaboration cycles (e.g. combine top-down intended direction with bottom-up strategic suggestions). Once the strategy is implemented, it is usually broken down into smaller performance targets. Furthermore

Hart and Banbury (1994, p. 265) states that organisations that develop high levels of strategy making process shows higher levels of performance not matter their size or the environment they perform in.

3.3. Strategic Planning Process: Schools of Thought

The concept of strategy has been influenced by the need of organisations to survive and remain competitive by achieving their goals, rather than pure development of theory (Ansoff, 1957, p. 113; Payne, 1957, p. 95). In the book *Strategy Safari*, (1998) Mintzberg et al. describe ten different schools of thought regarding strategy: The Design School, The Planning School, The Positioning School, The Entrepreneurial School, The Cognitive School, The Learning School, The Power School, The Cultural School, The Environmental School, and The Configuration School. Each school provides different processes of how organisations can formulate their strategies in order to reach their objectives. However, Planning and Learning Schools represent two extremes of a continuum of the strategy planning process.

Planning School was developed around the 50s and 60s (Grant, 2003, p. 491; Porter, 1983, p. 172). A period of time considered to be stable which allowed organisations to follow a formal almost mechanistic strategy (Mintzberg et al., 1998, pp. 48, 57, 58; Quinn, 1978, p. 7). *Planning School* is based on the publications of Igor Ansoff that notes that strategy results from formal, controlled planning processes (Mintzberg et al., 1998, pp. 48, 58). It is characterised as a deliberate linear process (Chaffee, 1985, p. 90; Brews & Hunt, 1999, p. 891), hierarchical (Wall & Wall, 1995, p.9), and divided in numerous steps that generate and evaluate alternatives to reach specific goals (Armstrong, 1982, p. 198-199). For this school, strategy has three steps: analysis, decision making and implementation (Hendry, 2000, p. 958). The analysis part is based on quantitative tools such as budgets, programs and operating plans (Mintzberg, 1998, pp. 58), that provide alignment within the organisation actions (Hough & White, 2003, pp. 486-488) to anticipate limitations that could impede the achievement of objectives (Mintzberg & Waters, 1985, p.259). The architecture of the strategy is shared between a team of planners and the organisation directors; the latter are also responsible for authorising and overseeing its execution (Mintzberg et al., 1998, pp. 57-58).

This strategic way of planning is developed to assist managers to envisage long term plans in order to control organisations' growth and react to the business environment (Drucker, 1959, pp. 241-242; Collis & Montgomery, 1995, p.118). Strategic decisions from this perspective are straightforward and unproblematic, and the task of the managers is just to choose the correct decision and minimise irrationality (Hendry, 2000, pp. 958-959). Formal planning is better suited for business environments considered stable and easy to predict (Mintzberg, 1994, p. 110; Brews & Hunt, 1999, p. 892). However, Armstrong (1982, p. 202-203) and Staw et al. (1981, p. 545) states that formal planning is useful for organisations where change occurs rapidly and perform in high uncertain and complex environments. Formal planning provides information and alternatives to deal with uncertainty in a disciplined way (Szulanski & Amin, 2001, p. 542). Additionally a formal planning process though considered time consuming it provides a guideline that improves decision making rather than a trial-an-error approach (Delmare & Shane, 2003, p. 1165-1166).

On the other hand the *Learning School* based on Mintzberg (1978, pp. 943, 946) claims that strategy planning needed to stop being a purely systematic approach and evolve into an emergent, and learning-based process. An informal adaptive process (Mintzberg et al., 1998, pp. 176) that does not follow pre-planned directions (Mintzberg & Waters, 1985, p. 271). This flexible type of strategy planning process allows management to handle large amounts of data (Mintzberg, 1978, p. 946; Quinn, 1978, p. 19) and react to an unpredictable environment that is subjectively interpreted (Mintzberg, 1978, p. 943, 946; Brews & Hunt, 1999, p. 892; Ford & Gioia, 2000, p. 707). The strategy creation through the learning approach is done by any member of the organisation; the leaders or top management role is that of promoting strategic learning rather than managing it (Mintzberg, 1994, p. 109; Mintzberg et al., 1998, pp. 208). In addition informal strategies usually appear as patterns from the past, to understand and serve for future reference, and finally to serve as a guide for the organisations' direction (Mintzberg et al., 1998, pp. 208). The strategic planning process is therefore proposed to be more flexible, through a larger emphasis on the understanding of the organisational environment (Porter, 1981, p. 610; 1983, p. 177; 2008, pp.79-80), which enhances the ability to quickly take decisions.

Segars & Grover (1999, pp. 201-203) describe a set of six dimensions suitable to position and compared in detail the before described strategic process schools. The first dimension is *comprehensiveness*, it refers to the level of exhaustiveness and inclusiveness (e.g. effort set to carefully evaluate the different alternatives) an organisation has at the moment of making strategic decisions (Fredrickson & Mitchell, 1984, p. 402). The second dimension concerns with the level of *formalisation* (usage of structures, procedures, written plans, etc.) that organisations apply to implement their strategic planning (Quinn, 1978, p.7; Hassan & Minden, 2010, p. 38). The third dimension is *focus*, which indicates the level an organisation embraces creative innovation by constantly looking for new opportunities or follows an integrative controlled approach over their internal activities (Chakravarty, 1987, pp. 518-519). *Flow* is the fourth dimension, it describes the authority model and type of contribution an organisation follow to conduct the strategic planning, refereeing to a centralised top-down or decentralised bottom-up planning flow (Ibid). The fifth dimension is *participation*, it is usually connected to the type of flow an organisation follows and it relates to the amount of involvement the different members of the organisation have on the planning process, which can increase or decrease the speed of decision making (Eisenhardt, 1989, pp. 549-570). Participation can be categorised either as narrow, an isolated involvement, focused and involving specialised planners; or as broad, based on collaboration and open involvement of the different managers of the organisation. Finally the sixth dimension is *consistency*, which is described by the level of review and time (e.g. continuity – frequency) an organisation sets on their planning process. An organisation's level of consistency is related to their business environment (both internal and external) awareness; implying that higher consistency is needed for organisations that are more affected by their business environment. The dimensions identified by Segars & Grover (1999) are compared on Table 3-1 for the Planning and Learning Schools through the description by Papke-Shields et al. (2006, p. 423).

Table 3-1. Planning and Learning strategic planning process schools comparison using Segars & Grover's (1999) dimensions

Dimensions	The Planning School	The Learning School
<i>Comprehensiveness</i>	High Comprehensiveness	Low Comprehensiveness
<i>Formalization</i>	Formal	Informal
<i>Focus</i>	Control	Creative
<i>Flow</i>	Top-Down	Bottom-Up
<i>Participation</i>	Narrow	Broad
<i>Consistency</i>	High Consistency	Low Consistency

Both schools are differentiated by highly opposite characteristics, a mid-point between both extremes can surge by the combination of the major characteristics; this mid-point is considered to be optimum especially in changing environments (Brews & Hunt, 1999, p. 889). When approached as a learning process, formal strategic planning assists managers to develop grounded strategic decisions in an unstable environment (Kaplan & Beinhoker, 2003, p. 76). Grant (2003, p. 491) calls it a planned emergence: a flexible semi structured strategy process guided by a formality and rigid objectives, which at the same times, allows a decentralised learning process that responds to unfolding events (Brown & Eisenhardt, 1997, p.29; Grant 2003, p. 491, 514).

These approaches to strategic decisions (regarding planning) are among the existent ones a significant example that have assisted academics and managers to understand through time the dynamics of strategy evolution; and deconstruct guidelines of how organisations should formulate their strategies in order to survive (Casadesus-Masanell & Ricart, 2010, p 195). Nevertheless, there is no literature about strategy planning that explains how managers develop proper strategy (Mintzberg, 1994, p.110).

An additional significant variable not exposed in Segars & Grover (1999) dimensions, but affecting organisational strategic process is *size*. According to Grinyer & Yasai-Ardekani (1981, p. 484) and Smith et al. (1989, p. 66) the organisation's decisions about strategy, structure and bureaucracy nexus are dependent and influenced by the organisations' size: the bigger the size, the bigger the bureaucracy, and the tendency towards strategic formality. Miller & Cardinal (1994, p. 1651) explains this relation by stating that when an organisation grows it tends to adopt a formal strategic process (Prekumar & King, 1994, p. 83) and intricate organisational structures in order to evade problems of internal control or employee integration. On the other hand Shrader (1989, p. 47) and Schwenk & Shrader (1993, p.60) claim that small organisations usually do not implement planning due to their flexible structure, lack of time, although those that implement formal planning practices seem always benefited.

Regarding strategic decisions, Meredith, (1987, pp. 256-257) exemplifies how organisations of different size approach technology. Larger organisations capacity to invest on technology is higher in comparison to small organisations, although usually the latter are able to obtain more return out of them (Ibid). Meredith also explains that the difference lies on the decision making; smaller organisations think critically and have a long-term perspective about their investment and are based on need and survival, while larger organisations often are less concern with the economical aspect, have a short-term perspective and a quick disposal mind-set about technology. The case

exposed by Meredith (1987) regarding technology and Miller & Cardinal (1994, p. 1651) about strategy formality, are just two from the endless possible, that strengthen Grinyer & Yasai-Ardekani (1981, p. 484) and Smith et al. (1989, p. 66) argument about the influence that organisations' size has on their strategic decisions.

3.4. General Business Environment

The business environments is defined as all the relevant variables within an organisation that might be consider at the moment of taking strategic decisions (Duncan, 1972, p. 314; Jarvidan, 1984, p. 384). It comprises of a set of relationships between actors (Mason, 207, p. 10). The business environment may be catalogued broadly in external and internal one. For organisations, internal factors are perceived as strengths and weaknesses, while external factors are perceived as opportunities and threats (Perrot, 2008, p. 27). The external business environment is divided according to Duncan (1972, p. 314) and Bourgeois (1980, p. 25) into task and general environments.

For Dill (1958, p. 424) the task environment is composed of customers, suppliers, competitors and regulatory groups. The general environment consists of all the factors affecting the organisation in a direct or indirect way and that are not contained in the task environment (Bourgeois, 1980, p. 25). For Johnson et al. (2008, p. 55) this is known as the macro-environment, which is beyond the control or influence of organisations (Kralj, 2009, p. 142). Johnson et al. (2008, p. 59) suggest that the general environment influence the task environment, in such way that general factors (e.g. economical) tends to surface in the more immediate environment through changes in the competition for instance.

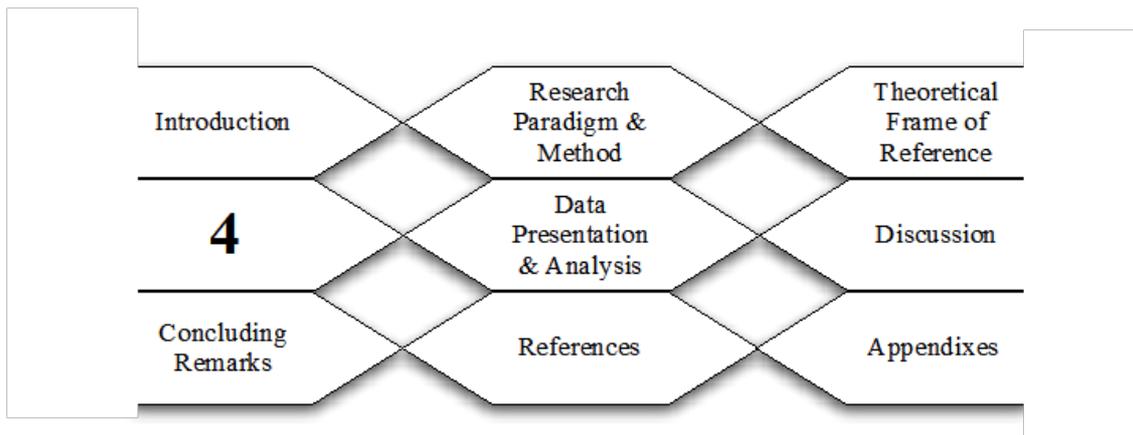
Organisations are not individual entities in their business environment (Mason, 2007, p.10); their actions influence others either by competition or collaboration (Brandenburger & Nalebuff, 1995, p. 59). Therefore the environment is not only influenced by external factors but also by the organisations that compound it (Mason, 2007, p. 11). However, the business environment affects organisations in different ways due to their heterogeneous behaviour (e.g. different ways of achieving objectives or production methods) (Hatten & Schendel, 1977, p. 109-111) and characteristic (e.g. size, financial power, etc.) (Camillus, 1996, p. 6). At the same time the way environment is perceived by the organisations directly influences the way they construct their strategy and take their decisions (Burgeouis, 1980, p.33-35). Consequently, managers performing in the same environment perceive it in a different way and in a different level; thus affecting the way they formulate strategy (Anderson & Paine, 1975, p. 812; Jarvidan, 1984, p. 381).

One of the most common activities managers perform in order to keep up with the environment is environmental scanning (Olsen et al., 1994, p. 3) which is the activity of obtaining information (Aguilar, 1967, p.1). It consists of systematic procedures used to identify external and uncontrolled factors that might affect the organisation (Nicolau, 2005, p. 218). It results in business intelligence, useful to taking decision and developing action plans (Daft et al., 1988, p. 124) and leads to an improvement of performance (Olsen et al., 1994, p. 7). Environmental scanning is important to develop a competitive advantage identifying opportunities and threats (Yüksel, 2012, p. 53). There are different techniques to analyse the general environment. On this research the model used is PESTEL which identifies trends in the political, economic, social,

technological, environmental (also known as ecological) and legal environment that might impact on the organisation activities. The PESTEL analysis provides a broader picture on the environment, enabling managers to construct different strategic scenarios (Thomas, 2007, p.10). The PESTEL factors have an impact on the organisations (Lynch et al., 2012, p. 145); consequently managers have to understand their effect in order to defend from threats, exploit opportunities and measure their effect on the organisations objectives and performance (Nicolau, 2005, p. 217). If the business environment is properly scanned contingency (De Geus, 1988, p.71; Chong, 2004, p.44) or defensive buffer plans can be developed (Milliken, 1987, p. 139). Therefore when it is easy to collect high amounts of information (Edmunds & Morris, 2000, p. 17), a key ability for an organisation is to scan the valuable data from the lot (Anderson & Paine, 1975, p. 814; Porter & Millar, 1985, p. 150).

The general business environment has been and is attributed with multiple characteristics or dimensions: ambiguity (Korman, 1971); chaotic (Stacey, 1996); complex (Osborn, 1976; Tung, 1979; Milliken, 1987; Vasconelos & Ramirez, 2012); heterogeneous (Khandwalla, 1972; Milliken, 1987); hostile (Khandwalla, 1972); hyperturbulent (McCaan & Selsky, 1984); munificent (Dees & Beard, 1984); turbulent (Grant, 2003; Perrot, 2008; Boyne & Meier, 2009; Kiliko et al., 2012); unpredictable (Grant, 2003); uncertain (Khandwalla, 1972; Tosi, 1973; Jarvidan, 1984; Milliken, 1987; Lopez-Gamero et al., 2011); unstable (Brews & Purohit, 2007) or volatile (Tosi, 1973; Snyder & Glueck 1982; Bourgeois, 1985; Milliken, 1987; Kren, 1992) among others. Based on this, researchers have conducted studies analysing the general environment in conjunction with strategy. The business environment is a common factor found in strategy decision making and strategy planning. After all, an “organisation's strategy determines the extent of match or alignment between its general environment and its internal processes and structure” (Fredrickson, 1983, p. 571). The impact of the business environment upon organisations is therefore significant (Anderson & Paine, 1975, p. 812; Lynch et al., 2012, p. 155). Business environmental factors such as rate of change (Milliken, 1987, p. 136; Wall & Wall, 1995, p. 10), globalisation complexity (Milliken, 1987, p. 136; Mason, 2007, p.10) or harsh competition (Wall & Wall, 1995, p. 10) have increased the attention academics and managers set on the business environment analysis (Miller et al., 1983, p. 230) when taking strategic decisions (Brews & Hunt, 1999, pp. 894, 905). Interesting studies in this sense are Lindsay & Rue (1980), Staw et al. (1981), Eisenhardt and Buorgeois (1988) or Brown and Eisenhardt (1994) either promoting formal or informal planning.

When the business environment goes through changes, it affects the factors affecting the organisation internally, consequently organisations have to adapt their strategies in order to survive and avoid falling in a long-term struggle that leads to decline (Camillus, 2011, p. 306; Lynch et al., 2012, p.146). Effective changes into the strategic planning processes of organisations that successfully adapt to the business environment are not coincidence, they depend on their top managers and staff ability to absorb what is happening in their environments and react on time (De Geus, 1988, p.70). A characteristic of sustainable organisations (those that remain competitive (De Geus, 1988, p.71)) is that they adapt to the changes of their business environment. Adaptation is, therefore, the best strategy (Hagel III et al., 2008, p. 83).



Context

There is general consensus that the selection of cases and the context where these sit is a decisive element in order to be able to provide the research with a solid level of understating (Yin, 2009, p. 56;). Yin (Ibid) states that a case study needs to cover the context and the phenomenon of interest. The context in this chapter provides the foundations to present the data analysis, discussion and conclusions here after. Therefore, this chapter presents information at two different levels. The first one is related to the environmental business conditions where this research takes place. On the view of the researchers, the current setting is defined for its volatility, uncertainty, complexity and ambiguity – VUCA. The second level presents the particular characteristics of the engineering consultancy sector within the construction industry in the UK.

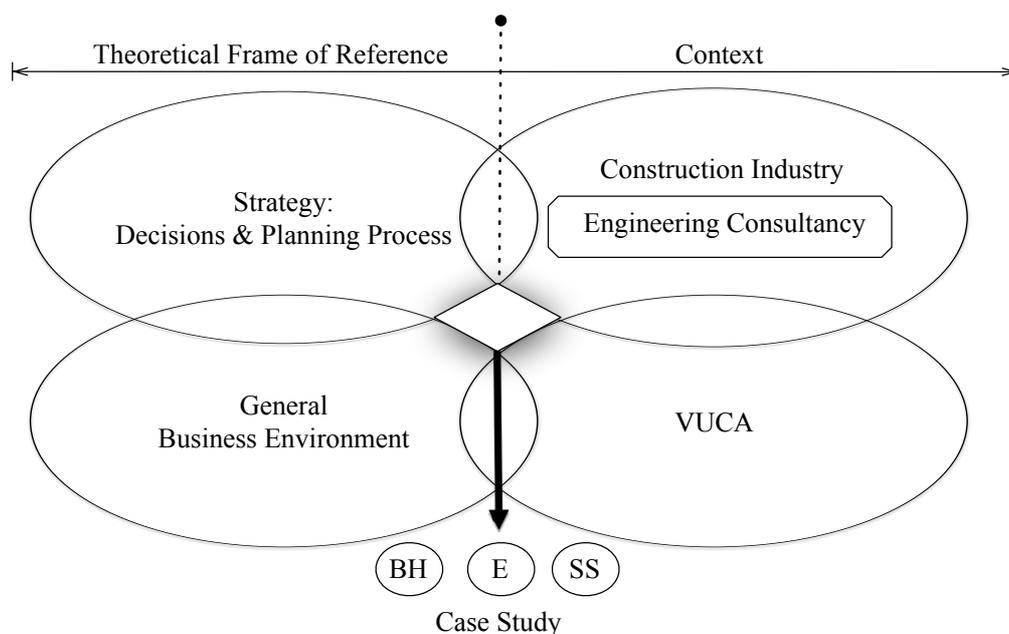


Figure 4-1. Overview of the topics presented in the theoretical frame of reference, and outline of the subjects covered in this chapter

4.1. VUCA: Volatility, Uncertainty, Complexity and Ambiguity

VUCA is an acronym coined by the US Army War College (Horney et al., 2010, p. 33) at the end of the Cold War (Kinsinger & Walch, 2012). VUCA stands for volatility, uncertainty, complexity and ambiguity. After the terrorist attacks of September 11, 2001 in the USA (Lawrence, 2013, p.3), VUCA started to be associated with the environmental conditions where organisations operate. The acronym really gained importance at the beginning of the financial crisis in 2007-08 (Kinsinger & Walch, 2012), and it is an accurate description of the work setting. The McKinsey Global Institute (McKinsey Germany, 2010, p. 5) has identified 32 financial crises since the Second World War; nonetheless no other crisis resulted in such extreme fluctuations (volatility) as did this most recent one making uncertainty and ambiguity constant companions. On this point, some people question whether it is always been a VUCA environment, and this is certainly debatable (Johansen, 2013, p.10). Friedman (2005, p.46) suggests that in the past civilisation has always been subjected to disruptive technologies such as the Gutenberg's printing press or dislocating historical events such as the Industrial Revolution that has changed our perception of the world in profound ways. Nevertheless, in order to operationalise the VUCA term, it is pre-requisite to understand the variables in isolation.

4.1.1. Volatility

Volatility is the opposite of a stable condition (Tung, 1979, p.674), with this proposition it is understandable why businesses have faced volatile global conditions since 2008 (PWC, 2012, p. 8). Volatility according to Dess and Beards (1984, p. 56) has three elements. First it is the frequency of change which may vary from often to rarely (stable or static environment); it is the rate of change – speed - (Kren, 1992, p. 514); the volume, magnitude and dynamics of change (Horney et al., 2010, p. 33). For the Department of Command, Leadership and Management, USA Army (2004, p. 12), volatility is the rate of change of information and the rate of change of the situation. Second, it is the amplitude of shifts in the environmental factors that organisations face. Lastly volatility implies unpredictability of change Boyne & Meier (2009, p. 803), it is random in nature, therefore cannot be easily predicted resulting on an increment of risk (Bourgeois, 1985, p. 533).

Volatility is also referred to as turbulence, dynamism (Bourgeois, 1980, p. 33) or high-velocity (Eisenhardt & Bourgeois, 1988, p. 738). By high-velocity, Bourgeois & Eisenhardt (1988, p. 816), understand “the rapid and discontinuous change in demand, competitors, technology, or regulation, so that information is often inaccurate, unavailable, or obsolete”.

Some theorists consider that the performance of organisations is intimately linked to the ability of these to deal with the environmental volatility (Snyder & Glueck, 1982, p.185) since turbulent times requires change and adaptation (Gioia et al., 2012, p. 364). Therefore for an organisation the ability to identify volatility as a characteristic of their business environment is critical.

Volatility has historically been considered a key concept in the business environment and it is therefore not a new concept in the business jargon. However, it is in the last years, where volatility has taken a central presence, as this phenomenon is occurring

more frequently than in the past (Lawrence, 2013, p.5). A study by Reeves et al. (2012) found that half of the most turbulent financial quarters during the past 30 years have occurred since 2002, and concluded that financial turbulence has increased in intensity and persists longer than in the past. McCann & Selsky (1984, p. 461) propose as reason for this increment of volatility, the scale and density of social interaction and connectivity brought by population growth, its demands and limited resources. Other drivers of volatility include global competition, digitisation, trade liberalisation and business model innovation (Reeves & Love, 2012, p.3); developments in both the market and the technological environment (Carson et al., 2006, p. 1065) and science Lawrence & Lorsch (1967, p.47); high rate of innovation in products or processes (DeLanda, 2006, p. 82). In this increasingly volatile business environment, strategies and business plans become obsolete very quickly (Reeves & Deimler, 2011, p. 139). Nevertheless, volatility should not merely be perceived as a negative environmental factor, volatility drives change and its source of progress and innovation (McKinsey Germany, 2010, p. 11). However the issue about volatility within the strategic planning is that is difficult to analyse and handle it (Davies, 2004, p. 21).

4.1.2. Uncertainty

In plain English sense, uncertainty is ‘lack of certainty’ (Chapman & Ward, 2003, p.3). Uncertainty is located at the boundary between knowing and what is yet unknown (Dewulf et al. 2005, p. 116). In this regard, Galbraith (1973, p. 5) links uncertainty to information and defines it as the difference between the information an organisation has and the information needed. Supported on this explanation, Eichberger & Kelsey (2009, p. 114) assert that most economic decisions are made under uncertainty. On the other hand, Brugnach et al. (2008) define uncertainty as situations “in which there is not a unique and complete understanding of the system to be managed.”

Uncertainty is approached in the research literature from three main streams. The first one is related to risk, game theory and decision theory. Uncertainty is linked to the probability of an event to occur (Cooper et al., 2005, p.253) although that probability is not calculable but only through a subjective estimate (Collier, 2009, p.7).

The second stream of research is grounded in the concept of information. Different theories have evolved around information as counterpart of uncertainty (Downey and Slocum, 1975, p. 570). Milliken, (1987, p. 136) proposes three types of uncertainties building on Lawrence & Lorsch (1967) and Duncan (1972). First, uncertainty is the unpredictability of the state of the world and how the environment might change, in this case organisations lack information about the nature of the environment where they operate. Second, uncertainty is the inability to predict the future implications on organisations as a consequence of change in the present environment, in this case organisations lack knowledge about how the environmental agents might affect the organisation. Lastly, uncertainty is the inability to predict the consequences of a response choice, in this context there is lack of knowledge and information about the value of the actions taken to achieve the organisational aspirations.

The third stream of uncertainty is the resource dependence theory as explained by Lopez-Gamero et al. (2011, p. 427), They summarise the view of Dees and Beard (1984), Finkelstein (1997), and Pfeffer and Salancik (1978): environmental uncertainty

arises when organisations compete for the same pool of scarce resources and the formers do not have control over such resources.

Zimmermann (2000, p. 192-194) provides a comprehensive list of the causes of environmental uncertainty: lack of information, abundance of information (complexity), beliefs, conflicting evidence, or as Brugnach et al. suggest (2007, p. 1081) the intricacy of the information. McGrath & McMillan (2000, p. 173) distinguish environmental uncertainty depending on the nature: related to the market (dramatic increase of competitiveness) or some aspect of technology.

The presence of uncertainty is an essential constraint for any decision making process (Brugnach et al., 2007, p. 1080), making it difficult Khandwalla, 1972, p. 299) and challenging (Reeves & Deimler, 2011, p. 136). Organisations should try to reduce uncertainty through active monitoring of the environment, gathering information and processing (Kallinikos, 207, p. 58) and forecasting tools (Rajagopan & Spreitzer, 1997, p. 58); or at least structure it through either wide participation and open communication channels or vertical integration (Khandwalla, 1972, p. 300).

4.1.3. Complexity

In 2010 IBM published a study based on face-to-face conversations with more than 1,500 chief executive officers worldwide. The conclusion was clear, public and private sector leaders believed that complexity was the biggest challenge confronting them. They expected it to continue and accelerate in the coming years (IBM, 2010, p. 3).

Complexity is caused by the interactions of too many variables acting simultaneously (Pich, 2002, p. 1009). It is accepted that complexity is “the property of a real world system that is manifest in the inability of any one formalism being adequate to capture all its properties” (Mikulecky, 2001, p.344). Consequently the bigger the complexity, the more incomplete the knowledge is and the more unintended effects the intervention produces (Hanseth, 2007, p.5).

Cilliers (2000a, p. 40) understands by complex systems those like the brain, language, social and cultural systems, markets, also the business environments and organisations. Organisations are complex adaptive systems – CAS – (Brown & Einsenhardt, 1997, p.29) that compete in environments that are formed by other CAS so that systems and their environments together form co-evolving supra-systems like economic, social and political at national and global level (Stacey, 1996, p.183-184), the higher the socioeconomic development the higher the complexity (Osborn, 1976, p. 180). Naturally, complex systems have always existed (Sargut & McGrath, 2011, p.70), but complexity has passed from being a characteristic of large systems (e.g. cities) to something that impacts roughly everything that surrounds us.

The factors and components that define environmental complexity is extensive, a review of the literature available suggests that the five points below are the common ground among complexity experts:

First, something is complex when it is constituted through a large number of dynamic, nonlinear interactions with a behaviour described by relationships (Cilliers, 2000a, p.

41) where the same starting conditions can produce different outcomes (Sargut & McGrath, 2011, p.70).

Second, nonlinear nature of interactions (Cilliers, 2000b, p. 9): interaction may consist of attraction, communication, trade, partnership, or rivalry (Axelrod, 1997, p. 3). Two different concepts underline this characteristic. First, it is extracted that complexity is incompressible, meaning that it is impossible to have a representation of the system that is simpler than the system itself without losing some of its features (Richardson et al., 2001, p. 8). A simplification forces to leave aspects out, and since the effects of these omissions are nonlinear, the result becomes unpredictable. Lorenz (1993, p.206) describe this phenomena as sensitive dependence. The reverse is naturally also true (Cilliers, 2000c, p. 25). This was popularised by Edward Lorenz in 1979 under the name *butterfly effect* (Lewin, 1992, p. 11). Second, some changes in the past are able to produce significant effects in the present/future (Urry, 2003, p. 23).

Third, dynamic nature of interactions (Cilliers, 2000b, p. 9). The systems are constituted by elements that interact dynamically by exchanging information or energy (Cilliers, 2000c, p. 24) through feedback loops. Each of these elements may be more important than the others, but none controls the behaviour of the whole system (North & Macal., 2007, p.11). For Youngblood (1997, p. 29) there are three factors that drive the dynamism of relationships. First is the rate and volume of information exchange. Second is the richness in the connectivity between elements. Lastly is the level of diversity between elements. Therefore, the interactions are non-cyclical, there are in constant change and there is not centralised control.

Fourth, complex systems (as organisations) are open systems. Cilliers (2000c, p. 24) proposes that a bi-directional exchange of information or energy occurs between organisations and the environment and concludes that organisations cannot be understood or isolated of its context (Cilliers 2000c, p. 25).

Lastly, Lissack (2011, p. 210) defines emergence as “the arising of something new in state or phase which was not predicted from the prior state of affairs”. Therefore emergence is the result of global interactions between individual agents. In this case the behaviour cannot be predicted by analysing the components of a system but the system as a whole (Cillers, 2000a, p. 41). The behaviour of the environment is determined by the interactions (dynamic, nonlinear, bi-directional) and not by the nature of the agents Cilliers (2000c, p. 24).

Environmental complexity occurs at three different levels: internal, transactional and contextual (Vasconelos & Ramirez, 2011, p. 236). Internal complexity arises from the internal focused activities of management such as capturing knowledge, motivate staff or expansion (Dees & Beard, 1984, p. 57). Transactional complexity is that created through the direct interaction between the organisation and external agents such as suppliers or competitors. Contextual complexity is composed by factors affecting the organisation such as socio-political issues and that are outside of the power of influence of the organisation (Vasconelos & Ramirez, 2011, p. 239).

Therefore, organisational environments are complex in various spheres (Emery & Trist, 1965, p. 21; Ho, 2012, p. 82) and this leads to increased risks (Hanseth, 2007, p.5). The increase of environmental complexity (Iles & Hayers, 1999, p. 96) includes, but is not limited to: enhanced competition, globalisation, rising outsourcing, more sophisticated

products (North and Macal., 2007, p.4); and naturally the information technology revolution (Sargut & McGrath, 2011, p.70) that has accelerated the change on political, economical and social fronts (Ho, 2012, p. 82).

4.1.4. Ambiguity

It is the age of ambiguity (Gioia et al., 2012, p. 364). Many environmental risks are ambiguous, the consequences of genetically modified food is ambiguous, the effect of global warming is also ambiguous, how to respond to terrorist threats is ambiguous, the impact of new technologies is ambiguous too (Eichberger & Kelsey, 2009, p. 115). Ambiguity characterises economic organisations (Ouchi, 1979, p. 846).

Ambiguity refers to a decision situation under uncertainty where there is incomplete information about the likelihood of events (Eichberger & Kelsey, 2009, p. 114). Ambiguity is therefore an intermediate state between ignorance and risk (Einhorn & Hogarth, 1986, p. 229). The effect of ambiguity is consequently substantive since many decisions in the business environment are made on the basis of imprecise information about risks (Rode et al., 1999, p. 270).

For Carson et al. (1958, p. 1059), ambiguity is primarily lack of clear information, is related to perception of the environment independently of its change over time. For Weick (1995, p. 92) the problem with ambiguity is that information may not resolve misunderstandings. Pich et al. (2002, p. 1017) understands ambiguity as lack of awareness: cause-effect being unknown (Ibid, p. 1009). In this sense, ambiguity is also lack of clarity (Schrader, 1993, p.76). It is Ball-Rokeach (1973, pp.378-379) who wraps all the other given definitions and links them to the business environment and the decision making process of the strategic planning. He distinguishes two types of ambiguity: pervasive and focused. The former is defined as the inability to establish meaningful links between events in a given context, for instance between the environment and the organisations themselves. In this case the instrumental questions are why and what is happening. On the contrary, focused ambiguity occurs when organisations are unable to decide on the most suitable way to manage known contingencies of a situation. In this case the fundamental question is how to solve an issue.

Ambiguity arises from multiple conflicting constituencies (Stone & Brush, 1996, p. 633). Schrader (1993, p.76), Daft & Lengel (1986, p. 556) and Dewulf et al. (2005, p. 116) support this view, and defines ambiguity as result of multiple and conflicting interpretations about situations. Therefore, ambiguity is subjective to the perception of individuals and organisations (Ellsberg, 1961, p. 660; Martin, 1992, p. 134).

Ambiguity also arises from fluctuating stakeholder demands, and the lack of direct control over resources (Stone & Brush, 1996, p. 633); also by the presence of a diversity of actors and multiple shareholders (Dewulf et al., 2005, p.123; Brugnach et al., 2008;). Dewulf et al. (2005, p.117) define ambiguity as a continuum ranging from “total confusion caused by too many people voicing different but still valid interpretations” to unanimous clarity.

Nowadays the business world is characterised by two distinctive and opposite features: too much information (masses of knowledge) and less clarity on how to interpret and

apply insights (inability to do anything as directions are not clear). Ambiguity is a feature of most decisions situations like those involving strategic planning (Ruefli & Sarrazin, 1981, p. 1161). In this situations the presence of ambiguity not only prevent to understand issues, but also the formulation of solutions, some of which will prove to be good and others bad (Yarger, 2006, p.18). The impact of ambiguous conditions on planning is not well treated on the literature (Stone & Brush, 1996, p. 633). Miller & Friesen (1983, pp. 230-231) suggest the need of more analysis so that gain awareness and a continuous review of their strategic planning process to remain viable and healthy in this dynamic and ambiguous world (Korman, 1971, p. 339). In any case the business environment is source of ambiguity for organisations (Rajagopan & Spreitzer, 1997, p. 57).

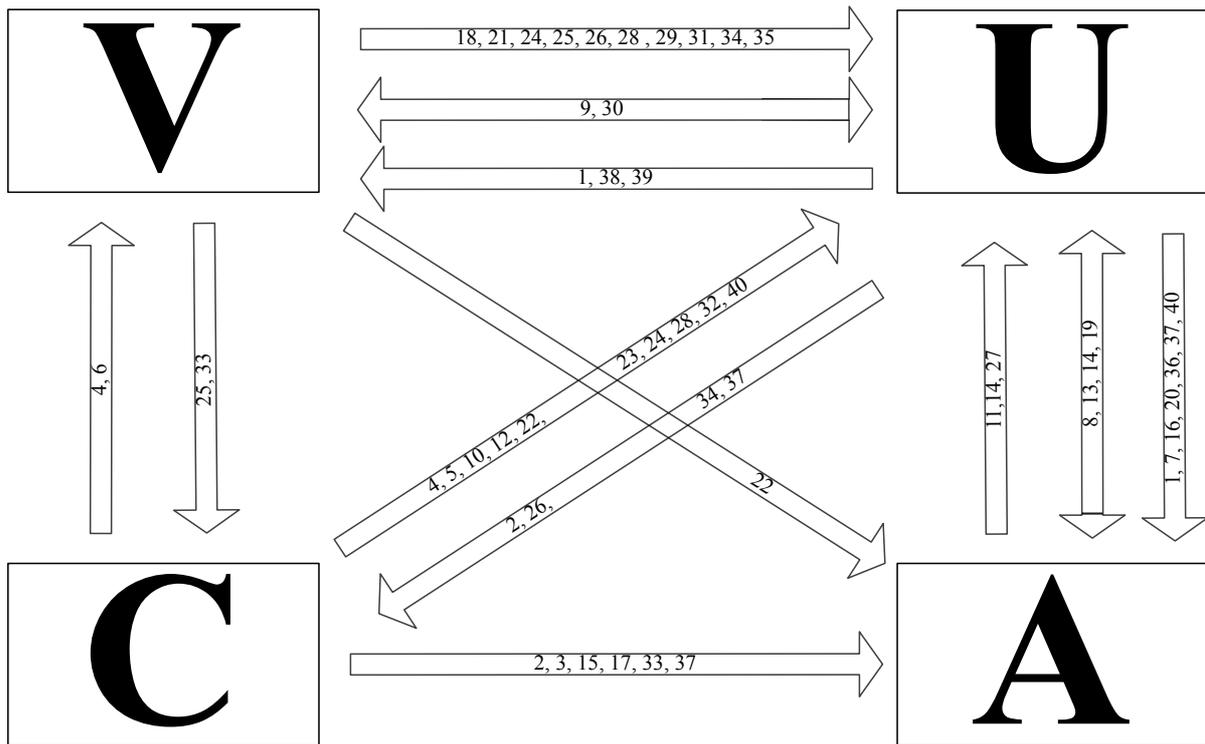
4.1.5. VUCA

VUCA world periods existed before (Johansen, 2013, p.11). However the difference between the past and the present VUCA environment is the speed and breadth of interactions and the multiplication of linkages among elements (Duit & Galaz, 2008, p.311) in unpredictable ways with multiple impacts (Gray, 2012, p. 13) touching a lot more of people on the planet at once with a more likely potential of disruption in terms of intensity and scale (Friedman, 2005, p.46). Rycroft & Kash (1999, pp. 56-57) illustrate the complexity in contemporary economies by examining the production process: in 1970 most valuable trade products were still simple; in 1995 only 14% of the most valuable products were produced following simple processes, 66% of the most valuable products involved complex processes using a vast number of interconnected components. Pietersen (2010, p. xiii) claims that no barrier to competition remains safe; the lifespan of services and products is getting shorter; if it was already short now it is even more compressed. IBM (2010, p.8) study based on face-to-face conversations with more than 1,500 chief executive officers worldwide indicates that organisations operate nowadays in a world that, compared to previous times, is more volatile, uncertain and complex. 69% of respondents believe in more volatility coming (deeper/faster cycles, more risk); 65% of participants highlight the expecting increase in uncertainty (less predictability); and 60% think that complexity is on the rise (Ibid, p. 15)

This background explains the motive about the embracement of VUCA by some organisations into their way they operate, train staff or formulate strategy. Unilever, Keith Weed - Chief Marketing and Communicator Officer - described that Unilever looks at the world through the VUCA lens (Dan, 2012). McDonalds adapted VUCA principles in its leadership training (Lawrence, 2013, p.10). Protect & Gamble, R. Keith Harrison Jr. - Global Product Supply Officer - at the Supply Chain and Logistics (2010) conference in Dallas (USA) addressed the attendees claiming that “VUCA is the reality for the foreseeable future, and it affects how we think about supply chains and design.”

VUCA involves taking a holistic view rather than a reductionist one. Hofstadter (1980, p.312) explains the difference in a simple way. Holism is “the belief that the whole is greater than the sum of its parts”; while reductionism developed by Descartes, is the belief that a “whole can be understood completely if you understand its parts, and the nature of their sum.” Linear thinking and the belief that the whole is only the sum of its parts are obsolete (Mainzer, 1994, p.1). So far, the authors have introduced the VUCA variables in isolation; however the VUCA variables have an interdependent character (Kallinikos, 2007, p.48). This capacity of developing such relationships is a property of

the variables and for Latash (2008, p. 14) this is called synergy. Synergies “work together” (Ibid, p.15). In some occasions the variables do not contribute equally to the definition of the current business environment, but that does not mean that there are not present as there is variable-dependence (Ibid, p.14). The synergy of VUCA produces an effect that is larger than each individual part added together, in the same way that a music band playing together in harmony produces a more dramatic effect than if the instruments are played individually. Figure 4-2 summarises the relationships that previous authors have established between the variables. Appendix 5 presents a detail explanation of the relationships.



1 - Carson, S. J., Madhok, A., & Wu, T., (2006)
 2 - Reed, R., & Defillippi, R. J., (1990)
 3 - Mosakowski, E., (1997)
 4 - McCann, J. E., & Selsky, J., (1984)
 5 - Osborn, R. N, (1976)
 6 - Emery, E. F., & Trist, E. L., (1965)
 7 - Courtney, H., Kirkland, J., & Viguerie, P., (1997)
 8 - Weick, K., (1995)
 9 - Bourgeois, L. J. III, (1985)
 10 - Taleb, N. N., (2007)
 11 - Lissack, M., (2011)
 12 - Huber, G. P., & R. L. Daft, (1987)
 13 - Rajagopalan, N., & Spreitzer, G. M., (1997)
 14 - North, M. J., & Macal, C. M., (2007)
 15 - Martin, J., (1992)
 16- Axelrod, R., (1997)
 17 - Ball-Rokeach, J. S., (1973)
 18 - Bourgeois, L. J. III, (1980)
 19 - Schrader, S., Riggs, W. M., & Smith, R. P., (1993)
 20 - Eichberger, J., & Kelsey, D., (2009)

21 - Bourgeois, L. J. III, (1985)
 22 - Brugnach et al., (2007)
 23 - Dess, B. G., & Beard, D., (1984)
 24 - Downey, H. K., & Slocum, J. W., (1975)
 25 - Gallati, R., (2003)
 26 - Gioia, D. A., Nag, R., & Corley, K. G., (2012)
 27 - Lopez-Gamero, et al. (2011)
 28 - Milliken, F. J., (1987)
 29 - Duncan, R., (1972)
 30 - Tosi, H., Aldag, R., & Storey, R., (1973)
 31- Tung, R. L., (1979)
 32 - Davies, L., (2004)
 33- Ho, P., (2012)
 34 - Eisenhardt, K. M., & Martin, J. A., (2000)
 35 - Eisenhardt, K. M., (1989)
 36 - Chapman, C., & Ward, S., (2003)
 37 - Dewulf et al., (2005)
 38 - Stoffels, J. D., (1994)
 39 - Lawrence. P., & Lorsch, J., (1967)
 40 - Zimmermann, H. -J., (2000)

Figure 4-2. Relationships between volatility, uncertainty, complexity and ambiguity according to previous researches

4.2. Industry Context and Background

The following section depicts the current state of the construction industry in the UK together with the main characteristics of the industry. Construction projects require the involvement of many stakeholders, engineering consultancy organisations are one of them. This research, focus on this particular sector. The authors describe the features of engineering consultancy organisations.

4.2.1. Nature of Construction Industry

Construction is a series of actions undertaken by organisations that apply specialised skills and knowledge to produce or alter buildings and infrastructure. (Radosavljevic & Bennett, 2012, p. 9). It is by nature complex (McGeorge & Zou, 2012, p. 211), since there is an interdependency of actors, components, tools, machines, etc. in a physical environment that is variable (e.g. weather) and that is likely to interfere with the planned schedule causing uncertainty and ambiguity (Ibid, p. 10). Construction is a major economic driver and industry throughout the world, which accounts for a significant proportion of gross domestic product – GDP – (Crosthwaite, 2000, p. 619), about 7-10% of a Western economy according to McGeorge & Zou, (2012, p. 69) offering employment contribution to economic development (Kunhui et al.m 2013, p. 135).

The complexity of the construction industry is greater than most other sectors (Betts & Ofori, 1994, p. 204). It is subjected to a high volatility (Langford & Male, 2001, p. 12; Betts & Ofori, 1994, p. 205), is characterised by a large degree of uncertainty (Murphy, 2013, p. 153) and is extremely fragmented (Garnett and Pickrell, 2000, p. 56; Ng et al., 2001, p. 3; Nitithamyong & Skibniewski, 2004, p. 491; Zawdie, 2012, p. 20) a result of the specialisation (Liu & Fellows, 2012, p.64) of the many stakeholders: contractors, sub-contractors, engineering consultants, architects, project managers, quantity surveyors, procurement consultants, planners, specialist designers, suppliers, etc. (Betts & Ofori, 1992, p.512); and phases involved in the development of construction works (Nitithamyong & Skibniewski, 2004, p. 491). Other specific characteristics of the sector are small profit margins and competitive tendering while having to respond to the fluctuating dynamics of the markets (McGeorge & Zou, 2012, p. 10). In addition, construction is undercapitalised, based on one-to-one projects (McGeorge & Zou, 2012, p. 69) where not two are the same (Garnett & Pickrell, 2000, p. 56) and is rooted on collaborative work (El-Ghandour, and Al-Hussein, 2004, p. 83) that involves communication and coordination among the different actors, including clients (Kassim, 2012, p. 36) along the whole construction process: the transformation of intangible ideas and concepts into physical entities (e.g. buildings). This process requires a large volume of often complicated information between different actors (Ng et al., 2001, p. 3) that are normally geographically dispersed (Kassim, 2012, p. 36).

Construction activities are subjected to strict regulations (e.g. health & safety), influences from the speed of technological change (e.g. Building Information Modelling – BIM), continuous changes as result of design process and clients desire (e.g. variations in taste, scope - source of ambiguity (Radosavljevic & Bennett, 2012, p. 260), broad concerns such as sustainability and environmental impact, and stakeholders demand to deliver projects on time and within budget. Therefore, given the constraints, constant changes and dynamism of the construction business environment (Langford & Male, 2001, p. 1; Akintola et al., 2012, p.3; Goulding, 2012, p. 158) and competition

within the construction industry is intense (Betts & Ofori, 1992, p.511). Furthermore, Betts & Ofori (1994, p. 205) state that the sector is influenced by external socio-political, (e.g. effect on clients' needs), economic (e.g. influence on profit and pricing), environmental (e.g. marketability of services) and technological drivers (e.g. effect on the way projects are designed), which affect the way construction organisations formulate strategy (Goulding, 2012, pp. 158-159).

Historically, the United Kingdom (UK) construction sector has been vital for the economy and a key driver of growth in terms of value added and employment (Department for Business Innovation and Skills, 2013, p. iv). It contributes almost £90 billion to the UK economy in value added, comprises over 280,000 businesses and provides 10% of the total UK employment (Ibid, p. v). In the last years, the UK construction industry has faced and is facing tough market and wider economic conditions (Glenigan & Construction Excellence, 2012, p. 3) with continued uncertainty (KPMG, 2013, p. 3) and unprecedented levels of volatility: In early 2012, the construction industry returned to recession for the third time in 5 years (Department for Business Innovation and Skills, 2013, p. v). Profitability is tumbling, although there are signs of recovery (Ibid, p.7). Employment also in the construction market remains more volatile than that of the economy as a whole (ACE, 2012, p. 54).

4.2.2. Nature of Engineering Consultancy within the Construction Industry

As previously mentioned, the construction industry is formed by many stakeholders one of them engineering consultancy organisations (Betts & Ofori, 1992, p.512). Consultancy organisations are “becoming ever more pronounced in economies the world over” (DeLong & Nanda, 2003, p. ix). Greenwood et al. (2006, p. 661) define consultancy organisations as “those whose primary assets are highly educated professionals and whose outputs are intangible services encoded with complex knowledge. The professionals represent the asset of the organisations (Winch & Schneider, 1993, p. 923) because translate the knowledge and develop the relationships with clients. As a result some authors (Ibid) consider these organisations as knowledge based organisations being this is a very distinctive feature, as the assets is the capacity to produce rather than a product. Consequently, consultancies are forced to attract, retain and motivate staff (Greenwood et al., 2006, p. 663).

Therefore, consultancy organisations compete simultaneously in two distinctive markets: “the output market for its services and the input market for its productive resources – workforce” (Maister, 1982, p. 15). Løwendahl (2005, p. 39) adds another four characteristics of the sector. The first one is information asymmetry: consultants are hired because they possess knowledge that the client lacks, the more specialised the expertise the more difficult for clients to assess quality. The second aspect is that standardisation is difficult to apply as each client/project requires a high degree of customisation (Løwendahl, 2005, p. 35; Maister, 1982, p. 15; Sheikh & Lim, 2011, p. 1126). The third one is that there is a significant component of interaction with the client (Løwendahl, 2005, p. 35). Lastly, consultancy organisations need to develop client proposals or tender documentation continuously and this may lead two scenarios, either being overloaded with work or not being fully employed (Løwendahl, 2005, pp. 67-68).

Another characteristic is that consultancy organisations are typical project-based organisations (Maister, 1982, p. 16; Sheikh & Lim, 2011, p. 1123) and have three main activities: project management, client relationships and performance of professional task. Finally, engineering consultancy organisations are generally partnerships which are characterised by voluntary association of partners who employ other professionals (Winch & Schneider, 1993, p. 923).

Specifically, engineering consultancy is defined by Roberts (1972, p.39) as the “set of methods and organisational structures which allow relevant scientific, technical and economic knowledge to be gathered and converted into designs and instruction for the construction of specific projects”. Engineering consultancy organisations are fundamentally different to more traditional organisations which are generally taking as cases in strategic management textbooks (Løwendahl, 2005, p 32) as these function on the basis of sharing and acquiring knowledge (Kakabadse, 2006, p. 419), and are hired to provide innovative solutions to problems becoming this process inherently uncertain in nature (Sheikh & Lim, 2011, p. 1126)., p. 927).

Engineering consultants “take scientific and traditional knowledge of the physical and human environment, together with an understanding of construction methods and the market to join clients, architects, contractors and others in providing solutions to problems. It is about economy and value” (Buro Happold, 1996, p. 2). The traditional UK approach within the construction industry is typically dominated by architects and engineer consultants. Within this approach the client for a building or infrastructure employs a design team that help to determine what is needed and then design it (Radosavljevic & Bennett, 2012, p. 22).

While the work undertaken by engineer consultants varies with size, capabilities and turnover of the organisation certain generalisations may be made (Langford & Male, 2001, p. 36): smaller organisations are generally specialist within a single discipline (e.g. structures) dealing mainly with private individual clients or with larger clients requiring small-scale works; whereas larger organisations posse specialist knowledge into more than one discipline (e.g. civil, structures and services engineers) are able to deal with corporate clients for public or private work providing multi-disciplinary consultancy services. The consultancy services generally include, but are not limited to: structural design, civil works, mechanical-electrical-plumbing works, feasibility studies, project management, flood risk management, cost analysis, surveying, master planning, disaster relief, landscape design, and transport planning.

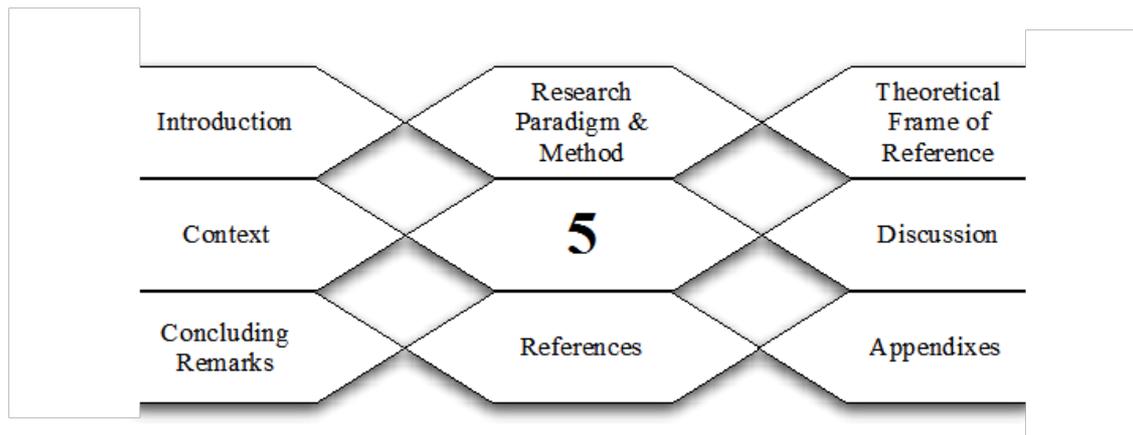
Neither The Office for National Statists nor any other governmental UK body collect information on consultancy engineering (Deneen, 2013). It is the publishing body of the Institution of Civil Engineers, New Civil Engineer (NCE), which offers the latest and comprehensive overview of the engineering consultancy in the UK (NCE Consultants File, 2013, pp. 3-7). In comparison to 2011, very large organisations reduced staff, while all others had a small aggregate increase in employment. These consultancy engineering organisations taken part on the NCE 2013 survey employ around 162,000 people and have a total value of fees of £12.5 billion in 2011 calendar year. This is a reduction of 8% in comparison to 2010 and around 1% to 2009. However, compared to 2008 (£10.9 billion) it seems that there signs of economic recovery. To measure performance, turnover per employee is used. In 2009 the average was £78,700 and £75,000 for the median (similar to those of 2010; in 2011 both were reduced by approximately 7%). To counteract this decline, engineering consultancy organisations

have opted for business strategies such as reducing margins, freezing pay, lowering fees, implementing redundancies and entering new markets as a way to survive. In conclusion, the picture seems quite flat with gross income, fee levels, tender success rates, staffing levels, cash flow, etc. unlikely to change and reflecting the current levels of uncertainty within the business environment (Ibid, p. 4).

On the other hand, the principal vehicle for policing consulting engineers' in the UK is the Association for Consultancy and Engineering ACE (2013, p. 2), which represents more than 600 organisations who together account for 90,000 employees in the UK. ACE provides benchmarking at two different categories. The first category is designed specifically for organisations with up to 50 employees in comparison with larger players. Table 01 on Appendix 4 summarises the main findings extracted from the following reports: ACE Benchmarking Lite Industry Overview 2011, 2012; and ACE Benchmarking Report Industry Overview 2011, 2012. The second category is between consultancy organisations in Europe against the UK ones. Table 02 on Appendix 4 summarises the main findings extracted from the following reports: ACE Industry Overview € version 2012, 2013.

The construction and consultancy engineering are described as mature, however this does not mean that their markets are stable (Junnonen, 1998, p. 110). The benchmarking indicators in both Table 01 & 02 on Appendix 4 present a pattern of unpredictability, a characteristic of volatile (Boyne & Meier, 2009, p. 803) and uncertain environments (Milliken, (1987, p. 136; Dewulf et al. 2005, p. 116). There is not much discrepancy between results among UK and the European ones stressing the fact that the sector is very competitive (Junnonen, 1998, p. 107). This may explain that client satisfaction with consultants according to has steadily increased since 2002 in accordance with UK Industry Performance Report (2012, p. 9).

In the short term and due to the uncertainty of the economic conditions, organisations have concerns about margins, staff retention and development, and salary pressures. However the biggest challenge given the current competition within the market is to keep a continuous work stream securing new local and overseas clients. In this sense, small organisations feel particularly squeeze due to the diversified activities of larger competitors (ACE, 2012, p. 11).



Data Presentation and Analysis

The context chapter has defined the setting of this study and has presented the particularities of the engineering consultancy sector. This chapter presents the gathered empirical data for the purpose of analysis in order to extract significant evidence towards answering the research question and fulfil the research objectives. The data is outlined separately for the three organisations under investigation: Buro Happold, Engenuiti and Structural Solutions.

First, a brief organisation's history and profile is provided. Second the process of strategy formulation is outlined. In a third step, the contextual setting of the organisations in relation to their general business environment is explained through the PESTEL variables within an outlook to the last five years where the economic crisis started and the VUCA acronym was defined as the *new normal* (Kinsinger & Walch, 2012). Subsequently, to capture the way the participant organisations operate three areas are explained. Firstly, it is knowledge and capabilities development because these organisations as knowledge based organisations being this is a very distinctive feature, as the assets is the capacity to produce rather than a product (Winch & Schneider, 1993, p. 923). Secondly is winning work, which is the way the organisations remain competitive and keep a continuous work stream securing clients (ACE, 2012, p. 11). Lastly, the participant organisations are project based organisations (Maister, 1982, p. 16; Sheikh & Lim, 2011, p. 1123) and delivered their consultancy services through projects. On the view of the authors there is a correlation between these three outlined areas that defines the intrinsic nature of the sector.

5.1. Buro Happold

5.1.1. Buro Happold Profile

Buro Happold was founded in 1976 (Bath, UK) by Ted Happold together with a group of likeminded engineers. It was formed as a partnership because the founders believed their skills were complementary and the whole was greater than the parts (Walker & Addis, 1997, p. 120). Happold was committed to aesthetically, socially, economically and environmentally conscious design (Eccles & Johnson, 2010, p. 2). Additionally, the practice started from the belief that seeing art and engineering as divided is not seeing the world as a whole (Happold, 1997, p. 2). These informed the early direction of the organisation (also referred to as practice) and its work, and established its strong reputation for innovation (Eccles & Johnson, 2010, p. 2).

Since then, the organisation has expanded organically and preserved the culture and guiding principles of care, elegance and value (Eccles & Johnson, 2010, p. 2). Following a holistic approach to engineering where integration of different engineering disciplines creates better solutions; the practice has broadened and expanded its original focus on structural engineering to include up to 20 different disciplines. Therefore, Buro Happold is a multi-disciplinary engineering consultancy where clients can hire engineering services in a *single-stop*.

Currently it is legally set up as Buro Happold Engineers Limited with an array of subsidiary organisations. It is supported by 51 partners located around the globe with a work force of around 1,400 people operating from 11 countries in 24 offices (Sincock, 2013a). The practice split the business operations into four major regions; Europe, Middle East, North America and Asia-Pacific and India (Buro Happold, 2013a). Buro Happold believes that its presence in local markets helps them to work closely with clients that are generally architects, construction organisations and developers, although this varies from region to region (Ibid).

The organisation works in multiple sectors like aviation, transport, water, education or energy; delivering design services for projects that vary in size and scope such as buildings, airports, bridges, masterplanning, cultural centres, media complexes, offices, public centres, sport stadiums, and tall buildings, among others (Eccles & Johnson, 2010, p. 3).

Recently, Buro Happold announced its financial results for 2012/13, with a substantial increase in profitability (Operating profit was £12.9m, increase of 50% over the previous year), and an increased of the operating margin to 12% from 7% in 2011/12 (Sincock, 2013b). However the turnover per employee in 2012 decreased to £73,000 in comparison with £88,900 for the 2011 financial year.

Figure 5-1 depicts the evolution of Buro Happold's turnover (£ millions) and the number of employees (Duedil, 2013)

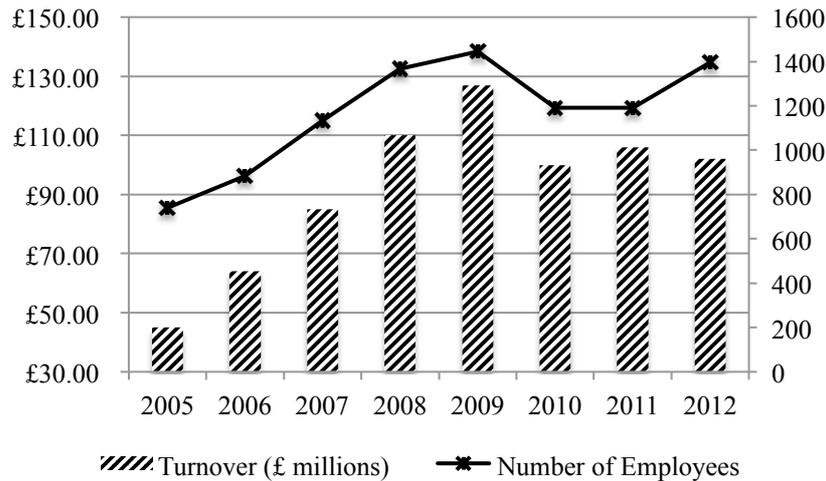


Figure 5-1. Buro Happold historical evolution of turnover in £ millions and total number of employees

5.1.2. Strategy

The strategic planning of Buro Happold is rather formal; although there are important aspects of informality arising from their ethos which is based on open discussion and influenced by what people read, learn and talk from the different markets where they operate (Cook, 2013). During the Global Executive Board, members present financial information and alike from sectors to regions, gathering a global picture of the current business and shaping future direction (Ibid) in addition other professionals in sectors like IT also present information to the Board (Mundy, 2013). Decision making is supported on financial and project business intelligence reporting (Ibid). Discussion centres, for instance, on how the organisation can grow designing for this a strategic plan that delivers the objectives. On this regard, Buro Happold formulates strategic plans that are internally created out of multiple external insights (Cook, 2013). This approach is in alignment with Hofer & Schendel (1978, p. 204) that suggest that at corporate level outside-in environmental forecasting should be use to assess the impact of environmental changes.

The strategy is designed and written by the Executive Global Board (CEO, CFO, two external non-executive directors, managing directors (MD) of the different business units and HR director) in consultation with the Supervisory Board who has a sanction right over the strategic plan (Ibid). The Supervisory Board is non-executive, is chaired by the Senior Partner, Mike Cook, and is also formed by three partners that are elected and represent all the other partners. The Supervisory Board is responsible for the long term survival of Buro Happold, acts on behalf of all the partners and is entitled to regulate the Executive Global Board who is in charge of the business and has a shorter view orientation. All the partners meet once a year during a long weekend and discuss the strategic plan of the organisation. Ultimately the partners approve the strategic plan proposed by the Executive Global Board (Ibid). The strategic plan is monitored constantly by the Executive Global Board on a monthly basis, besides there are the leadership meetings that occur three times per month where all business services (e.g. Systems Development, Procurement and Business Innovation, etc) sits with the CEO,

CFO, and the Head of Strategic Development which ensures continuous review of the strategy (Mundy, 2013)

Up to 2010, Buro Happold operated with informal processes and strategy formulation “crafted after one persons idea” (Cook, 2013). Whereas now Buro Happold is like any other business with a solid and professional leadership management structure, and measures and reports its commercial position in accordance with international standard practices. Until 2008 the executive board, formed only by engineers, thought that they were running the organisation in an optimum way in accordance with the particularities and culture of Buro Happold; however the crisis turndown their views. They started by hiring two non-executive members to add a new perspective. These suggested that the organisation were not commercially and financially measuring “the normal things” (Cook, 2013). At the present the practice is not a rule based organisation, but follows standard operational and strategically frameworks, guidance and toolsets to make good decisions (Westbury, 2011).

Buro Happold had 3 strategic cycles called Horizons (Refer to Figure 5-2). These horizons has lasted about 15 to 18 years, with changes happening from one to another in times of economic recession. Each horizon was inspired by a topic. The current one is called climatic and it is founded on the general idea of engineers taking the lead within the build environment providing more value to clients. Buro Happold believes that the world is facing problems (security of natural resources, urbanisation, population growth, climate change) that only engineers and technology can resolve (Westbury, 2011).

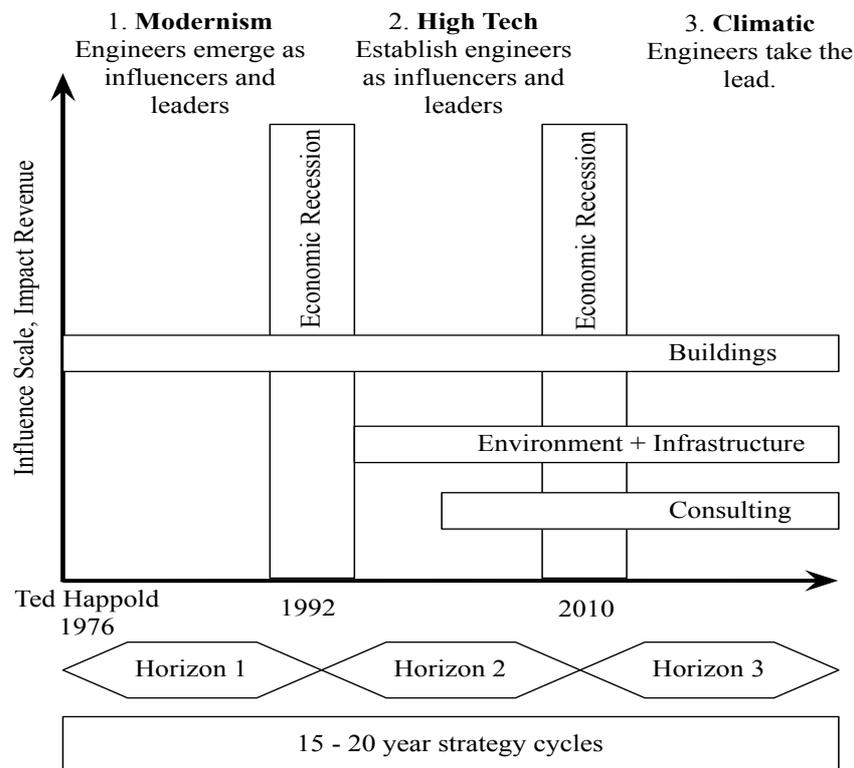


Figure 5-2. Buro Happold historical strategic cycles

These strategic cycles are split into tactical plans of three years duration aligned with the three year tenure by the CEO (Cook, 2013). The tactical plan has more operational and project orientated goals although still has a strong essence of idealism. The tactical plan for the period 2011-2014 is as follow:

Year 2011-2012 – Strengthen, Stabilise and Energise: regroup and get much better organised as a global business.

Year 2012-2013 – Get back into the growth groove: bring together the work over the last two years to land double digit net profit and strong cash balance sheets.

Year 2013-2014 – Make it worth our while: push for strategically aligned growth that stabilises the business but it must be controlled and ordered (Westbury, 2011).

Beyond the tactical plans, there is a cascade of business plans from regions to offices to finally business units or disciplines. The business plans are aligned with the main goals of the organisational strategic plan, and the design follows the same principles already explained.

In the last three years Buro Happold has been putting the effort into the tactical plan leaving one on side the Horizon 3. However, in the last three to four months and as result of the change measures implemented; Buro Happold has passed financially from “red to black” and staff and partners are being rewarded for their efforts during the difficult last years (Cook, 2013). Having the business financially strong Buro Happold is now looking ahead with the long term vision depicted on Horizon 3. Among the strategic goals associated with this new horizon are a review of the brand.

5.1.3. General Business Environment (PESTEL Analysis)

Mike Cook (2013) states clearly that the business environment where Buro Happold operates has changed in the last five years; and not only Buro Happold, but all other actors that form the market as result of the changes happening at a “higher level”. Cook (2013) explains that some of the changes that the sector has experienced have been in form of growth by acquisition, closure of business or diversification of services. Other organisations are now expanding their operations abroad; Buro Happold started in 1976 by working on abroad projects so their experience in this sense offers them a competitive advantage. In this regard, some architects are using Buro Happold to enter sectors or markets beyond their comfort zone (Cook, 2013). In contraposition the practice is at present working with a wider spectrum of architects and clients (Ibid). Buro Happold expects to grow in the coming years by opening offices in emerging markets and in parallel develop new relationships (New Civil Engineer, 2012, p. 15).

In the last years, especially post 2008, the main changes in Buro Happold have been in response to an urgent business imperative to change (Cook, 2013). Moreover, the environment where the practice operates is constantly changing so organisations need to be constantly adapting (Ibid). To survive the volatility, uncertainty and ambiguity of the market in the last years, Buro Happold has restructured its business development operations by exploring new markets and opening new offices (New Civil Engineer, 2012, p. 15). Also Buro Happold has put in place a more substantial professional risk management and rigorous commercial structure (Cook, 2013) around a simple set of systems, objectives and communications (Westbury, 2011); becoming a more mature organisation while paying more attention to cash flow, income generation and cost expenditure (Cook, 2013). These new organisational features established by the leadership team, needed in parallel to be acquired by the employees as another

characteristic part of their jobs (Ibid). This has been a challenge from an organisational culture point of view. Historically, Buro Happold has grown up allowing people to develop their own interests, capabilities and talents without being constraint or overlaid prescriptive in the way they work; so the challenge has been not losing too much of that liberal side in the doing of the work while creating rigorous conditions for long term commercial survival (Ibid). In addition, the organisation has improved the performance and development review process to ensure individual tailor development plans and refreshed the training programs (New Civil Engineer, 2012, p. 15).

For Buro Happold, on the words of Chairman Mike Cook (2013), the present business environment is full of potential: the possibilities are fantastic and challenging. Buro Happold is starting to feel optimistic about the market this is also making people feel more positive (Ibid). The survivors of the business environment have survived by being the more open minded, ambitious and flexible (Ibid). Furthermore, the survivors are more willing to listen at Buro Happold as collaborative partners, allowing the former to lead in alignment with its long term strategic motto: “Engineers take the lead” (Westubry, 2011). In order to take further lead, Buro Happold is starting to value relationships beyond the immediate environment of clients in order to be more distinctive from other engineering consultants; as an example the organisation is making effort into establish a long term relationship with the Venice Biennale (Cook, 2013).

PESTEL: Political Factors

A large organisation like Buro Happold is not immune to political factors (Cook, 2013). Since its origins, the practice has grown organically into different markets and regions, also has diversified its services. This spread has also means that the organisation is exposed to political factors at local, national and international level. Buro Happold historically has had a strong presence in the Middle East. Their first projects, in 1976, were in Riyadh, Saudi Arabia (Eccles & Johnson, 2010, p. 3). At the moment they are involved among others in Phase 2 and Phase 3 of the Msheireb Downtown Doha (Qatar) or Sabah Al Ahmad Sea City development in Kuwait City (Buro Happold, 2013d). During the Arab Spring protests Buro Happold was, for instance, designing the Cairo Expo City together with architect Zaha Hadid, the result was that the project being designed to a large extent was stopped and currently is on hold (Zaha Hadid, 2013) causing a financial lost.

In the UK, the changes in the government during May 2010 brought a coalition government to the power that changed the political agenda towards a reduction of public deficit (Blitz, 2010). Two months after elections, the government stopped a programme valued on £55bn to rebuild 700 schools (Croft, 2010) called Building Schools for the Future (BSF). The response by Dr. Mike Entwisle, associate director at Buro Happold said, “We are greatly saddened by the decision not only to axe completely the future BSF programme, but also to review every academy and BSF project currently in procurement. The delay resulting from these reviews threatens to destabilise an already fragile industry and we can only hope that the resulting decisions are made quickly”. (Buro Happold, 2013e). Buro Happold was working on the design of schools along the whole country and this put uncertainty and pressure on their UK operations. Overall the practice has been less affected in the building sector and more in infrastructure projects in the last five years (Cook, 2013). Like in the UK governments around the world had decided to take reduction deficit strategies rather than expansionist ones affecting investment in infrastructure (McKinsey, 2013, p. 20)

Nevertheless, Buro Happold is not only affected by political factors, the practice also lobbies to politicians to change the current landscape. In a letter published in the Sunday Times (2012) under the heading “The Government’s review of aviation policy” and addressed to the Secretary of State for Transport, Buro Happold’s CEO together with other 42 CEOs and Chairmen of organisations like Barclays or Deutsche Bank asked for more UK hub capacity to support economic growth.

PESTEL: Economical Factors

In the same way that political factors, Buro Happold is vulnerable to economic conditions (Cook, 2013). Buro Happold passed through redundancy phases where the organisation shrank. Governmental policies to reduce deficit translated into the cancellation of many infrastructures projects, in addition private developers found harsh conditions to get credit and fund their projects; the result was that the market sized down (Ibid). In 2008, the practice had almost 1800 staff (Eccles & Johnson, 2010, p. 26) while currently they have around 1400 (Sincock, 2013). Buro Happold was forced to reduced staff; “this was not felt as a decision but a business imperative”, because the business environment pushed in that direction (Cook, 2013). This was the only option for survival at a time where work started to dry out (Ibid).

The access to credit has been one of the difficulties that Buro Happold has faced on the last years. The practice had difficulties with liquidity. Although Buro Happold was approached for acquisition by bigger international consultants; aligned with its core values, the practice did not compromised their independent nature (Cook, 2013). However, the partners put money of their own pockets and the staff accepted a reduction of salary and benefits (Ibid). In the last years, the financial performance of Buro Happold has improved and recently the organisation has renegotiated the credit facilities with HSBC to secure a financial platform and move forward (Buro Happold, 2013f).

The current economic performance is the effect of a direct organisational change: previously, business units had more autonomy in the decision making but this now has been reduced and aligned with the strategic and tactical plans (Cook, 2013). In order to manage risks of working on projects of which Buro Happold did not necessarily have the best skills or available resources, or getting involved in projects where a risk of not being paid was too high; the practice has introduced more control in the processes also organisational structure (Ibid). In summary, the practice is now more selective in the new work that they target and must have strategic reason to pursue each and every new opportunity (Westbury, 2011)

Buro Happold leadership team has realised that they did not make a substantial profit in the past, because they were too many wrong projects where they were involved (Ibid). Cutting 50% of the significant one-off project losses that Buro Happold incurs each year may double their annual profit (Westbury, 2011). Therefore, at the present, risk is managed by processes and people. Buro Happold has setup a Contract and Commercial Executive group who need to be satisfied about projects of certain size before signing up contracts. Presently Buro Happold is reviewing this practice by increasing their scope, include further variables in the analysis and internally question if the organisation has the right skills and people to deliver certain jobs. Projects do not only going wrong for contract or commercial issues, but not having the appropriate people to run projects (Cook, 2013)

As summary, Buro Happold has used the economic crisis as an opportunity to re-shape the organisation and project it healthily into the future without the need of sell part of the business or engage on external funding. (Ibid).

PESTEL: Social Factors

The impact of social factors has been steady for Buro Happold in the last years (Cook, 2013). Buro Happold recognises some of the challenges that humanity is facing as opportunities. The world's biggest challenge in the words of CEO, Paul Westbury, is the increase population in cities. City councils have problems of making the most effective use of energy, organising transport, and creating the best environment for dense concentrations of people (Marsh, 2011). Westbury (2011) places engineering and technology at the heart in the solution of unresolved global issues such security of natural resources, climate change mitigation and adaptation, and population growth. Development of Asia-Pacific region business is a key strategic focus (Buro Happold, 2013h) as the region is creating economic opportunities as result of the fast growing urban population. Buro Happold provides services that try to tackle these challenges and in the last years, the practice has started to place more focus on the Far East by opening offices in China: Hong Kong (2008), Beijing (2011) and India - Mumbai (2010), (Cook, 2013).

PESTEL: Technological Factors

Technological factors have had a significant degree of impact on Buro Happold's operations and strategy (Cook, 2013). The practice has made an important investment on video and communications technologies enabling people to collaborate face-to-face in real time and link all the offices worldwide while offsetting the cost of travelling (Ibid). This investment has allowed Buro Happold to save up to £3 million annually; (Polycom, 2012). Paul Westbury, CEO of Buro Happold thinks that the use of new video technology has helped the practice to be more competitive (Polycom, 2013). Furthermore, the changes and spread of technology is allowing Buro Happold to establish a central global outsourcing framework with lower cost bases (Westbury, 2011). Westbury believes that outsourcing 1/3 of any project will double its profitability.

Computer aided design (CAD) technologies have enabled consultancy engineering to increase productivity and improve quality in design work (Mcdermott & Maruchek, 1995, p.411). Nevertheless, Mike Cook (2013) thinks that for Buro Happold these technologies are not a differentiation, but the only option "to be up to the best". The new wave of CAD technology, called Building Modelling Information (BIM) is however having an important growth in Buro Happold. BIM technology is a novel way of design, construct and maintain infrastructure and buildings (Bryde at al., 2013, p. 971). Buro Happold is questioning how they can improve in order to achieve a higher benefit from it (Cook, 2013). As a result of the spread of technology, Buro Happold fees are now lower than what they used to be (Ibid).

PESTEL: Ecological Factors

Environmental factors are very important for Buro Happold (Cook, 2013). These are linked to the sustainable aspect and knowledge that the practice uses in all their projects. Happold was an early proponent of sustainable design (Eccles & Johnson, 2010, p. 2)

and the practice used this approach to attract clients and win work. People in America, China and to a certain degree in India perceive Europeans as those who have gone further to reduce environmental impact of buildings and cities. This has helped to expand the practice operations into those markets. About 50% of the growth in China and India may be attributed to Buro Happold's ability to sell environmental awareness (Ibid).

On the other hand, Buro Happold has developed an environmental management policy where the organisation commits to the promotion of sustainable development and protection of the environment (Buro Happold, 2013g). The organisation also has a sustainability policy where they outline their approach under three headings that are linked to other previously discussed factors: Natural, Social (human capital) and Economic Capital (growth & governance).

PESTEL: Legal Factors

Legal aspects have a modest impact on Buro Happold (Cook, 2013). The organisation has developed policies such as Anti-Bribery in accordance with UK law that extends to the entire organisation's business transactions and dealings in all regions in which they operate (Buro Happold, 2013g). Employees were appropriately trained on this matter during 2010 (Cook, 2013). Buro Happold also has a Health & Safety At Work Policy for employees in relation to projects (Buro Happold, 2013g).

5.1.4. Knowledge and Capabilities

In the last three years Buro Happold has primarily focused onto re-shaping the business (Cook, 2013). It is being during 2013 when the business has financially passed from "red to black", and the immediate response has been to allocate budget for the creation of a program called Quality, Talent and Integration (Ibid). The new strategy to increase knowledge is built around quality of product, talent of people and integration of services.

In addition, Buro Happold is consolidating the training activities such as the Graduate-week program that brings together all the organisation's new employees out of university when they first joined in a week-long session (Eccles & Johnson, 2010, p. 10); also the Graduate +1 program for second year graduates; and the leadership training for senior and associates offering advance management skills (Cook, 2013). And additional feature of this new strategy towards gathering and spreading knowledge is the Global Integration and Quality Summit where selected people, from all levels and the whole practice, gathered for two days to discuss about the management of the practice and about technical aspects from all disciplines (Ibid).

Knowledge is shared and quality is enhanced by the Regional Disciplines Reviews that during the last three years lost importance. Regional Disciplines Reviews happened at every office: a panel of senior experts review some projects ensuring that the delivered quality meets Buro Happold expectations. The Directors Design Reviews are also being re-energised; these are formed by a group of Directors in conjunction with the Senior Partner visiting all the offices for a couple of days and scrutinising projects not only from the quality of the design also the quality of the talent. In addition Buro Happold

questions how the standard peer reviews for projects has been conducted until now in order to make them more robust and decrease mistakes (Cook, 2013).

Buro Happold also aims to maintain and extend the breadth of their skills base and the broadest of offers by partnering with niche technical services by pulling them under the Buro Happold umbrella but without having to invest on all new skill development (Westbury, 2011).

5.1.5. Winning Work

Buro Happold remains competitive in the market and wins work by a strong reputation and brand for quality design delivering challenging projects that has build along the 37 years of existence (Cook, 2013). The reputation is constantly enhanced by the multiple awards won by the organisation since its origins (Buro Happold, 2013j). Also by being a versatile multidisciplinary organisation, as explained by regional leader Andrew Kelly (Procter, 2013). Lastly, their ability to offer holistic solutions (Westbury, 2011). To keep its position in the market, Buro Happold is strengthening the support infrastructure for the Quality, Talent and Integration program as previously explained. They are also developing new relationships into the art field and working with a wider spectrum of architects and clients while being more local to clients in emerging markets (Cook, 2013).

In a society surrounded by increasing complexity, Buro Happold aims to transform complexity into as another selling point (Westbury, 2013, pp. 6-7). Paul Westbury, CEO of Buro Happold, explains that Buro Happold is in a privileged outlook to tackle the difficult complexity challenges. The differentiation lies in Buro Happold ability to bring together a broad range of leading technologies and thinking together to create smart solutions to their clients' complex problems (Westbury, 2011). So that the organisation is focus on the delivery of specialist and high value work, targeting high brand wit people that understand the culture of Buro Happold (Ibid).

5.1.6. Projects

Buro Happold is a project based organisation and engineers are organised by disciplines. At the lowest level are graduate engineers hired straight from university. After several years, and additional work toward their professional certification, graduate engineers moved up into engineer positions. Next are senior engineers, who have received professional accreditation after five to seven years experience, typically they manage one/two other engineers on projects; senior engineers act generally as job leaders overseeing a specific discipline in which they have expertise. Next level is associate engineers who overseeing a portfolio of project work and a team of engineers and senior engineers; these are responsible for the day-to-day coordination of projects. Associate directors made up the next level leading teams of 10 to 12 people within their discipline and are involved across 12 to 15 different projects at one time; associate directors are responsible for client liaison and strategic project leadership. Group directors are responsible of specific disciplines within an office or region and hold ultimate project responsibility. Regional directors are responsible for all projects within a region. These two last groups are generally partners (Eccles & Johnson, 2010, pp. 4-

5). Everyone can be partner if proves value to the practice and generally long term service.

Staff is allocated to projects in resources meetings happening generally on weekly basis, engineers are allocated to projects mainly in terms of time availability, although knowledge and self-development in accordance with the personal development reviews are also considered. Projects are constantly monitored in terms of financial perspective, but also from a commercial and technical point of view.

5.2. Engenuiti

5.2.1. Engenuiti Profile

Engenuiti was established in December 2009 by Paul Grimes with current directors Nathan Wheatley joining in May 2010 and Clive Fussell in October 2010 (Engenuiti, 2013a, p.4). The practice was initially set up as a limited organisation (Engenuiti Limited) with the three partners having equal shares. In the original plans the partners envisioned a strategy where they wanted to give away to employees part of the ownership with two aims: firstly, as a way to attract talent; secondly, as a way to acknowledge the contribution of employees to the success of the practice (Grimes, 2013a). The practice is structured so that it empowers all members of the organisation and provides rewards through the quality of work that they do (Engenuiti, 2013b). The organisational structure was changed in December 2011 to a Limited Liability Partnership (Engenuiti, 2013a, p.4). Limited Liability Partnerships (LLP) are typical of professional service organisations in the UK (Grimes, 2013a). The ownership structure of Engenuiti ensures that rather than remunerating external investors, the success of the practice is used for the stability of the organisation and the long term growth (Engenuiti, 2013b).

The practice has had a significant growth since the business was launched, and currently employs 19 staff. Fee turnover for October 2011 to September 2012 was £880,000. Net profit was £63,000. The business is still in the introductory phase but is moving into the growth phase (Engenuiti, 2013a, p.4). Turnover per employee in 2011 was £44,300 and £48,600 for 2012 (Engenuiti, 2013e).

5.2.2 Strategy

The three Engenuiti partners do not have formal training in business, so the strategic planning has evolved throughout learning by doing and looking at best practices of other organisations (Grimes, 2013a). It was not until 2012 that they did not write a strategic plan, which they refer as business plan. Engenuiti uses SWOT analysis and forecasting financial tools like Rapport 3 to formulate their strategy (Ibid). Rapport 3 is a practice management system specifically designed for the construction industry (Cubic-Interactive, 2013a). Løwendahl (2005, p. 76) affirms that strategic planning is neglected in the early years because this reduces responsiveness and innovation.

Their strategic planning has characteristics of formal and informal planning. The formal process is documented on their business plan; they also forecast in order to visualise what will happen if they grow to certain rate and how to plan for it (Grimes, 2013a).

Their view is that up to a certain number of employees you can direct the business with only month-to-month cash flow as there is control about the total number of live projects (e.g. 10 projects); and consequently of the whole business. Engenuiti is currently managing 30 projects and control mechanisms have been implemented (Ibid). Paul Grimes (2013a) thinks that “as you grow, you need to have formalised systems, but at the same time you need to avoid those systems to become only about management because in organisations that are about management people forget what they are doing in the first place.”

Likewise it is informal, because Engenuiti is able to take decisions in a quick and emergent way (Grimes, 2013a). For instance they can interview somebody for a perspective position and appoint him/her on the same day without the need of passing through a human resources department (Ibid).

Another characteristic of the informal strategic process is that employees are encouraged to propose ideas (Ibid). The business plan is reviewed annually and presented to the employees. These have the opportunity to express their ideas and opinions about the direction of the practice ongoing basis. Additionally the strategic direction of the practice is discussed in the leadership meetings happening every two weeks, although the main focus of these is the short term, typically three month outlook. The leadership team is formed by the directors and three other senior staff. All the gathered feedback feeds into the strategic plan (Grimes, 2013a).

With this in mind, the directors share all the strategic information with the employees in a transparent office environment because the directors believe that in the context where they operate their employees need to buy-in the future direction of the organisation (Grimes, 2013a). However, only the partners have detailed information about the finances. “The financial side is about managing cash flow. If you do not manage your cash flow you are out of business” (Ibid). Engenuiti performs a forecasting based on growth rate scenarios (e.g. cause-effect relation of a growth 20% each year) that includes information regarding assigned budgets to training and staff development, IT systems, salary structures, etc. (Grimes, 2013a). The scenarios are three (low, medium, high) and are a *compass* that allows Engenuiti to interpolate where they are going without the need to be strictly followed (Ibid). Engenuiti believes that is very important to conduct a thoughtfully strategic planning, as its foundation defines the direction of the practice; nonetheless they allow changes according to the circumstances of the business environment (Ibid).

Engenuiti has split its goals into strategic and tactics, being the later the way to implement the former. The business tactics for the next three years is to develop new project opportunities through further work and building relationships with new clients through recommendation. This requires an emphasis on fostering and developing relationships and listening to clients objectives and not focussing just on individual projects. The second tactic is to provide excellent quality in the delivery of services (Engenuiti, 2013a, p. 5). The main strategic goal is to grow up to 35 employees, with a focus on solving complex engineering problems (Grimes, 2013a). Organic growth is for Engenuiti the more profitable scenario in percentage terms, first because investments in IT or hardware are incremental; second because if the organisation grows to quickly the chance of making mistakes in projects increase, as quality control becomes harder (Ibid).

Other strategic goals are to balance the portfolio of clients and sectors, research and implementation of innovations in design and its process (Engenuiti, 2013a, p. 5); maintain organisational culture and nurturing existing partnerships with other international organisations which generally are low cost centres (Grimes, 2013a). In this regard, Engenuiti specialises in designing the complex elements of projects, delegating the design of standard elements to the outsource partners. These partnerships avoid Engenuiti to have additional staff without losing quality control (Ibid).

Besides, Engenuiti knows that they “are in point A and would like to go to point B, how to get there is the journey, but we are not sure about the route. If we map it out as a straight line, it would be a smooth journey and it would be very certain. The route is uncertain and we are quite relaxed about the journey because this uncertainty is what makes the journey interesting” (Grimes, 2013b). Paul Grimes describes it like the metaphor used by Hayes (1985, p. 114) between *road map* and *compass*. The former is often rigid in reacting to environmental changes, while the *compass* is able to adapt environmental changes providing general direction but not in a prescriptive way.

5.2.3. General Business Environment (PESTEL Analysis)

One of the most challenging situations for a project based organisation is that projects can start/stop at any time; so it is important to have a strategy on place, also it is important to be aware of the changes in the internal and external business environment and make sense of it (Grimes, 2013a). This sense-making by *gut-feeling*, comes with experience and is independent of what the forecasts shows (Ibid). Courtney et al. (1997, p. 68) suggest that under uncertainty *gut-feeling* is as valid as a more formal analytical tool.

Within the internal business environment the observation of the level of stress of employees is one of the indicators used by the practice (Ibid). Engenuiti scans the external environment through formal channels (industry specific media sources, published data from UK an international organisations about market growth, etc) and informal means (discussing with a broad range of stakeholders within the business environment or following Twitter accounts) (Ibid). Nevertheless for Engenuiti, informal scanning gives a better sense of the environment than *formal intelligence* as the informal one goes generally ahead in time (Ibid).

The business environment has a major effect on Engenuiti (Grimes, 2013b). As of June 2013 there is a feeling in the industry that the built environment consultancy sector is heating up with many consultancies reporting increased workload and enquiries (Engenuiti, 2013a, p 7); the industry is therefore getting healthier and for them this means that they are starting to be appointed earlier, the size of the projects is increasing, and overall is easier to plan ahead (Grimes, 2013a). If a year ago, they had committed work with an outlook of one to three months, that is now three to six months and in prosper times the outlook for engineering consultants in the construction industry is about nine months (Ibid).

Engenuiti also knows that contractors are becoming more contractual and are claiming back to consultants; contractors are trying to recover money because they did low bids during the last years in order to win work. The result is that insurance premiums for Engenuiti are up. For Paul Grimes (2013b) the business environment is complex (Ibid);

Engenuiti transforms complexity into simplicity by creating opportunities and solutions for clients (Ibid). Paul Grimes (2013b) thinks that successful organisations are those that interpret the complexity around and turn it into simplicity.

PESTEL: Political Factors

The UK government has been pretty stable for the last years and there are still two years to run before elections (Grimes, 2013b). When the government was constituted in 2010, they cut the BSF programme, so opportunities in that sector were significantly reduced. In addition museums, town halls, public centres, and all other sort of public funded construction projects were also reduced (Engenuiti, 2013a, p 7); these have had a negative effect on Engenuiti's work stream (Ibid).

Internationally the practice does not have a considerable exposure, some of the opportunities in the North of Africa did not materialised as result of the instability and volatility generate by the Arab Spring (Grimes, 2013b). Project work in Georgia, where Engenuiti is and has carried on some projects like the Prosecutors Office in Tbilisi presents high risk. The recently change of government in October 2013 may have consequences in some of the relationships and prospects that Engenuiti has developed over these years, but at the moment is difficult to predict the influence of this change (Ibid).

PESTEL: Economical Factors

There has been a mix of positive and negative effects since the practice was set up taking the economic downturn as context (Grimes, 2013b).

The organisation was founded during the recession peak in 2009-2010, and this was an excellent moment to hire very talented people that lost their jobs (Ibid). At this time, Engenuiti have a very capable and strong team, and are in the position to catch the "booming times coming" (Grimes, 2013a) because the economy is heading to a period of five to six years of growth although there is still a high degree of financial uncertainty (Engenuiti, 2013a, p. 4; Grimes, 2013b). However, "the opportunities will be for those that are quick enough because each year it will be something new to adapt" (Ibid). Grimes summarises that the business environment is very dynamic and "things are changing faster and faster and faster".

An indirect effect on Engenuiti was the difficulties that developers were having to access credit, resulting on projects that did not materialised or where interrupted creating uncertainty, like the Black Sea Hilton Hotel in Georgia (Grimes, 2013b).

Engenuiti started *banking* with a UK bank because of the facilities that this was giving to start-ups; but soon after the economic crisis started the bank was bought by a bigger one. The directors thought that this one was in a critical position and decided to move their operations to a larger and international one because they felt safer (Grimes, 2013b).

In the last years, the economic crisis has not given opportunities to new graduates to gain experience, resulting in a scarce pool of experienced engineers (e.g. 3 to 5 years), which becomes a potential threat for the recruiting aspirations of the organisation.. (Grimes, 2013b) and it is potentially a threat to the organisational aspirations (Grimes,

2013a). To account for this Engenuiti, as other consultancy engineering organisations, has a Graduate Training Scheme which is accredited by the Institution of Civil Engineers (Engenuiti, 2013a, p. 16). The aim behind is to nurture the current graduates into more senior positions (Grimes, 2013b).

PESTEL: Social Factors

Globalisation has changed the way consultants work. (Grimes, 2013a). “40 years ago communications was through telex, not even fax; nowadays we talk through Skype” (Ibid). The threat is that people around the world are offering their consultancy services for a lower cost. Engineers in Vietnam, India or China are able to turn out calculations for a fraction of the cost compared to UK organisations (Ibid). This factor shaped the approach of Engenuiti towards being competitive: “we sell ideas, critical thinking and new ways of doing things throughout accumulation and sharing of knowledge. Mastering calculations is not enough. The end product, typically construction drawings is not the only one. The final product is bigger than that and includes the initial thoughts, ideas and processes. We offer a much higher value via thinking and approach” (Ibid). In addition, they not limit themselves to their core activity (structural engineering) but offer a reduced-holistic approach about engineering. All together defines “our way to differentiate from other consultancy engineering organisations” (Ibid).

Likewise and linked to globalisation is demographics: “one of the biggest opportunities of the coming years” (Grimes 2013a). As people are moving to cities, there is a need for engineers to bring solutions to issues like sewage, power, water, etc., especially in big cities. This suburban growth is a threat for the city’s infrastructure, but for engineers it presents amazing opportunities (Ibid).

In a more concrete way, there is currently an economic migration that attracts talent from European countries to UK (Grimes, 2013b). Engenuiti is a very diverse organisation with more than 12 nationalities, what gives the organisation an international and dynamic outlook (Ibid). London is an international city full of opportunities, and it is one of the reasons why global clients *buy* design from London and very rarely from another European cities. Diversity and the possibility of attracting global clients are two of the positive impacts that demographics have on Engenuiti (Ibid).

Other concern related to recruitment is that the education level of engineering students in the UK and other European countries is decreasing in comparison to the level of Chines and Asian students (Grimes, 2013b). Today it is hard to quantify the effect of a decrease in the education level, but an impact on the long term can be expected. “Opportunities in the next five years driven by *knowledge economy* are massive” (Grimes, 2013a). Knowledge economy is defined “as production and services based on knowledge-intensive activities that contribute to an accelerated pace of technical and scientific advance, as well as rapid obsolescence. The key component of a knowledge economy is a greater reliance on intellectual capabilities than on physical inputs or natural resources” (Powell & Snellman, 2004, p. 199).

PESTEL: Technological Factors

Technology changes all the time and this has a positive impact on the practice (Grimes, 2013b); even more, for small organisations the cost of technology is the same nowadays than for a large one, so the differences have reduced with time (Ibid).

Engenuiti is a pioneer in the use of BIM designing all the projects in 3D. Recently the practice has published an article in the journal of Structural Engineering UK where offered advice for those starting out on their BIM journey from a process and cost point of view (Grimes et al., 2013, pp. 90-93). For Engenuiti BIM creates opportunities because “it leaves to engineers the possibility to unlock complex projects” (Grimes, 2013b). Paul Grimes (2013b) thinks that the “most complex the better because Engenuiti sells its services at the top end; so the most complex is the problem to tackle the better because this becomes a differentiator factor”. To enhance the use of BIM, they are launching their own standards in order to boost effectiveness and efficiency, but also to bring more consistency as the practice outsource some of the work to international partners in places like Slovakia (Ibid). Paul Grimes believes that BIM creates ambiguity, “if you put an apple on the table everyone agrees about what is an apple; but if you put BIM on the table you will have different understandings” (Ibid).

The outsourcing previously mentioned is possible to the use of video technology, cloud computing and IT sharing platforms coupled with powerful bandwidth (Grimes, 2013b). Hence technology has allowed Engenuiti to benefit from outsourcing without the need of add permanent staff while keeping quality control (Grimes, 2013a).

In the last years, the practice has taken a significant investment in infrastructure and IT systems (Grimes, 2013a) and has introduced organisational management software (Rapport 3) for project monitoring and reporting among other functions; it was felt that managing the expansion of the business on spreadsheets was becoming challenging (Grimes, 2013b; Cubic-Interactive, 2013b). Engenuiti is also taking advantage of online banking in their daily operations (Grimes, 2013b).

PESTEL: Ecological Factors

Environmental factors are not perceived by Paul Grimes (2013b) as having an important weight on Engenuiti. Grimes explicates that the economic crisis shifted the focus onto more *important* issues such as business survival. Nevertheless, Grimes uses the Maslow's pyramid of needs to explain that the economic situation is improving and with this the environmental agenda and other inspirational ideas related to art or beauty are taking again centre stage. Maslow's states that every human being is driven by a hierarchy of needs being these from bottom up: psychological, safety (job security and economic safety), social, esteem ad self-actualisation (morality or creativity) (Stum, 2001, pp. 5-6). Nonetheless, Engenuiti is uncertain about the consequences that a shift of agenda may bring for the practice in both forms: threats or opportunities (Grimes, 2013a). However, he thinks that sustainability is also source of ambiguity because “it means different things to different people” and the way to unblock the ambiguity is through codification and operationalisation of terms by means of checklists for instance like with BREEAM (Grimes, 2013b). BREEAM stands for Building Research Establishment Environmental Assessment Method is one of the world's leading and most widely used environmental assessment method for buildings and it is required to be carried out in all UK new buildings (Aspinal et al., 2012, pp. 1-3).

PESTEL: Legal Factors

Some of the legal factors affecting the business environment of Engenuiti are a source of opportunities. As an example, the introduction of structural Eurocodes in March 2010 was both, a huge change and a big opportunity (Grimes, 2013b). The Eurocodes are an European structural design codes for building and civil engineering works (Eurocodes, 2013a) that established a set of harmonised technical rules and eliminated technical obstacles (Eurocodes, 2013b) along the whole Europe withdrawing national codes (Wilkinson, 2010, p. 20). Working on international projects, Engenuiti has taken advantage of them by pushing for their use in countries such as Georgia without the need to learn how to use local codes of practice (Grimes, 2013b). Eurocodes are arguably the most advanced structural codes in the world (Eurocodes, 2013a).

5.2.4. Knowledge and Capabilities

Gaining competences and knowledge follows a structured and formal approach. Junior staff follows the Graduate Training Scheme accredited by the Institution of Civil Engineers. This is a three to four year training scheme leading to Professional Engineer (Chartered) status through the Chartered Professional Review examination. Engenuiti has a senior member of staff who is responsible for the graduate training programme (Engenuiti, 2013a, p. 16). Senior staff follows an informal route driven by interests and self-development. These are encouraged through sponsorship to take specific master courses to develop leadership skills in the construction industry (Grimes, 2013b). All staff have an annual development reviews and training needs are identified as part of this process (Engenuiti, 2013a, p. 16). There is a training and development budget set aside within the 5 year strategic plan. As fees are starting to improve, Engenuiti plans to increase the allocated budget for individual training on technical issues and leadership issues (Grimes, 2013b).

Engenuiti also runs internal training courses and bi-weekly technical workshops as learning and knowledge sharing opportunities (Engenuiti, 2013a, p. 16). In addition and as part of the internal Quality Control system, there is a project review culture where the technical, commercial, and delivery aspects of each project is reviewed and monitored by at least two directors. The review process also includes all levels of staff so as to develop knowledge sharing (Ibid, p. 17).

Gaining and developing new organisational capabilities is informal and more intuitive (Grimes, 2013b). Engenuiti has identified a certain number of areas where they have a particular interest; for example, taking opportunities to provide services in facade design and complex geometries; these are shared and discussed internally (Ibid). However there are some specialist areas, which are far of the core competencies of the practice, where rather than gaining capabilities Engenuiti has opted to develop strategic alliances and joint business development with *like-minded* engineering practices to mutually complement their skills and offered services. (Grimes, 2013b; Engenuiti, 2013a, p. 10). Nevertheless these are developed informally and organically. For Engenuiti the plans towards new capabilities are emergent and depends on future or present opportunities (Grimes, 2013b).

5.2.5. Winning Work

For Engenuiti winning work is not only about the financial aspect (Engenuiti, 2013a, p. 6; Grimes, 2013b). This position is also suggested by Løwendahl (2005, p. 49) that asserts that after ask professional organisation in his dissertation; most of them “replied that their primary goal was to help clients and have fun, rather than to make profits”. Because of this, Engenuiti is not particularly keen to take public related projects because often these projects are about low cost fees (Grimes 2013b). In order to win work the strategy is about identification clients’ needs and development of relationship which ultimately would lead to projects (Ibid). Development of relationships with clients involves first selecting right clients and, second investment in order to develop the relationship. (Grimes, 2013a). For Engenuiti the hardest part is to establish new working relationships with clients, once they begin, Engenuiti has confidence to strengthen these relationships to assure work continuity. (Ibid).

The key selling point of the practice is their reputation for real innovation in engineering design leading to savings in material costs for clients (Engenuiti, 2013a, p. 4). Engenuiti is enhancing its reputation entering into national and international awards (Ibid, p. 10). They also innovate in the design production process utilising technologies like BIM, which lead to a higher quality end product (design construction information). They have developed partnerships with engineers in lower cost centres in Georgia and Slovakia and they are able to use these relationships to deliver repetitive design work more efficiently (Engenuiti, 2013a, p. 4).

Currently, one client accounts for 40% of the turnover (Engenuiti, 2013a, p. 5). For a small practice having clients that constitute a high percentage of earnings is a significant risk factor because the organisation is too exposed financially and commercially to a single relationship (Grimes, 2013a). Hence the practice is conducting business development to diversify its portfolio: more clients, more sectors, domestic and international projects, etc; constituting different opportunities of revenues stream (Ibid). Some of these activities are: networking at national and international trade fairs, sponsoring charitable events and causes linked to building and architecture or practice-to-practice presentations (Engenuiti, 2013a, p. 10).

5.2.6. Projects

Engenuiti monitors projects very closely because the partners understand that is the *bread and butter* of the business and call this type of monitoring *operational survival planning* (Grimes, 2013a). Additionally, Engenuiti forecast three different scenarios in terms of workload (projects): potential project opportunities over one year outlook these are factored by an assigned probability of success (yellow line); green line is 100% work where there is a signed contract and generally provides a look ahead of about three months; red line is between yellow and green and have assigned a probability of 85% of projects to happen (Ibid).

From an organisational point of view, the employees are not split into teams (Grimes, 2013b); although in the near future it is anticipated that the staff will be split into two teams (Engenuiti, 2013a, p. 15). The projects are assigned to employees based on individual capabilities, self-development and availability discussed on the leadership meetings that are also resource allocation meetings (Grimes, 2013a).

5.3. Structural Solutions

5.3.1. Structural Solutions Profile

Structural Solutions Management Limited is a micro-entity of consulting engineers based in Bristol and Wiltshire in the UK that mainly provides structural services (Structural Solutions, 2013a). It was set up in 1995 by Peter Beresford as a sole trader with the aim of providing a practical and creative structural design service for medium sized building projects. At that time Peter had occasional assistance from other engineers that were employed as consultants when necessary. Structural Solutions became a partnership (50/50 split) when Mark Mitchell joined the practice in 1998 (Beresford, 2013b). The two of them were previously employed by a top consultant for many years gaining experience on a variety of projects in multidisciplinary environments within the UK and overseas (Structural Solutions, 2013a).

In December 2001 Structural Solutions became a private limited organisation with the two partners still having equal shares (Beresford, 2013b). Since then, Structural Solutions have been involved in a huge variety of structures in almost every form of construction, new build and refurbishment projects. The number of permanent employees has varied, including the two partners and admin staff, between four and nine at the peak during 2008 and 2009. In moments where the volume of work has been/is bigger than the capacity, Structural Solutions employs external consultants, which explains the variation between turnover and number of staff on Figure 5-3 (Ibid). Currently there are seven employees and due to a greater demand of their services they are currently looking to hire another engineer (Beresford, 2013a).

Structural Solutions only work on buildings structures, and they generally do about 30 projects a month which make about 300-400 projects a year with an average fee of £1,000 per project (Beresford, 2013a). Figure 5-3 shows the historical evolution of Structural Solutions turnover in £ thousands against total number of employees, including directors (Beresford, 2013b). The turnover per employee in 2012 was £48,570, while in 2011 this was £44,290.

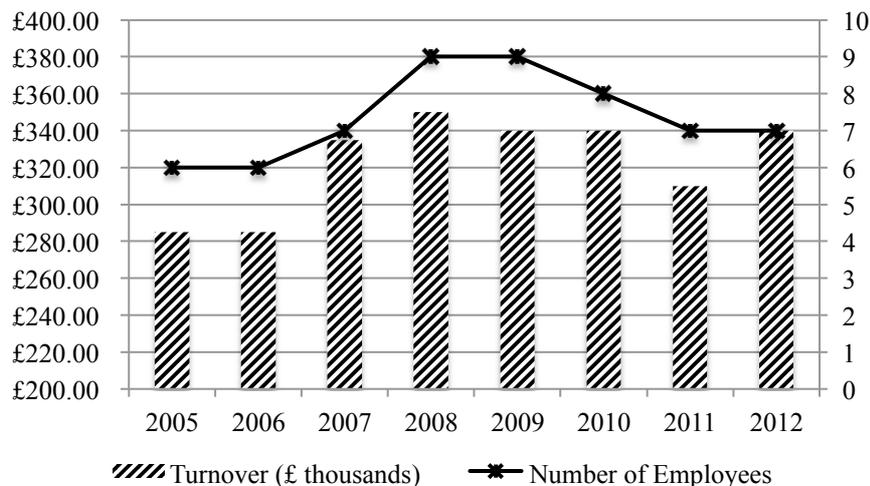


Figure 5-3. Structural Solutions historical evolution of turnover (£ thousands) and number of employees

5.3.2. Strategy

Structural Solutions do not have any written documentation regarding strategy; it is not a process Structural Solutions ever formally applied. The only formal business plan was done in 1995 when Peter Beresford set up the business (Beresford, 2013b). Being a small organisation the two directors have control about the project work and the future direction of the practice (Beresford, 2013a). Price et al (2003, p. 364) supports this position by remarking that most of small practices take an informal approach to strategy based on the vision of the owners. In their own words, “we simply discuss our business *strategy* and just keep on going!” (Beresford, 2013b). The strategic process is therefore emergent, continuous and informal with a focus in the operations as result of being a project based organisation. Regularly the partners discuss how *busy* they are or how much time they need from their employees (project resources) with an outlook of about two weeks (Beresford, 2013a). They also sense the environment through informal discussion using *gut-feeling*, e.g. how much demand they feel is out for their services (Ibid). The strategic planning is therefore based on their perception and the amount of work pressure Structural Solutions has each week. They do not quantify this with figures and do not document any of it, because it would just consume more of their time

The formality comes once a year when the directors meet their accountant to to discuss turnover and profits, and broadly how they feel about the previous year's performance and the current market situation (Beresford, 2013b). However, Structural Solutions do not record these meetings following any sort of formality except the profit and loss account (Beresford, 2013a). In addition to the annual review of profit and loss accounts, every two weeks an accountant prepares VAT documentation, invoice reviews, expenditures, etc. reporting to the directors the current state of the practice from a financial position. This information is used to know the level of invoicing and the available budget for extraordinary events (e.g. update of IT systems) (Ibid).

The two directors are in their fifties, and by mutual agreement plan to reduce their working hours to four days a week by 2016. This is a very specific goal attached to time, and in operational terms means that the office needs to start working more effectively without the two partners being around (Beresford, 2013a). The organisational structure is formed by two levels: at the top the two directors, being the engineers in a lower one with the administration staff supporting both. Consequently an intermediate goal is to recruit a senior engineer with managerial vision and additional skills to the partners (Beresford, 2013a). It is expected that the senior engineer will do the same sort of supervision and management of projects that the directors do now, to reduce their workload and begin liberalising the partners from day-to-day technical activities (Beresford, 2013c). This will also allow the practice to achieve another strategic goal: to win bigger projects (Beresford, 2013a). Ultimately, the main goal is to foster growth (Ibid), and Peter Beresford (2013a) thinks that the current economic situation is improving what is align with the goals of the practice.

In the short term and to facilitate growth, Structural Solutions also hopes to employ another new engineer in the first quarter of next year (Beresford, 2013c); the practice will also need to move to larger office (Beresford, 2013a). Hence there is not formalised strategic planning documented, the informal detailed plan and the interlinked strategic goals provide the future direction towards where Structural Solution would like to position themselves. Ultimately, the directors' long term goal is either to sell the practice or to keep a financial interest on it but stepping aside from the day-to-day

engineering in the next ten years. Either way, the directors need to get the practice running by itself with little routine input from them while there is an increase of the current value of the practice (Beresford, 2013c). It is acknowledge that the new direction will need of formalised processes in terms of staff training, delivery of works, hierarchy, capturing knowledge and win-work strategy (Beresford, 2013a).

Peter Beresford (2013a) understands strategic planning as how organisations play in their markets. This interpretation seems to be aligned with that of Fredrickson & Mitchell (1984, p. 400) that defines the strategic planning as the alignment between the internal structure/processes and the external environment. Structural Solutions do not have a formal strategic process as the workflow is continuous and there is no specific need to gain market share (Beresford, 2013a). However they think that more attention should be put on clients and strategic development but they do not have time as they are focus on structural design activities rather than strategic or managerial ones (Ibid). In his own words they are “too hands on” and do not have time to look at the bigger picture (Beresford, 2013b). In summary, Structural Solutions is using, without acknowledgement, an incremental strategic model which according to Mintzberg (1973, pp.46-47) should be used in unstable environments where these are too complex to understand as shown on Figure 5-4.

The informal and emergent nature of the decision making process coupled with the advantages of being a small organisation are exemplified in the way the practice undertook one of their main changes in the last years. During a technical review with one of the engineers, Peter Beresford realised that to open and navigate through documents employees were wasting an important amount of time. This simple observation was immediately discussed with Mark Mitchell and resulted in the prompt upgrade of the whole IT hardware systems (Beresford, 2013a). The speed of the decision making is also depicted in the way that new employees are hired. Recruitment interviews may happen on Thursday and the candidate will start on Monday if both partners agree (Ibid).

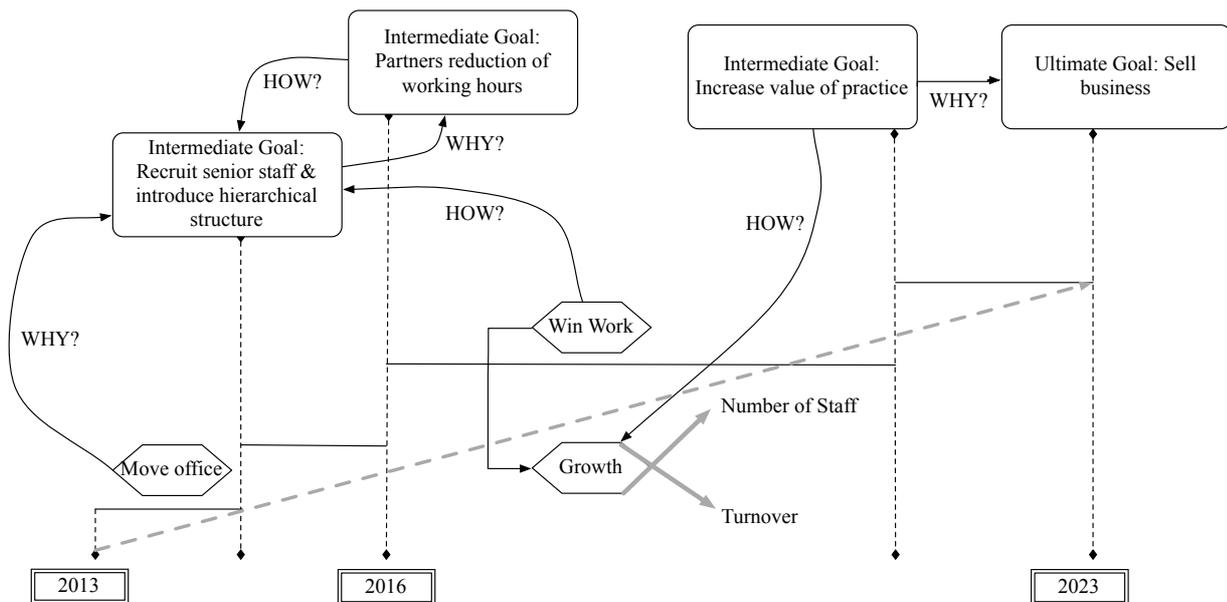


Figure 5-4. Interpretation by the authors about the Structural Solutions’ incremental plan to achieve strategic goals

5.3.3. Business Environment (PESTEL Analysis)

Despite the economic downturn in the last five years, Structural Solutions has “not changed significantly during this period neither in the type of jobs they do, the people they work with or in organisational terms” (Beresford, 2013a). The turnover figures confirm the stability of the practice. In 2009 and 2010 it was felt that getting jobs was tougher, and the practice leverage down its resources from permanent employees to external consultants to cover small periods of time where an increase in the workload was happening. Besides, the economic downturn also brought a redundancy phase where a couple of engineers lost their jobs (Beresford, 2013c).

Structural Solutions do not use any recognised tool, such as financial forecasts, budget plans, scanning or referencing to specialist magazines, in order to formulate their business path (Beresford, 2013a). Their strategic planning is therefore informal and emergent. Structural Solutions focused their activities in Bristol and surrounding areas; therefore the directors generally know what is going on through *word-of-mouth* (Ibid). Another informal tool that the partners use, related to their emergent approach, is to monitor casually the number of project enquiries and what type are these. These two methods, which have not changed in the last years, are the only ones employed to perceive the business environment and set up organisational direction.

The current business environment is for Peter Beresford (2013a) “improving steadily through a lens of conscious positivism”. There is still a level of uncertainty because clients are very worry among other things the cost of the project and this brings mixed feelings between opportunities and threats, which ultimately causes ambiguity (Ibid). Nevertheless things are improving although the changes are being very slow (Ibid).

PESTEL: Political Factors

Political factors do not have a critical impact on Structural Solutions (Beresford, 2013a). Structural Solutions does not take much work sponsored by governmental agencies. Indeed most of the schools that the practice has designed, and are presently designing, are funded by private charities (Ibid). These are generally obliged to spend their allocated budget before the financial year closes, pushing designers and contractor involved in their developments to streamline the work (Ibid). In contraposition, the UK government has reduced the expenditure in education affecting the construction sector.

PESTEL: Economical Factors

The practice is directly affected by the state of the economy (Beresford, 2013a). As an example, during the economic downturn the whole housing market was quiet, therefore less people moved houses, but the directors notice that there was a tendency by people to spend money in their houses they own by building extensions or making loft conversions. In better economic times, these types of jobs are less frequent as people tend to buy and move to bigger houses (Ibid). Hence Structural Solutions has benefit of this situation in comparison with larger competitors that do not undertake small design projects; however during the recession Structural Solutions was doing less substantial projects and more small projects, but when the economy is good, they get bigger projects and turn down smaller ones (Ibid). Before recession the practice was winning four out of five jobs, but during the downturn the ratio reduced to one third. This meant that Structural Solutions was forced to push down their fees in order to maintain

competitiveness (Ibid). Coupled with the improvement of the economic conditions, Structural Solutions is increasing their fees and they find that in bids for larger projects bigger engineering consultancy organisations undercut its own fee (Ibid).

PESTEL: Social Factors

Social factors do not have a significant impact on the practice except the difficulties to recruit new staff which is perceived as a threat to the aspirations of the organisation (Beresford, 2013a). Graduate engineers tend to go for big names; it is occasionally that someone prefers to work for local and small practices like Structural Solutions (Ibid). However during the recession the practice receive many enquiries from good and experience quality engineers and they were able to hire graduates with honour degrees; nevertheless this tendency is changing again to pre-crisis times (Ibid). To overcome this challenge the directors have strategically decided to employ a recruitment agency that looks for and filters candidates that match the needs of Structural Solutions, rather than waiting for speculative applications. This is aligned with the desire for future growth as the practice wants to ensure that any new engineer has the potential to become senior, leading and supervising others (Ibid).

PESTEL: Technological Factors

Not major impact in the last years (Beresford, 2013a). The organisation is aware of the new technologies and possibilities that these offer (Ibid). The directors consider that at the current cost for Structural Solutions some software like BIM does not provide any benefit, mainly because the projects are small and modelling in 2D is sufficient (Ibid). The practice however is monitoring the trends and new technological developments that may improve their efficiency (Ibid).

PESTEL: Ecological Factors

These do not have a recognised impact on the practice (Beresford, 2013a)

PESTEL: Legal Factors

For a small organisation some legal factors have a significant effect in terms of time. For instance, the CDM (Construction Design and Management: the Regulations place duties on all those who can contribute to the health and safety of a construction project (CDM, 2013) are very time consuming for engineers as each project needs to carry out a risk assessment according to UK regulations (Beresford, 2013a). Also BREEAM is considered by Structural Solutions tedious and generally a “wasted time” (Ibid). The change of engineering structural codes from British Standards to Eurocodes in March 2010 was a headache; although software mitigated the transition coupled with intensive training to learn about the new standards (Ibid).

5.3.4. Knowledge and Capabilities

There are no prescribed mechanisms to capture knowledge within the practice (Beresford, 2013a). Nevertheless the directors would like to introduce in the upcoming months a series of regular set meetings to discuss with all employees technical and non-technical issues covering lessons learned, achievements, organisational performance, etc. The main reason that explains why meetings are not happening is the lack of free

time to conduct these (Ibid). However the practice is founded on a transparency policy and when issues pop-up, these are discussed openly and in an emergent way between the whole team. Additionally the skills of the directors are passed on daily basis to engineers because the directors are involved intensely in the design process (Ibid). Training is also conducted informally without a clear path for engineers to achieve chartered status, although the directors encourage employees to attend seminars, technical talks, etc. In addition, the staff is sent regularly to training courses to improve technical competences (Ibid).

Peter Beresford (2013a) does not believe that the in a holistic sense the practice needs new capabilities, because their usual projects match their skill and vice versa. But he does think that the new recruitments, mainly the senior engineer position, need to have a set of skills different to the partners to counterbalance the practice, offer a new perspective and broaden their appeal.

5.3.5. Winning Work

So far Structural Solutions has taken a passive approach regarding winning work, as a result of a very solid client base that guarantees a continuous work flow achieved through delivering high quality design and personal long term relationships (Beresford, 2013a). The projects just come although the practice needs to be competitive even with their regular clients (Ibid). Structural Solutions do not carry any marketing activities with the exception of their website, where they advertise their services, potentially win work from potential clients or recruit new staff (Ibid). Nevertheless, the two partners think that the present is a good moment for the practice to grow, be more proactive and strategic. For doing this they are aiming to market themselves more positively, although there are not yet formalised plans about how to achieve this (Ibid). In this regard, one of the options is to increase the networking activities, something that has not been done proactively until this moment. Secondly they are taking the recruitment process more rigorously as they realise that employees are assets to the practice.

Structural Solutions feel that the market is once again improving slowly. In addition, they think that compared to five years ago, big contractors are now willing to work with small practices (Beresford, 2013a). Peter Beresford (2013a) concludes that contractors started to cut costs during the economic downturn and realised that small practices provide very specific and specialised knowledge for a reasonable fee, in comparison with larger organisations that may provide a more generalist expertise for a higher fee (the result of generally larger fixed costs).

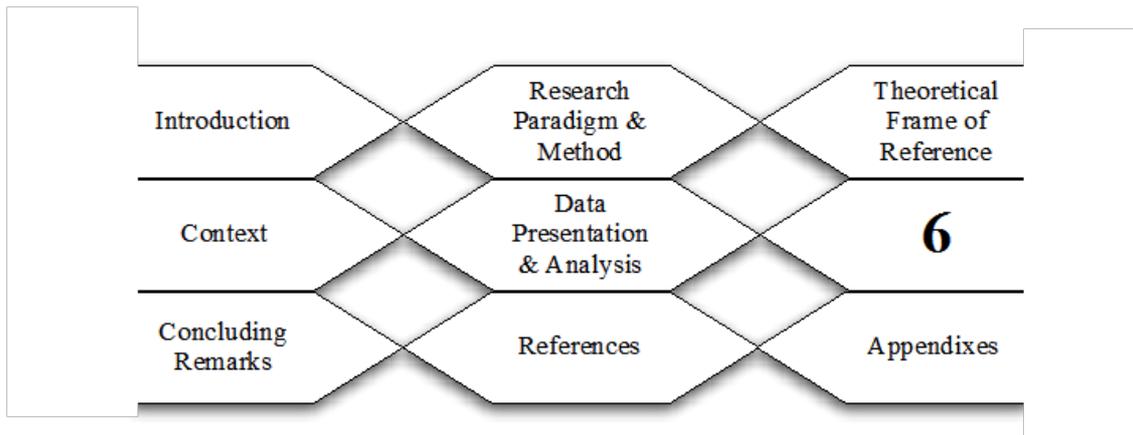
The competitive advantage of Structural Solutions is not fixed to a single strategy but a combination of two: cost and differentiation. In a potential tender with other larger players in the same pool, Structural Solutions offers a competitive and, general, lower price; but at the same time they offer high expertise with hands-on in the project (Beresford, 2013a). Larger organisations generally offer senior expertise at the front end (relationships with clients), managing the project from an administrative and control point of view, and technically through periodic reviews but not daily involvement. The source of differentiation at Structural Solutions, is that the two directors deliver on a daily basis their expertise (25 years in engineering) to all their projects, same as a large organisation but more personalised. Additionally when

competing with similar size organisations, their main competitive advantage is their speciality in timber structures (Beresford, 2013a).

5.3.6. Projects

Partners discussed the pipeline of jobs every one or two weeks and assign these to engineers depending on skills, interests, etc. Engineers then, under the supervision of the directors, carry on the design and close out projects by sending invoices to clients (Beresford, 2013a). Salaries are increased not in relation to total man-hours but amount of invoiced projects. The outlook in terms of projects is around four to six weeks, but the projects come so steadily that this is not perceived as a threat (Ibid).

Face to face relationships with clients, architects or other design team consultants have been until now conducted by the partners, with some exceptions, while engineers do the back office work. Now the directors would like to change this and empower employees to take more ownership of the projects, clients and the practice as a whole (Ibid). The directors envisage two actions in this regard. First, increasing their current engineers responsibilities, so they will be managing junior engineers in time. Second, their steady clients are very much there because of the up-front contact with the directors, so they have to hand over most of that contact to others within the practice and seek out new and better clients themselves. (Beresford, 2013c).



Discussion

Based on the findings presented through the individual cases on the previous section, this chapter aims to provide a cross-case discussion, and overview of the differences and similarities of the three organisations under investigation. The discussion is presented through matrixes, also by graphical means. The cross-case discussion is built around the framework shown on Figure 6-1.

The organisations investigated on this research are subjected to environmental conditions. Organisations cannot be understood without the socio-politico-economical-technological-ecological-legal context; although organisations interpret the same environmental information in different ways acting in various manners (Daft & Macintosh, 1981, p. 211).

It is proposed to discuss the impact of the general environment, which is nowadays characterised by volatility, uncertainty, complexity and ambiguity, at two levels: strategic decisions (content) and strategic process. The strategic decisions are embedded into the strategic process. Ultimately all the decisions taken by any organisation feed back into the environment where they operate. This last step is outside of the scope of this research.

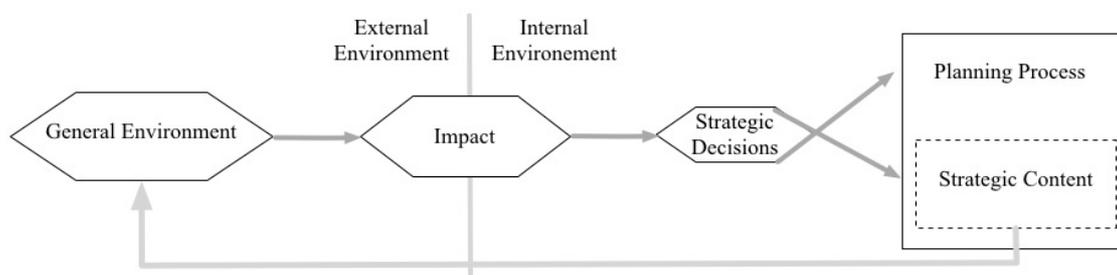


Figure 6-1. Framework used to discuss the impact of the general environment upon strategic decisions

6. 1. PESTEL and impact on strategic decisions

6.1.1. Political factors

The cuts in public spending at national and international levels as result of the 2007-08 economic crisis had a negative impact on the three participant organisations, although the degree of severity varies accordingly to the size of each organisation. On this sense, Baark (1999, p. 61) claims that decline or expansion of public spending on infrastructure are important in the demand for engineering consultancy services. The impact has been on a decrease of project opportunities, with side effects like staff redundancies. For Buro Happold the reduction of public fund projects supposed a period of uncertainty as the practice works worldwide for governmental agencies. Project opportunities were also lost as result of the turbulence of the Arab Spring, a series of demonstrations and protests in countries such as Lybia, Egypt, Bahrain or Syria. In addition Buro Happold not only lost projects which did not materialised into opportunities, but some of the projects on which they were working stopped causing significant financial losses.

Engineering projects can stop at any time. It is one of the main risks for project based organisations and creates uncertainty to employees and directors, as remarked by Paul Grimes (2013a). That uncertainty may come from the general or the task environment, but in any case the unpredictability of projects reduces the possibility for engineering consultancy organisations to develop long term plans as explained by Løwendahl, (2005, p.101). The uncertainty is also increased when considered that projects are sometimes difficult to predict in terms of end results which may affect the reputation of the organisation, and ultimately the envisage strategy.

For Structural Solutions, the political implications are minimal as they do not carry much work sponsored by government (Beresford, 2013a), while Engenuiti is not particularly keen to take public related projects because often these projects are about “low cost fees” (Grimes 2013a). Other political factors such as regulation and de-regulation trends or tax policy where not mention by the participant organisations.

In summary, political issues create contextual complexity and are outside of the power of influence of organisations (Vasconcelos & Ramirez, 2011, p. 239), secondly political issued cannot be understood in isolation from economic conditions and legal arrangements. Organisations should monitor political events closely, while developing contingency plans or carry exhaustive modelling of scenarios to predict future outcomes (pro-active approach). This is however not simple. Organisations generally react to political issues in a reactive mode mainly because the events are outside of control by the organisations. The events tend to create uncertainty until the organisations re-adjust to the new conditions. Political factors have an impact on strategy if, first the issues are continuous over time rather than discontinuous or applicable to a short period of time. Second if these occur where the organisations have a more solid market position. As an example if the events developed in Egypt during the Arab Spring would have occurred in Saudi Arabia, where Buro Happold (2013k) has maintained a steady and growing presence for the past 30 years, surely this would have had strategic consequences for the practice. Third if a consultancy engineering organisation carries a significant amount of work from a single governmental agency and this is subjected to changes (e.g. stop of BSF programme), the stability of the consultant and its strategy may be significantly

affected. This is the risk, as highlighted by Grimes (2013a), about dependency for project work on single clients. Moreover, the larger is the spread of an organisation in terms of geographical reach the bigger the implications of political factors into the organisation, as the spread is coupled with a wider range of stakeholders, local government policies and events to monitor: large organisations are not immune to political issues (Cook, 2013).

Table 6-1. Summary of the political issues, and impacts on organisations

Organisation	Political Issues	Organisational Impact
<i>Buro Happold</i>	→ Exposed to political factors at local, national & international level	→ Less affected in the building sector & more in infrastructure projects
	→ UK cuts in public spending (e.g. BSF programme)	→ Uncertainty & pressure on their UK operations on stopped projects
	→ Instability & volatility in the Middle East & North Africa	→ Projects stopped causing financial lost
<i>Engenuiti</i>	→ UK cuts in public spending (e.g. BSF programme)	→ Negative effect on work stream → No further interest on public work
	→ Change of government in Georgia (October 2013)	→ Difficult to predict. May have consequences in some relationships & prospects developed
<i>Structural Solutions</i>	→ UK cuts in public spending (e.g. BSF programme)	→ Not much work carried out is sponsored by governmental agencies

6.1.2. Economical factors

It is not coincidence that the economical factors are for the participant organisations the ones that have had a bigger impact in strategic terms. The last five years have had the economic crisis of 2007-08 as main focus for countries, organisations and individuals. No other crisis resulted in such extreme fluctuations in almost all core economic and financial indicators as this one (McKinsey Germany, 2010, p. 5) due to the scale, scope and extent Lynch et al. (2012, p. 145). Murphy (2013, p. 153) asserts that the macroeconomic environment of the construction industry is highly affected by government policy, inflation, interest rates and regulation. This creates a large degree of uncertainty and by extension of ambiguity and volatility. In such business environment the ability to strategically adapt is critical in order to survive Lynch et al. (2012, p. 145).

Buro Happold used the financial crisis of 2007-08 to re-shape the organisation, tightening the control at the same time. This was done at the two levels under examination. First they changed the strategic process towards the planning school gaining formality features. Murphy (2013, p. 153) suggests that the higher the environmental uncertainty the higher the formality of the strategic planning process. This seems to be the case for Buro Happold. Second, they deployed a tactical plan in order to remain competitive and survive the imperatives of the global economic turbulence. The tactical plan was articulated through a set of measures at operational level regarding knowledge sharing, win work initiatives and project schemes. For

Eisenhardt (1989, p. 565) organisations are more successful if organisations integrate their strategic decisions.

In the words of Mike Cook (2013), “there is nothing like a crisis to make people willing to change”. Some theorists consider that the performance of organisations is intimately linked to the ability of these to deal with the environmental volatility (Snyder & Glueck, 1982, p.185) since turbulent times requires change and adaptation (Gioia et al., 2012, p. 364). In this sense Buro Happold was following some of the key points stated on the *Never Waste a Good Crisis Report* (Wolstenholme, 2009) like strengthening the business models and leadership (e.g. appointment of new CEO) through an array of strategic decisions. But in any case and as remarked by Mike Cook (2013) the changes that Buro Happold incurred in the last years raised from the imperative to survive and adapt to the conditions imposed by the general environment. This statement is aligned with the positions by Camillus (2011, p. 306) and Lynch et al. (2012, p.146): falling to adapt leads to decline.

Another strategic change was the need to reduce staff; the same situation was shared by Structural Solutions. In both cases this issue was considered the only alternative, which eliminates the possibility of calling it decision making process (Cook, 2013a) as there were no alternative scenarios. The redundancy of staff occurred as result of the cut expenditure policies applied by governments worldwide, and the difficulties that developers where having to access credit (Grimes, 2013a). These two events, created a reduction of the pipeline jobs affecting employed staff. Redundancies have been one of the business decisions that the industry as a whole has taken to counteract the decline in the work stream (NCE Consultants File, 2013, p. 4).

On the other side of the spectrum is Engenuiti, which was deliberately established during the recession peak. Paul Grimes (2013a) asserts that there is not best moment to establish an organisation that during economic downturns, because these allow you to hire some of the talented and trained people that other consultancy organisations are simultaneously firing. This was a strategic decision that has helped Engenuiti to grow strong to 22 employees in about four years.

For Structural Solutions the economic crisis also supposed the need of reducing their fees in an ecosystem highly competitive, what leads to transactional complexity (Vasconcelos & Ramirez, 2011, p. 236) as the environment is shaped by other organisations’ actions influence (Brandenburger & Nalebuff, 1995, p. 59). Vargo & Seville (2011, p. 5620) suggest that small organisations are highly vulnerable to economic crisis periods as they have limited resources, also because they feel particularly squeeze due to the diversified activities of larger competitors (ACE, 2012, p. 11), and additionally because larger players sometimes undercut fees (Beresford, 2013a). Likewise they have the advantage to respond faster to environmental changes (Vargo & Seville 2011, p. 5620) in comparison with larger organisations that, for instance, in redundancy periods may engage in consultation periods with staff extending uncertainty and ambiguity in the operations of the organisations. This seems to be the case with Structural Solutions: they reacted fast to the macro-economic changes and the result is that in their own words “we have no changed significantly in this period neither in the type of jobs we do, the people we work with or in organisational terms (Beresford, 2013a). Therefore impacts of the general environment are mitigated either by being pro-active and anticipate to the upcoming changes, or by reacting fast and

putting measures in place before the environment creates chaotic situations upon organisations.

Another particular issue of the challenging economic conditions for the three organisations under investigation has been and is the management of cash flow. The Department of Business Innovation & Skills (2013, p. vii) also highlighted recently that for construction business late payments are a particular problem: organisations rely on credits to smooth cash flow during the period between carry on the work and receiving payment. This is particularly an issue for small and medium organisations, although the researchers do not have evidence to support or contradict such statement. Buro Happold, specifically articulated the importance of balancing the cash flow in its tactical plan for the year 2012-13 (Westbury, 2011). In any case the consultancy engineering practices are nowadays paying more attention to cash flow (NCE Consultants File, 2013, p. 4); including the three participant organisations. This is achieved by close monitoring of balance sheet, amount of raised invoices, etc. and indirectly by balancing their accounts through cost cutting measures.

At present the economic conditions are improving, although there is still a high degree of volatility, uncertainty and ambiguity, and it is need to interpret the economic recovery through a “lens of conscious positivism” (Beresford, 2013a). This statement has also been remarked by Mike Cook and Paul Grimes, and it is aligned with the position of governmental bodies (Department for Business Innovation and Skills, 2013, p. v) and economic institutes (Emmerson et al., 2013, p. 23). The three organisations are already reacting to the changes in the economic sphere. For instance, Engenuiti and Structural Solutions are increasing their fees (Grimes, 2013a; Beresford, 2013a); which is contrary to the position of NCE Consultant Files (2013, p. 4) that states that fee levels are flat. However, Engenuiti and Structural Solutions have both highlighted that the best way to scan the environment is by *word-of-mouth* as these method is always ahead of the formal intelligence. This method is supported by Courtney et al. (1997, p. 79), traditional strategy formulation has been ejected on the believe that applying formal analytical tools, management can predict the future in order to provide strategic direction; however in unstable times there is no formal methods that helps to predict the future. Another sign of the improvement of the economic conditions is that engineering consultancy organisations start to be appointed earlier which is helping them to have a longer planning outlook.

For small organisations, the perception of their environment is critical to influence their attitude towards growth; additionally in this development small organisations must leave their comfort zones regarding network and clients and interact with other actors (Stone & Brush, 1996, p. 635). Structural Solutions is using their perception of the current economic conditions of the general environment, along with the age constraint of the partners, to foster organisational growth through incremental steps (Mintzberg, 1973; Quinn, 1980) as already shown on Figure 5-4.

In the case of Buro Happold, the juxtaposition of adaptability to the environmental conditions and planning (Vargo & Seville 2011, p. 5619) are helping the practice to grow again. The practice has taken multiple decisions to place knowledge sharing as core in the business development of the organisation in alignment with the thoughts of Kakabadse, (2006, p. 419), Williamson (1999, p.117) and Kim & Mauborgne (2004, p. 81) whom suggests that future opportunities are created by continuously improvement and development of new capabilities integrated within the strategic planning process.

Also with the view of De Geus (1988, p.71) who states that is vital for organisations to look into internal capabilities that could be improved in order to remain competitive.

Engenuti has growth in challenging times and is currently taking advantage of the improvement of the economic conditions. Although formality of the strategic plan has not been introduced until recently to “avoid routinisation, rigid formal structures, and predesigned activities that might reduce responsiveness and innovation” (Løwendahl, 2005, p. 76); the management is introducing the first signs of formality and taking the strategic planning seriously by forecasting different scenarios. This thoughtful analysis is understood by Miller & Friesen (1983, pp. 230-231) as needed to remain viable and healthy in this dynamic and ambiguous world (Korman, 1971, p. 339). Engenuti is in the first stage of long term planning (Grant, 2003, p. 491; Porter, 1983, p. 172) which is used to control growth when organisations become more complex and try to deal with rapid change (Drucker, 1959, pp. 241-242; Collis & Montgomery, 1995, p.118). In this regard, Paul Grimes (2013a) stresses that “things are changing faster and faster and the opportunities are there for those that adapt quickly to the changes”. Additionally they seem to take a *compass* approach (Hayes 1985, pp. 114, 118). The *compass* provides a sense of direction giving opportunity to adapt to environmental issues.

Table 6-2 provides a summary of the impact on the organisations arising from economical factors

Organisation	Economical Issues	Organisational Impact
<i>Buro Happold</i>	→ Global financial crisis 2007-08	→ Strategic process gains formality → Development of Tactical plan 2011-14 → Practice had difficulties with liquidity → Redundancy of staff. Organisational shrinkage → Substantial risk management & rigorous commercial structure introduced
	→ Improvement of economic conditions Nov. 2013	→ More selective in new work, this must be aligned with strategy → Setup Contract & Commercial Executive group → Opening new offices overseas → Value relationships beyond immediate environment of clients (e.g. Venice) → Helping clients to establish in new markets and sectors → Improved development review process to ensure individual tailor training → Launch of Global Integration & Quality Summit → Establishment of Quality, Talent & Integration program → Emphasis on Regional Disciplines Reviews → Review of standard peer project → Re-energisation of Directors Design Reviews

Organisation	Economical Issues	Organisational Impact
<i>Engenuiti</i>	→ Global financial crisis 2007-08	→ Organisation was setup during recession peak in 2009-10
		→ Excellent moment to hire very talented people that lost their jobs
		→ Developers had difficulties to access credit. Some projects did not materialised at all
	→ Improvement of economic conditions Nov. 2013	→ Development of strategic plan
		→ Increase of fees
		→ Starting to be appointed earlier. Working on larger projects
<i>Structural Solutions (SS)</i>	→ Global financial crisis 2007-08	→ Appointment on larger projects
		→ Insurance premiums are up
		→ Development of new capabilities depending on opportunities
	→ Improvement of economic conditions Nov. 2013	→ Tighter fees in order to remain competitive
		→ Redundancy of permanent staff. Leverage with contract staff
		→ Quiet housing market. Beneficial in comparison to larger competitors; practice did less substantial projects
		→ Foster organisational growth through strategic plan
		→ Marketing more positively
		→ Increase of fees
		→ Big contractors willing to work with small practices such as SS

6.1.3. Social factors

Social factors cannot be understood in isolation from economic and political factors (Yüksel, 2012, p. 58). Changes in lifestyle patterns, media perceptions, religious differences or attitudes towards issues such as corporate responsibility or education; all have direct or indirect implications on organisations. However, none of the organisations on this research mentioned the above factors as having an effect on their strategic decisions. For practices with an international outlook, the increased of population is a source of project opportunities. Already Buro Happold has taken advantage of this, and has expanded its operations into the Asia-Pacific region which has also benefited of favourable economic conditions. This expansion seems to continue by opening new offices (Cook, 2013). Engenuiti also, perceives population growth as source of opportunities although they do not have specific strategic goals in this regard.

Global competition is stressed by theorist as origin of volatility (Reeves & Love, 2012, p.3) because strategies and business plans become obsolete very quickly (Reeves & Deimler, 2011, p. 139). For the UK engineering consultancy organisations globalisation along with technology spread at low cost is source of threat because in developing

countries, engineering consultancy organisations are able to provide services by a fraction of the cost of UK services. Within this rapidly changing setting, engineering practices need to position themselves in order to win work (Winch & Schneider, 1993, p. 928) and differentiate themselves from competitors at national and international levels. Buro Happold bases its competitive advantage by offering a holistic and comprehensive engineering service that is more valuable than competitor's services, the extra value of the service justifies higher prices (Warszawski, 1996, p. 138). Moreover Buro Happold also offers strong experience and strong ideas because of their reputation to deliver original ideas (Winch & Schneider, 1993, p. 930). Engenuiti, on the other hand, offers a focus strategy based on a narrow segment of the market (mainly structural engineering) and is able to gain a better knowledge of its clients' needs gaining value advantage (Ibid, p. 139). Paul Grimes (2013b) states that for Engenuiti winning work is about identification of clients' needs. Furthermore, Engenuiti also offers strong ideas and experience because of the specialisation of service (Winch & Schneider, 1993, p. 931). Structural Solutions also offers a high specialised service (only structural engineering) and strong knowledge; besides Structural Solutions has primarily a cost focus competitive advantage in conjunction with strong relationships of the local market where they trade. Nandakumar et al. (2010, p. 907) propose that in volatile and ambiguous environments cost leadership strategies helps to improve financial performance which can be confirmed when the stable turnover figures of Structural Solutions are analysed (refer to Figure 5-3).

Another common point linked to the possibilities to win work, is that Buro Happold and Engenuiti are based on London which offers an excellent position to attract international clients (Grimes, 2013a). In this regard, London attempts to wean itself from its dependency on financial services, being the consultancy engineering sector one of a number that are expanding to fill the gap (NLA, 2013). Therefore, inherently both practices benefit from its location to potentially win work.

Both practices recognise complexity as differentiator factor in order to win work. The views of Paul Grimes and Paul Westbury are that the solution to deal with complexity is to impose simplicity; this position is one of the two extremes that it was discussed during the Complexity Conference in Vienna November 2013 (Schumpeter, 2013, p. 67). The other extreme is that complexity cannot be simplified without losing meaning (Richardson et al., 2001, p. 8) but this view seems more abstract and philosophical, while the directors' stand is more pragmatic. In any case, this ability to win work is intrinsic to the nature of organisations and not specific plans are attached to effectively transform those potential opportunities into projects.

In a competitive environment staff is the most important resource (Warszawski, 1996, p. 136), and recruitment is an important issue for the small and micro-small practices, because talented professionals prefer to work for large organisations like Buro Happold (Beresford, 2013). For Buro Happold recruitment is less of a problem. The practice has built a reputation that helps hiring top students as suggested by (Greenwood et al., 2006, p. 663) and confirmed by Beresford (2013a). During the recession time, Engenuiti and Structural Solutions benefited of hiring skilled people that lost their jobs in medium and large practices; but with an economy that is steadily improving, recruitment is a threat for the strategic goals related to growth. Another point related to recruitment in a broader sense, it is the UK shortage of engineers (BBC, 2013). Project opportunities in construction mean that flexible and skilled workforce is essential to the UK engineering sector's future competitiveness and performance (Department of Business Innovation &

Skills, 2013, p. vi). Recently the UK government launched a campaign called Tomorrow's Engineers (2013) to attract youngsters to take engineering degrees. In this context, the three organisations have relied on inward economic migration to fill skilled jobs in engineering (BBC, 2013) while at the same time create multicultural work environments which provide substantial benefits: improved competitive advantage and higher productivity (D'Netto & Sohal, 1999, p. 544). To counterbalance the recruitment issues, the three practices promote training in both, formal and informal ways with more or less structure, and aim to nurture talent from the graduate levels to senior positions. The consultancy engineering organisations are therefore forced to attract, retain and motivate staff (Greenwood et al., 2006, p. 663) but due to the uncertainty of the economic conditions there are still concerns about staff retention (ACE, 2012, p. 11).

Social factors also increase the contextual complexity of organisations (Vasconcelos & Ramirez, 2011, p. 239) and do have a significant impact on strategic decisions. Some of them are direct (e.g. recruitment), others are indirect (e.g. higher productivity) and others are intrinsic to the business models of the practices (e.g. strategic differentiation). In any case, for larger players social factors do not seem to be disruptive but steadily during the last years (Cook, 2013). For small organisations the changes in the social arena have a larger impact as they have fewer resources to compete against larger players, in particular related to issues of recruitment. Globalisation is considered as a threat for UK organisations, and they have counteracted this by having business models which are generally based on creativity and problem solving attitude to complex problems. The organisations with a more local outlook are to certain extend more insulated from the effects (positive and negative) of globalisation and global demographic issues.

Table 6-3 summarises the social issues that have a strategic impact on the organisations under investigation

Organisation	Social Issues	Organisational Impact
<i>Buro Happold</i>	→ Demographics. Population increment	→ Development of Asia-Pacific region business
	→ Globalisation	→ Partnering with niche technical services
	→ Complexity	→ Strategic selling point: transform complexity into simplicity
<i>Engenuiti</i>	→ Economic migration	→ Diversity in the workforce & possibility of attracting global clients
	→ Globalisation	→ Threat. People around the world offer their consultancy services for a lower cost. Engenuiti offers a much higher value via thinking & design approach
	→ Knowledge economy	→ Acknowledged. Unknown impact
	→ Demographics. Lack of engineers (Recruitment Nov. 2013)	→ Difficulties to recruit people with certain characteristics. Potentially a threat to the organisational aspirations. Nurture talent
	→ Lower education standards of UK/European students against Asian ones	→ Impact on the long term future. Difficult to quantify it nowadays. Nurture talent
	→ Complexity	→ Strategic selling point: transform complexity into simplicity
<i>Structural Solutions</i>	→ Demographics. Lack of engineers (Recruitment during recession)	→ Talented people hired
	→ Demographics. Lack of engineers (Recruitment Nov. 2013)	→ Threat to the aspirations of the organisation. Appointment of recruitment agency
		→ New recruitments to have set of skills to counterbalance practice

6.1.4. Technological factors

The spread of video communication technologies at a low price has been used for Buro Happold and Engenuiti to established outsourcing frameworks and partnerships with lower cost centres. On the view of Vasconcelos & Ramirez (2011, p. 238), organisations facing high complex environments “should outsource non-core activities and concentrate their resources on the most important ones”. Already in 1999, Baark (p. 67) identified video-conferencing as a trend that allows designers located in different countries to discuss design simultaneously. Both organisations are established in the premium market of engineering consultancy and are hired for their approach to design from a creative lens; however for the analysis and design of standard elements, engineers in countries like Georgia offer a more economical service, which can be easily outsourced. This strategic movement is done with the aim of increasing profitability (Westbury, 2011) and avoid recruiting permanent staff while keeping

quality control of the projects (Grimes, 2013a). But not only IT technologies are used for outsourcing purposes, these also allow real time collaboration between the staff bringing closer all the offices while offsetting the cost of travelling (Cook, 2013). On the other hand, outsourcing increases the risks as the internal complexity of the organisation also increases (Hanseth, 2007, p.5; Vasconcelos & Ramirez, 2011, p. 236).

Building Modelling Information (BIM) technologies offer mixed views for the participant organisations. Structural Solutions perceives it as expensive and not suiting their business model (taking on this non-decision a strategic decision). Buro Happold remarks that 3D technologies are not a differentiator factor but a must to embrace. For Buro Happold also the spread of technology has signified an increase of competition that is being translated into a reduction of fees. It is Engenuiti the ones that distinguishes it as a differentiator factor, and it is tacitly pivotal to their strategy to approach and win projects.

In general, the adaptation of technology by engineering consultancy organisations with international aspirations is critical to acquire or maintain a competitive strategy (Baark, 1999, p. 57). Grimes (2013a) remarks that technology has closed the gap between small and large organisations regarding capabilities and possibilities to unlock complex projects. This position is shared by Meredith (1987, p. 257) that indicates that “smaller organisations seem better able to capitalise on their benefits” although they need a commitment in terms of capital requirements. High cost is one of the causes highlighted by Beresford (2013a) to avoid the use of 3D modelling. In addition for a micro-organisation like Structural Solutions, or those with relatively local operations, the use of specific technologies do not seem to bring any competitive advantage; although is important to be aware of them and the possibilities they offer (Beresford, 2013a).

Table 6.4. Technological issues and organisational impact on the tree practices under investigation

Organisation	Technological Issues	Organisational Impact
<i>Buro Happold</i>	→ Spread of video communication technology	→ IT investment required at front to save up to £3M annually afterwards → Established a central global outsourcing framework with lower cost
	→ Computer aided design (CAD) Technologies	→ Not a differentiation, but the only option for organisations to be up to the best
	→ Building Modelling Information (BIM) & 3D modelling	→ Fees are now lower than what they used to be
<i>Engenuiti</i>	→ Spread of video communication technology	→ Outsourcing helps to deliver repetitive design work more efficiently → Possibility to outsource without the need of add permanent staff while keeping quality control
	→ Building Modelling Information (BIM) & 3D modelling	→ Used as differentiator factor against competitors → Unlocks design of complex projects
	→ Continuous changes in technology	→ For small organisations the cost of technology is the same nowadays than for a large one: differences have been reduced
<i>Structural Solutions</i>	→ Building Modelling Information (BIM) & 3D modelling	→ None. 3D modelling is expensive Modelling in 2D is sufficient

6.1.5. Ecological factors

Environmental knowledge is for Buro Happold a pivotal aspect in the development of their Asian market with about 50% growth accountable for their expertise in sustainability (Cook, 2013). This implication is aligned with the view by Levy et al. (2000, p. 67) and Mason (2011, p.11) that remarks that the environment is not only influenced by external factors, also by the organisations that conforms it. Buro Happold shapes the general environment regarding ecological factors by promoting a conscious and sustainable build environment.

The three participant organisations have been directly unable to highlight impacts of ecological factors in their strategic decisions. Nonetheless, Paul Grimes (2013a) mentions that the environmental agenda has taken a secondary status in the last years as the focus has been in the economic side. Focus on the economical aspect was also remarked by Mike Cook (2013a) as the focal point of the last three to four years. Wolstenholme (2009, p.25) supports these views: “in the middle of an economic downturn, organisations are more interested in survival – saving cash – and looking for

returns on their investment decisions”. This may explain why the environmental factors have not had significant implications for the participant organisations.

Table 6-5 recaps the ecological issues remarked by the engineering consultancy organisations and their impact

Organisation	Ecological Issues	Organisational Impact
<i>Buro Happold</i>	→ Environmental awareness	→ Sustainable design used to attract clients & win work. About 50% of the growth in China & India may be attributed to ability to sell environmental awareness
<i>Engenuiti</i>	→ Shift of agenda from economic focus (e.g. business survival) to environmental one	→ Uncertainty about this change may bring for the practice in both forms: threats or opportunities
	→ Environmental factors are source of ambiguity	→ Codification & operationalisation of terms by means of checklists, etc.
<i>Structural Solutions</i>	-	-

6.1.6. Legal factors

Legal factors seem to have a bigger effect on more small organisations rather than large ones. Although large organisations are exposed to more legal constraints as result of the variety of sectors and regions where they operate; simultaneously they have more resources to deal with them.

The introduction of structural Eurocodes in March 2010 was a *headache* for Structural Solutions, as described by Peter Beresford (2013a); however for Engeunity, Eurocodes suppose an opportunity while working on overseas projects. Wilkinson (2010, p.20) states that the approach of small to medium sized practices in the application of Eurocodes varies considerably between two extremes: hindrance or an opportunity, which seems to be the case exposed on this research. Grimes (2013a) suggests that for big and international organisations Eurocodes has not a been a big issue as they are used to design on international codes of practices; while for small organisations, which they are not used to, this has been an important aspect. For small organisations, with limited resources, legal factors increase the workload without adding value to their services.

Table 6-6. Strategic decisions taken by the organisations as result of legal issues

Organisation	Legal Issues	Organisational Impact
<i>Buro Happold</i>	→ Anti-Bribery UK Law	→ Provided training for staff
<i>Engenuiti</i>	→ Introduction of structural Eurocodes in March 2010	→ Taken advantage. Pushing for their use in foreign countries (e.g. Georgia) without need to learn local codes
<i>Structural Solutions</i>	→ Introduction of structural Eurocodes in March 2010	→ <i>Headache</i> . Mitigated through software & intensive training to learn about new standards
	→ Construction Design & Management Regulations	→ Very time consuming when working on small projects being CDM mandatory

6.2. Strategic process in comparison

The business environment has a significant impact on the strategic decisions within the organisations under examination. According to Johnson et al. (2008, p. 22) and Cummings & Daellenbach (2009, p. 239) strategic decisions concern two main streams: strategic content (decisions per se) and decisions that generate change on the planning process, both impacted by the business environment (refer to Figure 6-2). Strategic content decisions are taken by the organisation through a process embedded in their strategic planning. Each organisation has an innate strategic planning process independently of size, structure, formality or employee engagement; which through time may or not change in order to coexist with their business environment. The strategic decisions regarding planning lead the organisations' into following a process that conveys what is the adequate way to formulate direction and generate decisions accordingly to their business environment influence. Moreover Dutton & Duncan (1987, p. 115) elaborate on this by claiming that the planning process is the agenda that revise and evaluates the business environment, to identify the potential impact and accordingly formulate decisions.

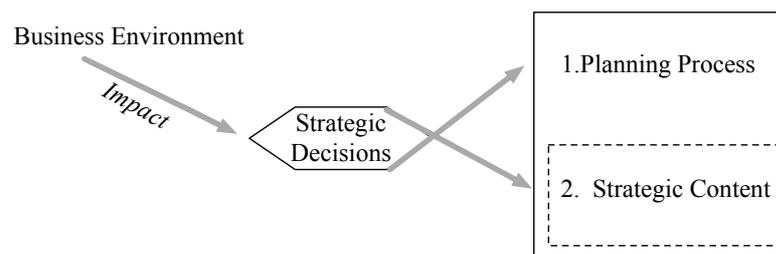


Figure 6-2. Two streams of strategic decisions impacted by the business environment. The strategic content decisions, which are embedded in the planning process

To different degree, the three organisations seem to have increased their formality because of the business environment imperatives (positive and negative), but also because a formal planning process allows control on factors such size and growth among others. The financial crisis on 2007-08 has been one of the most restructuring imperatives (Lynch et al, 2012, p. 145) from the past years. Buro Happold used the financial crisis to re-shape its structure (Cook, 2013a). Actions were taken at the two previously mentioned strategic streams: content and planning process. The process that until that time had informal features, it is now more *formal*.

Buro Happold passed from shaping their strategy following “one person idea” (Cook, 2013) to a hierarchical structure of planning process represented on Figure 6-3. This filter process led by a *top-down* flow provides *comprehensiveness* at the moment of evaluating and approving their strategy and decisions. Also the planning process is structured through written documents and is *consistently* revised in a monthly basis, characteristics that grant the process even more rigour and formality (Cook, 2013a). Buro Happold took strategic decisions on the planning process and into the content allowing them to have more control on the delivery of projects and the winning work practices. At the same time maintain organisational identity and independence through the harsh conditions of the environment.

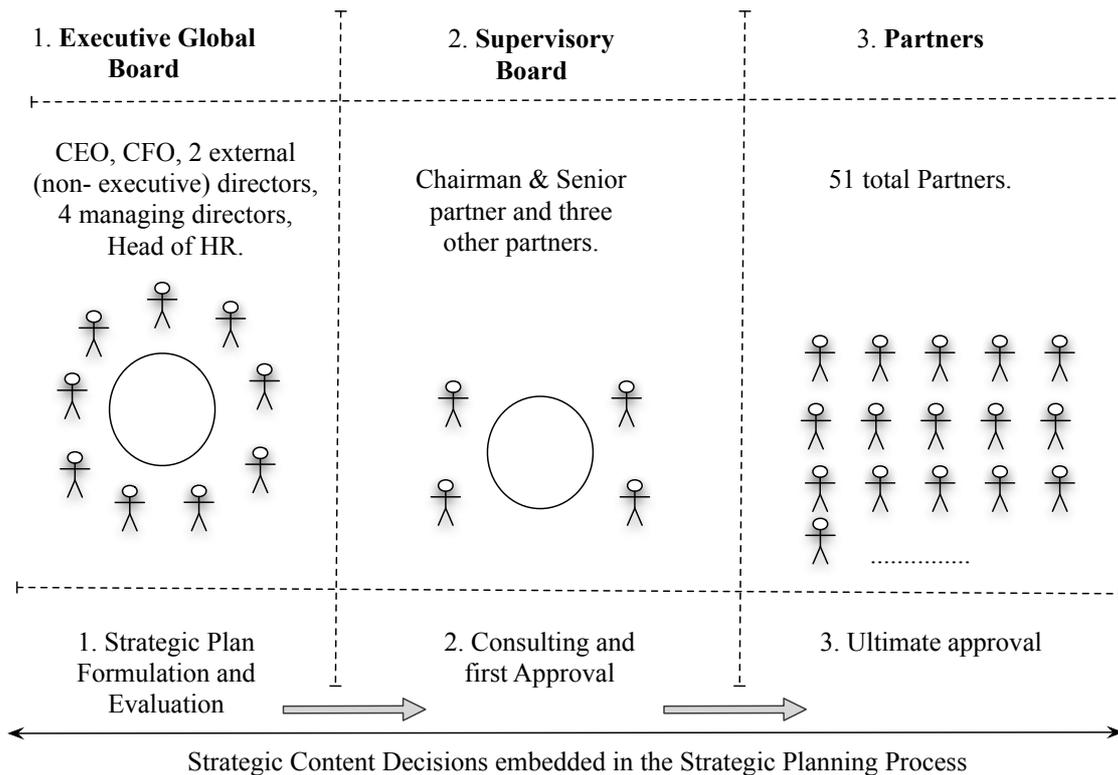


Figure 6-3 Buro Happold’s organisation structure depicts the chain of command that implements their formal strategic planning process and strategic content decisions

Engenuiti is managed by a partnership of three directors, (none of them with business background) and their strategic insight has develop from a learning by doing progress (Grimes, 2013) resulting on them writing their first business plan on 2013. This characteristic situates their planning process in a *continuum* between informal and formal; formal because the strategic plan is being documented and informal due to their ability to produce quick emergent decisions (Grimes, 2013) between the three partners instead that through an exhaustive bureaucracy.

This characteristic is shared with Structural Solutions, which being formed by only two partners has a limited bureaucracy concerning strategic decisions. Price et al (2003, p. 364) supports this position by remarking that most of small practices take an informal approach to strategy based on the vision of the owners. Sharer et al. (1989, p. 52) add to this by concluding after conducting a study of small organisations that 65% had no strategic plan; and they do not carry out strategic planning because they lack time

(Hassan & Minden, 2010, p. 38). Although similar in the speed to take decisions (e.g. instant recruitment of new personnel; immediate purchase of equipment if necessary) they differ in the evaluation of alternatives. Engenuiti is *comprehensive* because they consider alternatives to evaluate alternatives and build scenarios to support their strategic decisions; while Structural Solutions is *non-comprehensive* because their decision making is based on informal discussion and *gut-feeling* by the partners (Beresford, 2013). Courtney et al. (1997, p. 68) supports the use of *gut-feeling* in uncertainty times to take strategic decisions. These characteristics are completely opposite to Buro Happold's structured deliberation process previously explained.

A dimension that is shared by all organisations is that all decisions follow a centralised *top-down* planning flow. For Buro Happold the *flow* is formed by the top management, board members and partners; while for both Engenuiti and Structural Solutions, the partners who take decisions. Even though only top management directs the three organisations decision making flow, resulting on a narrow or no employee engagement, they all have a unique interpretation toward encouraging the participation of their employees into collaborating with the planning process. Buro Happold as well as Engenuiti currently implements meetings to review, promote and encourage the brainstorming of ideas and opinions about strategy (Mundy, 2013; Grimes, 2013).

On the other hand the partners of Structural Solutions have never engaged their employees' opinion on their decisions, although they have recently acknowledged that it would be beneficial to encourage it. Linked to the decisions *flow* is the dimension of *consistency*, which is defined by the amount of time and resources set on the strategic planning (Dutton and Duncan, 1987, p.108). Bourgeois & Eisenhardt (1998, p. 827) state that the more exhaustive the decision process, the better the results. Again both Buro Happold and Engenuiti *consistently* review their strategy and process. Buro Happold's Executive Global Board revises the strategy on a monthly basis and Engenuiti constantly overview their strategic objectives while revising their operations every two weeks. In contrast Structural Solutions lack of strategy or plan need no revision or consistency scheme, rather they work on a day-to-day basis (Beresford, 2013).

The way the organisations perceive the impact of the environment affects their decisions and consequently their planning process (Dutton & Duncan, 1987, p. 105). Technology is an example of the previous statement. Engenuiti *innovative* focus is illustrated by the use of the word *opportunity* (21 times) by Paul Grimes (2013) during the interview. This represents their search for improvement by exploiting opportunities like those arising from technology. Engenuiti uses BIM to expand their winning work options and unlock complex projects in the delivery (Grimes, 2013b). Meredith, (1987, pp. 256-257) explains that size bias organisations' view to technology (e.g. larger organisations' perception of technology only as a commodity, small organisations as an opportunity). However, Structural Solutions partners do not share Engenuiti's external search and continuous look for opportunities; rather they perceive technology as an element of insignificant impact to them.

A summary and positioning of the strategic planning processes of the organisations regarding the previously mentioned Segars & Grover (1999) dimensions are depicted in Figure 6-4.

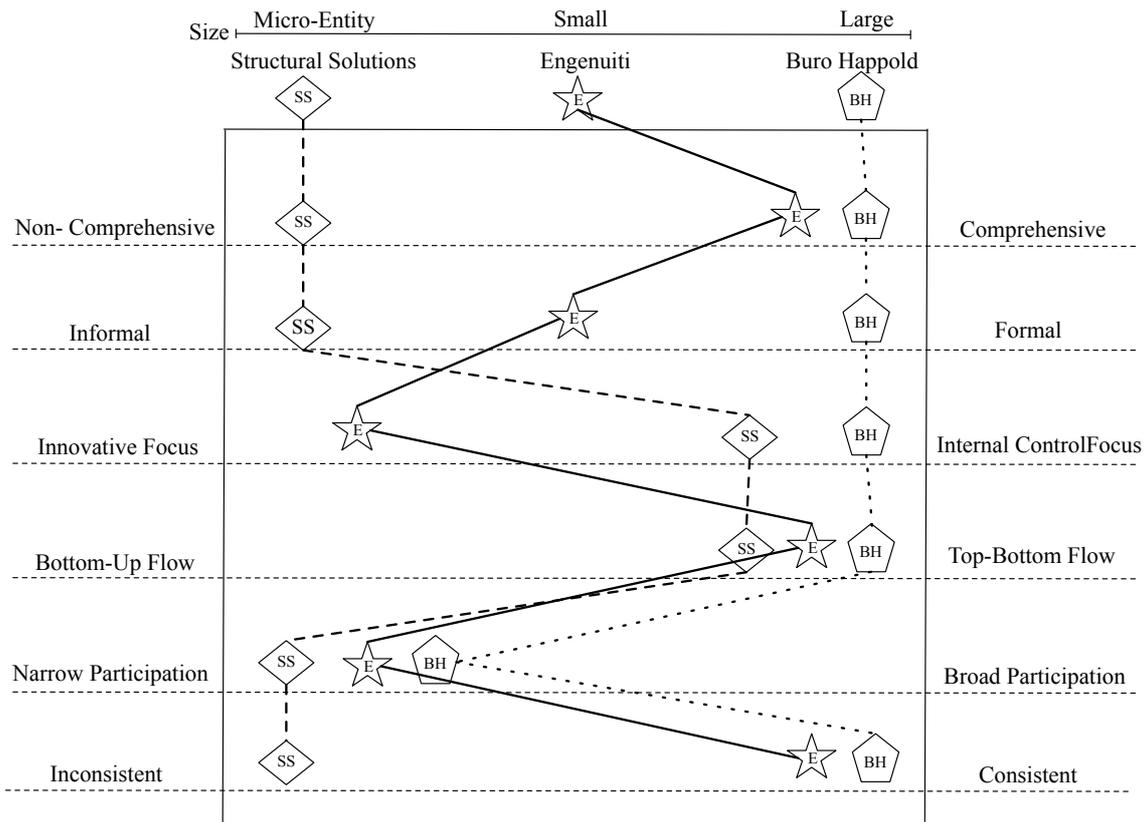


Figure 6-4. Adaptation from Segars and Grover (1999) representing the positioning of the organisation under investigation

The positioning of the organisations on Figure 6-4 in conjunctions with Table 3-1 provides a connection to Planning or Learning Schools. Buro Happold has developed a formal and constrained type of planning process, a pattern similar to the characteristics of the Planning School. Engenuiti position, in the continuum between both schools, is planned-emergence (Grant, 2003). Lastly Structural Solutions pattern matches the Learning School characteristics, due to their day-to-day approach to manage the practice. An additional element adapted to the analysis is the size of the organisations. Stone & Bush, (1996, p. 635): small organisations are structurally less intricate, while Grinyer & Yasai-Arkedani (1981, pp. 474-475) claim that as organisations grow and mature their strategic planning process tend to become more formal and centralised in order to achieve objectives and maintain control.

Buro Happold presents the largest size (1400 employees) and eldest organisation, therefore is predisposed to having a higher impact by its business environment and needing a formal planning process to counteract it. Engenuiti with a small size (22) and only four year old shows a quick progression into planning, driven by their wish to grow. While Structural Solutions with 17 years and only eight employees has remain through time relatively impartial to the effects of their general environment and more impacted by the task environment. Nevertheless both Engenuiti and Structural Solutions acknowledge that in order to grow, a more formal planning process must be implemented. Statement supported by Shrader (1989, p. 47) and Schwenk & Shrader (1993, p.60) who claim that small organisations benefit from formal planning practices to reach their objective, regardless of their structure or bureaucracy.

Figure 6-5 represents the interpretation of the authors regarding the positioning of the organisations through time. The interpretation is based on the collected empirical data and analysis carried during the research. Buro Happold, has been directly affected by the economic crisis and switched from a planned-emergence style of planning into a formal planning process. This strategic decision allowed Buro Happold to remain independent and economically sustainable during the crisis, and in the present and future allows them to maintain the desired status quo and be prepared for future adversities. For Engenuiti and Structural Solutions have been a different scenario; the business environment has not affected their planning process, rather it has only been a map to guide their practice concerning strategic content decisions. The slow movement of both organisations into implementing formal planning practices is not only due to their business environmental conditions, also as a reaction to their strategic content decision to grow.

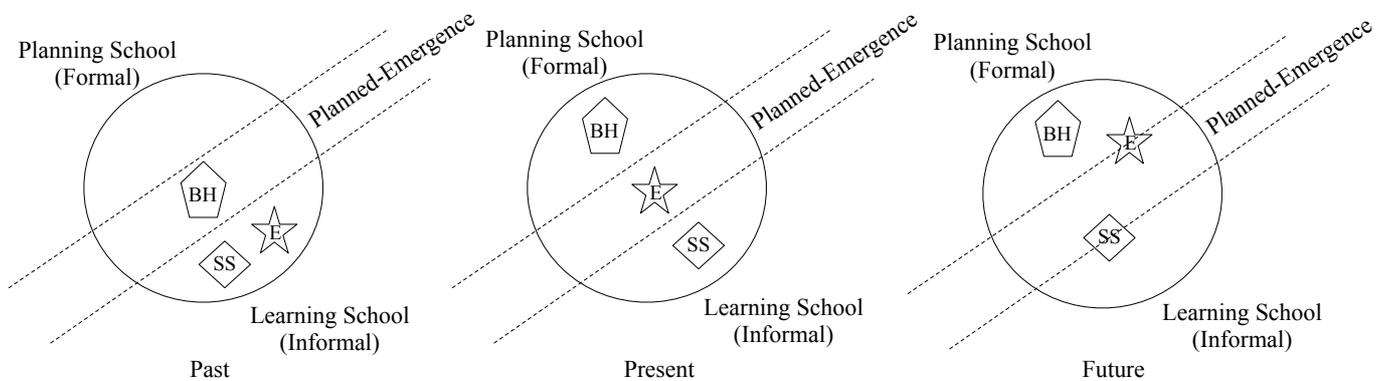


Figure 6-5. Summary of the organisations' position regarding strategic planning schools

6.3. Strategic decisions (content) in comparison

The impact of the general environment into the engineering consultancy organisations regarding the strategic content has been and is significant. Organisations cannot be understood without the socio-politico-economical context where they operate. All organisations are embedded in some sort of societal context. However the economic factors coupled with political reactions have had the bigger impact on the organisations under investigation leaving on side, as expressed by Paul Grimes (2013a), the *aesthetical* aspirations like sustainability (ecological factor). In this hierarchy of factors, technology issues follow economical and political factors in terms of impact. The social aspect seems to gain weight in the strategic decisions of engineering organisations. Globalisation is source of both opportunities and threats: recruitment has an impact on small organisations and it is perceived as a threat to future growth. Urban population growth is a source of opportunities for the engineering consultancy organisations that have an international outlook. Legal factors do affect strategic decisions regarding training to all organisations as organisations are obliged to comply with the legal framework. Lastly ecological factors offer either no impact on small practices or a significant effect on large ones.

It is perceived that the general environment has promoted positive changes, however it must be noted that the three organisations under investigation are after all survivors of the harsh economic conditions of the last years. The organisations have shown signs of flexibility and adaptability to the volatile environment in alignment with the thoughts of Snyder & Glueck (1982, p.185) and Gioia et al. (2012, p. 364). Failure to adapt would have probably meant that they would be out of business or acquired by a larger competitor. Data provide by ACE (Pontin, 2014) shows that from 2011 to 2013 the number of engineering consultancy organisations in the UK reduced by 10%, unfortunately there is no available data since 2007 but it seems that the trend would be even sharper. Mergers and acquisitions (M&A) had been the norm for the engineering consultancy sector as highlighted by Mike Cook (2013) and supported by Pontin (2014): “M&A activity has increased following the financial crisis... However, organisations are being more selective with their M&A activity to ensure their businesses are a good match and provide long term revenue growth.”

Mike Cook (2013) explains that in his perception, the business environment has changed significantly in the last five years and mentions that financial crises are ‘eye opener’ for organisations. In this regard, Buro Happold has been obliged to change in order to remain competitive. The decisions have projected the organisation healthier into the future, and they have allowed the practice to continue being independently owned.

At a time where the work pipeline started to dry up as result of tough conditions to access credit for developers and public cuts in infrastructure; Buro Happold appointed a new CEO in 2010, and the Global Executive Board developed a strategic tactical plan of three years long in order to strengthen the business, promote growth and control business units. The practice has therefore showed strong signs of adaptability by restructuring the *excesses* (e.g. increase financial monitoring to maintain adequate levels of liquidity (Cook 2013)). Also by strengthening commercial aspects and putting forward measures around knowledge (enhance of training), wining work (opening offices in Asia and work with a larger network of clients) and project delivery (potency the reviews process in order to mitigate risks). However, some of these decisions have been trade-offs, according to Porter (1996, p. 3), because increasing control meant a reduction of the autonomy of the business units; so there is the risk that the practice has lost some of the cultural identity that helped the organisation to be what it is.

Engenuiti has described its direction on a strategic business plan with specific goals related to organic growth and balancing their clients portfolio. For Engenuiti growth is understood through a *compass* approach (Hayes, 1985, p.114); a plan able to adapt to environmental changes (Grimes, 2013). The impact of the economic crisis in 2007-08 was used for Engenuiti to setup the practice, therefore the environment was source of opportunities at different levels and the directors took strategic decisions accordingly that have promoted strong growth since inception. Engenuiti benefited by hiring talent at low cost (Grimes, 2013) and by taking project opportunities that were risky. In the present they have taken a set of strategic decisions like forming partnerships with other organisations or outsourcing that support their current organisational goals.

On the other hand Structural Solutions faced redundancies, and they worked on multiple small projects (Beresford, 2013a); but the result of these decisions is that they have survived challenging economic times. Currently the directors have envisaged a plan to grow consequence of the improved economic conditions. This plan presents a

dichotomy: the partners are so engaged in daily project work that they do not have time to carry on business development or planning more actively. Although Structural Solutions' partners acknowledge that to reach their objectives they need to start to introduce features of formality (Beresford, 2013a).

The three organisations have formulated strategic plans on a three year outlook; which differs from the view of (Glaister & Falshaw, 1999, p.109) and their suggestion that planning for a five year period is common within organisations of all sizes. The shorter strategic planning term may be explained by a business environment that is characterised by volatility, uncertainty and complexity. This is explained by Bourgeois, & Eisenhardt, (1988, p. 817): strategic planning is challenging within this context because changes are so dramatic that are difficult to predict. Additionally these organisations are project based and this limits the long term planning as individual projects may have significant effects on finance or reputation.

Multiple links between general environmental factors and the strategic decisions taken by the organisations are showed on Figures 6-6, 6-7, 6-8; these exemplify the impact of the general environment also a set of tacit insights. First organisations have accomplished multiple goals with single strategic decisions (e.g. outsourcing). Second, the impact of the general business environment upon strategic decisions has been framed, using six variables: political, economic, social, technological, ecological and legal. However Yuksel (2012) stress that the variables of the general business environment should not be considered in isolation but as a whole, because the impact of one factor may have consequences in other factors creating a *snowball effect*. For instance, political issues cannot be taken in isolation from legal arrangements or economic conditions (Ibid, p. 53); the other way is also true: political situations may produce social and economical connotations. Everything influences everything and some factors affect organisations directly or indirectly.

Third, the same factors are perceived by the different organisations in a different manner (hermeneutics) and the strategic decisions do not follow a pattern. For instance, technology is simultaneously source of volatility (Carson et al., 2006, p. 1065), uncertainty (McGrath & McMillan, 2000, p. 173) and complexity (Sargut & McGrath, 2011, p.70; Ho (2012, p. 82) and the impact is heterogeneous among the researched organisations. For Engenuiti is source of competitive advantage. Buro Happold does not perceive it as a differentiator factor although they exploit it widely. Structural Solutions is to certain extent indifferent. What is clear is that technology has closed the gap between large and small organisations within the same country and between developed and less-developed countries: technology is a catalyst of globalisation. This increment of competition has pushed down the fees in the consultancy engineering sector because there are low barriers to enter.

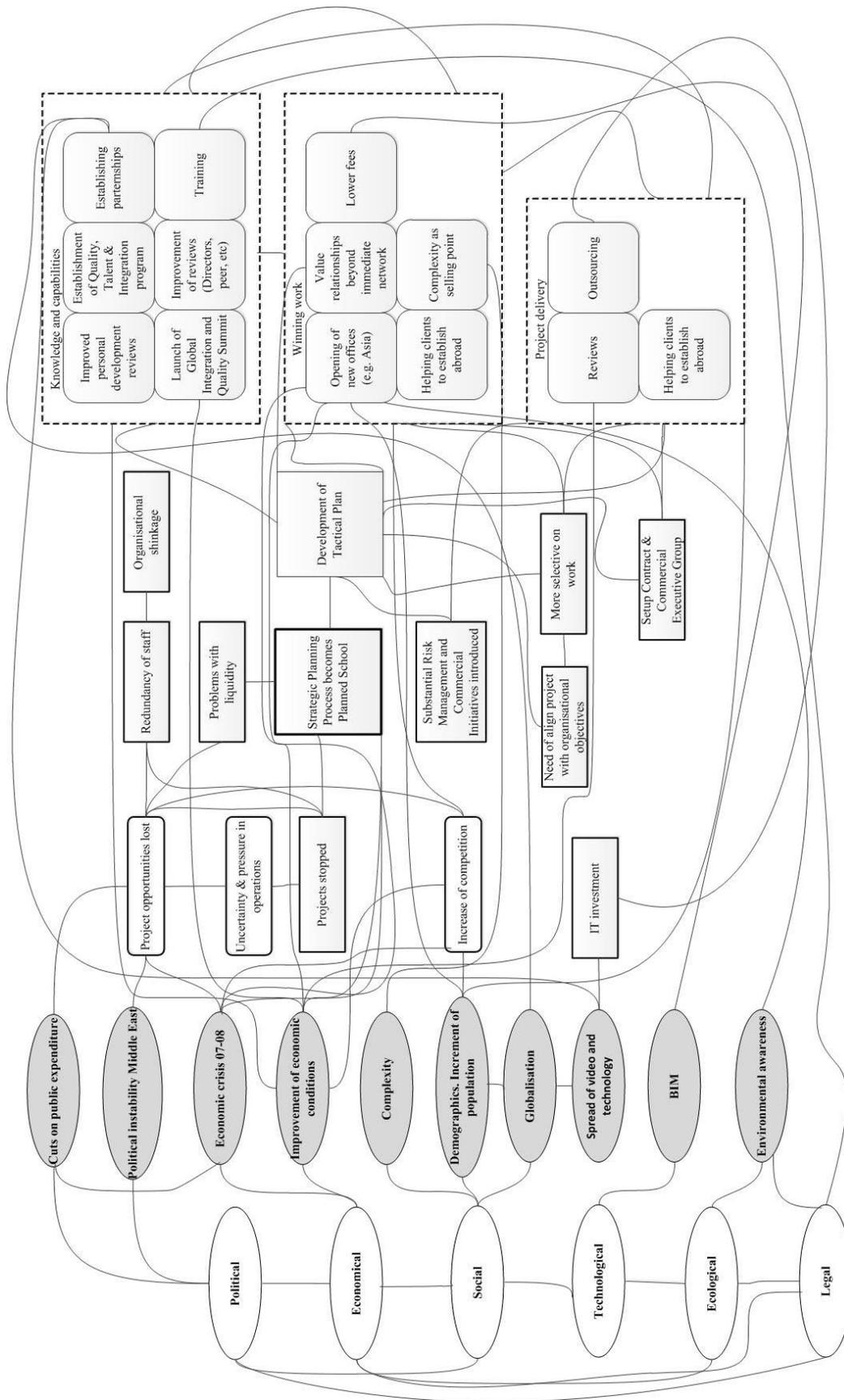


Figure 6-6. Impact of general environment upon Buro Happold's strategic decisions

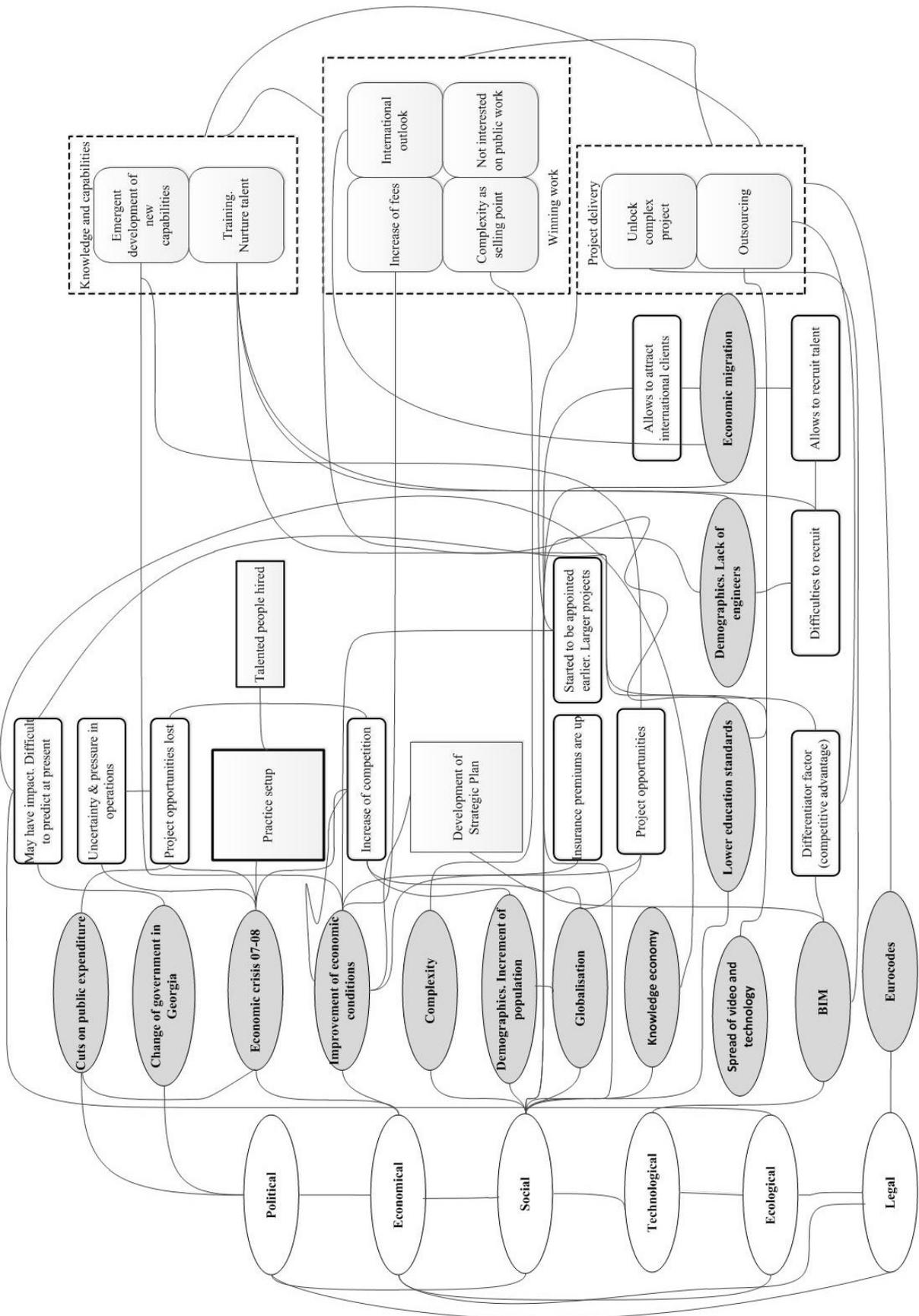


Figure 6-7. Impact of general environment upon Engenuiti's strategic decisions

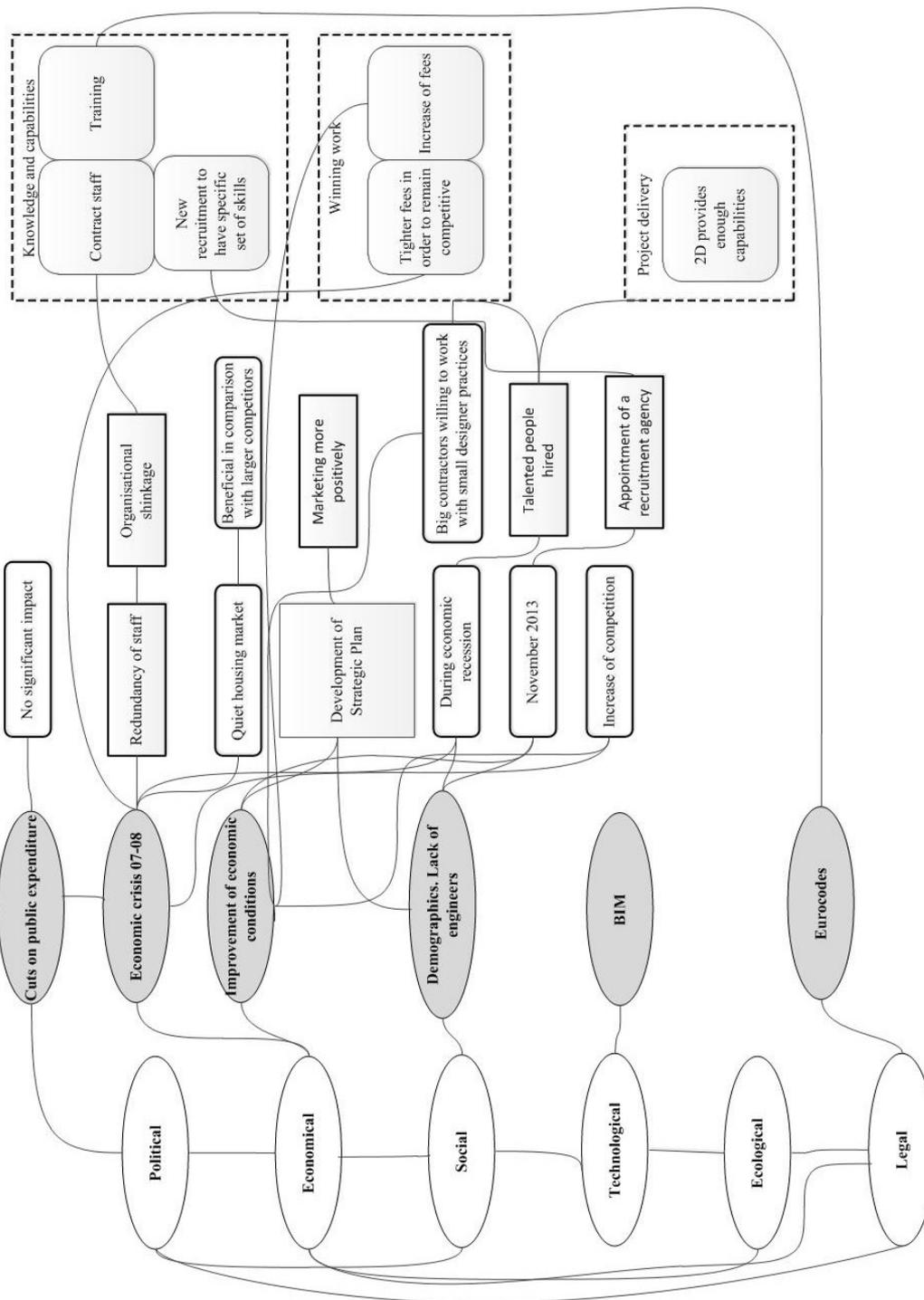


Figure 6-8. Impact of general environment upon Structural Solutions's strategic decisions

The data and analysis shows also a clear relationship between the general environment (source of threats and opportunities), the organisational size, and consequently strategic decisions. The bigger the size, the bigger the opportunities and threats, even though in parallel larger organisations have more resources to insulate against the environment. For instance for a large organisation, globalisation brings opportunities in terms of project work, also it is cause of threat because other large competitors are pursuing the same global projects which might end up in low bidding tender processes. For Buro

Happold, its global outlook and diversification of services helped the practice to establish in countries with emergent economies (strategic decision) at a time where the West was hit by the financial crisis. This allowed the practice to deploy resources efficiently without the need of increasing further redundancies, although this also took place in several periods in the UK as the organisation was highly dependent of public funded work. The redundancies were a strategic decision although these were not perceived by the top management as a decision but a business imperative (Cook, 2013); the fact is that this was a strategic decision. In order to reduce the dependency to public projects, the organisation is looking beyond the traditional network of clients in a strategic movement.

In contraposition, a small organisation have less resources and means to deal with the forces of the general environment, however the impact is generally smaller as they are generally less diversified (e.g. single discipline engineering). In addition small engineering consultancy organisations need of deep knowledge of their task environment in order to remain competitive; in conjunction with a solid client base (Structural Solutions) or an extensive network of clients (Engenuiti). For example, the directors of Structural Solutions know their competitors and customers in detail; and despite the changes in the general environment the perception by Peter Beresford (2013a) is that “Structural Solutions has not changed significantly in the last years neither in the type of jobs we do, the people we work with or in organisational terms”.

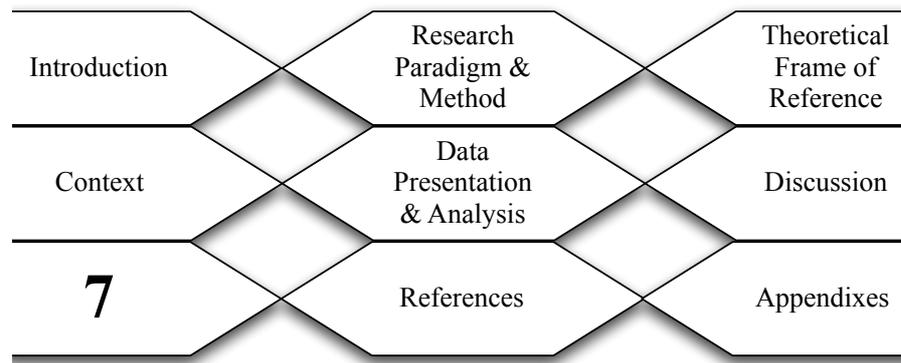
Another factor related to size is that strategic decisions in large organisations take longer while in small engineering consultancy organisations decision time is shorter. This statement is linked to the strategic planning process and the formality/informality of this; after all strategic decisions are embedded into a strategic planning process. Recruitment of staff exemplifies this. In Structural Solutions interviews may happen on Thursday and the candidate will start on Monday if both partners agree (Beresford, 2013a). While in Buro Happold recruitment goes through Human Resources department slowing the overall process. These examples are in alignment with Grinyer & Yasai-Ardekani (1981, p. 484) and Smith et al. (1989, p. 66): the bigger the size, the bigger the bureaucracy, and the tendency towards strategic formality. With this context, for smaller organisations most of the decisions are strategic (e.g. recruitment of a senior engineer in may be critical in terms of gaining capabilities and foster growth). While for Buro Happold the recruitment of a single individual does not have the same impact and it may be not considered a strategic decision.

Strategic decisions are also linked to contingency plans that allow the possibility of rerouting if a failure condition occurs (Cox, 2009, p. 374). Although not explicitly mentioned by the organisations, they are indirectly taking strategic contingency plans. The tree organisations are expecting to grow, in a moment where the economic situation is improving although there is still a significant uncertainty. This is mitigated in several ways (contingency plans): one of them is outsourcing to low cost centres, which for Buro Happold and Engenuiti has been a strategic decision. Outsourcing is a single decision that achieves multiple objectives. Through the spread of video communication technologies, UK organisations are setting up lower cost centres allowing them to focus on their value propositions, although creating transitional complexity. Other benefits are reduced costs by not hiring permanent staff, while at the same time achieving quality control over the services. Outsourcing also avoids going through redundancies periods in moments where work might be scarce.

Moreover, the strategic decision by Engenuti to cap growth is a tacit contingency plan because in uncertain and volatile times it is best to be conscious and grow incrementally; than allowing an uncontrolled spread of growth that may have negative consequences in the future. These plans are therefore pro-active to the general environment in the present and future, while there are others that are re-active to the present and pro-active to the future like setting up a Contract and Commercial Executive Group in the case of Buro Happold

Volatility, uncertainty, complexity and ambiguity, as conditions, are inherently unstable and diffused in its sources and effects. The directly effects are difficult to measure (McCann and Selsky, 1984, p. 461). The degree of volatility, uncertainty complexity and ambiguity of the environment should not be considered constant features in any organisation. Perception matters: All the VUCA environmental variables are dependent on the perceptions of individuals within an organisation or the organisational culture; in such way that some individuals/organisations may have, for instance, a very high tolerance for uncertainty than others (Duncan, 1972, p.325). The uncertainty or any other descriptive variable of environment are translated into the way that organisations take strategic decisions and shape their strategic planning process.

VUCA impact on strategic decisions may be impossible to assess meticulously; however the impact is evident. The role of the strategic planning is “to exercise influence over the volatility, manage the uncertainty, simplify the complexity, and resolve the ambiguity in favourable terms to the interests” of the organisation (Yarger, 2006, p. 18). Industries and organisations adapt and evolve dynamically to local circumstances as a result of complex interactions among different stakeholders (Levy, 2000, p.75), also as result of the coupling of technology and other variables (Vargo & Seville, 2001, p. 5619). The environment not only shapes the organisational behaviour, organisations shape the structure of industries and the contours of competition (Levy, 2000, p.75); all other organisations are also adapting so the changes in one actor may have consequences for the environment and the success/failure of other agents (Gilbert, 1995, p. 148; Vargo & Seville, 2011, p. 5619).



Concluding remarks

This chapter provides the concluding remarks generated throughout this research. It contains five parts. The first one outlines the findings to the initially proposed research question: *How the strategic decisions of engineering consultancy organisations are affected by the general business environment?* Thereafter additional remarks are proposed. Academic implications are followed by managerial applications. Finally, limitations of this study and further research directions are offered.

The theoretical frame of reference outlined that strategy needs to be understood in terms of decisions. In this regard, strategic decisions have two main streams according to Johnson et al. (2008, p. 22) and Cummings & Daellenbach, (2009, pp. 239): strategic content (decisions *per se*) and those affecting the strategic planning process. Further on, the research introduced the concept of general business environment and the importance that this has when formulating strategic decisions. Following a descripto-explanatory approach, the aim is not generalisation but at understanding of the phenomenon under investigation by using top management perspectives. Furthermore, it contributes to fill the research gap by expanding the empirical database to the engineering consultancy sector at a time that is characterised by volatility, uncertainty, complexity and ambiguity.

Based on an interpretivism epistemology and supported on hermeneutics, multiple case-studies (three organisations) were selected as research strategy. Semi-structure interviews in conjunction with organisational documents provided the data. Several techniques were used to analyse the data and present the information in isolation for each organisation. A cross-case discussion presented the findings of the research.

7.1. Concluding remarks

The theoretical frame of reference indicated that strategic decisions concern two main streams: strategic content and strategic planning process. The business environment is categorised between task and general. There are relationships between them: events in the general environment influence the task, and the other way around. Organisations cannot be understood without their context (Cilliers 2000c, p. 25); all organisations are embedded in some sort of societal structure. Therefore they are not immune to the effects of the environment: simultaneously organisations shape the environment where they interact. Organisations are open systems (Ibid) that exchange information with their task and general environments. The exchange of information and the effect of the environment upon organisations vary depending on the nature of these. This research aimed to explain through three engineering consultancy organisations within the UK construction industry the effect of the general environment upon strategic decisions.

The sense-making of the environment is interpreted by actors in different ways even when they are in the same context (Dutton & Duncan, 1987, p. 105), therefore the reaction to events differ. The PESTEL factors of the general environment, within the last five years, had an impact on the strategic decisions of the participant organisations. Nevertheless, not all the factors have the same effect on the organisations: the economic crisis in 2007-08 and the recession that followed, coupled with political events have taken central stage leaving on side the *aesthetical* aspirations like sustainability (ecological factor). In any case, everything influences everything and some factors affect organisations in direct or indirect ways.

The three organisations have taken content strategic decisions that have allowed them to be survivors of an environment that is being characterised by its volatility, uncertainty complexity, and ambiguity. All of them are still independently owned and are able to dictate their destiny by adapting to the conditions: failing to adapt leads to decline.

The environmental impact should not only be considered in negative terms: redundancies, fees reduction, shortening of planning cycles and committed project work. Also in positive ones: measures to reduce risks and increase commercial awareness, outsourcing, etc. In addition, the impact needs to be understood in relation with the size of the organisation. Buro Happold has taken a set of strategic decisions. These tend to decrease when the organisation is smaller; because there is a correlation between size/geographical spread, and the exposure to environmental factors. However this does not mean that small organisations do not take strategic decisions. The positive impact of the general environment in turbulent and ambiguous times has been remarked widely. Mike Cook (2013) notes “there is nothing like a crisis to make people willing to change”; and Paul Grimes (2013a) asserts that the best moment to establish an organisation is during economic downturns, because these allow you to hire some of the talented and trained people that other consultancy organisations are simultaneously firing.

Consultancy organisations characteristics such being project based, focus on knowledge and offering customised services to win work has pushed them to take specific strategic content decisions in these core areas: outsourcing, tighter financial control on projects; training, recruitment; BIM, increment of fees respectively. On a wider sense, the financial crisis has also pressed organisations to focus on cash (Cook, 2013; Grimes, 2013a; Beresford, 2013a). The strategic content decisions formulated generally address

multiple objectives with single actions and are not taken in isolation but as an array of decisions that enhance their effectiveness. These strategic decisions are projecting the organisations healthier into the future.

Moreover, the general environment has affected the strategic planning process and there is a tendency towards formality (refer to Figure 7-1). This trend is aligned with several academics (Bourgeois & Eisenhardt, 1988a; Grant, 2003) that suggest that formal planning features are needed in volatile and uncertain times (Murphy, 2013, p. 153). Therefore the finding of this study proves that contemporary planning processes are not static, but an evolving process. Formality increase as environmental instability grows (Brews & Purohit, 2007, p. 64), being formality used as the mechanism to deal with environmental instability (Ibid, p. 72). Miller & Friesen (1983, pp. 230-231) builds up on this statement by claiming that formality is key to remain viable and healthy in the contemporary dynamic and ambiguous world (Korman, 1971, p. 33). However the changes in the strategic planning process are not only affected by general environment but also by size, maturity, growth aspirations, geographical reach and breadth of services. Table 7-1 summarises the impact of the general environment into the organisations under investigation.

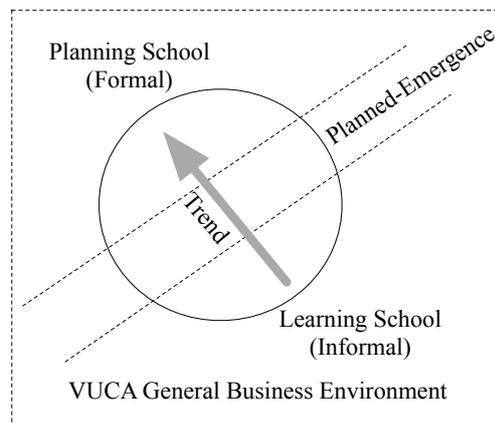


Figure 7-1. Contemporary strategic planning process tendency

Table 7-1. Summary of the impact the general business environment has upon the organisations under investigation

Strategic decision	Buro Happold	Engenuiti	Structural Solutions
<i>Strategic content</i>	Significant impact. Multiple strategic decisions taken	Significant impact. Multiple strategic decisions taken	Some in the past. More impact expected in the present-future
<i>Strategic planning process</i>	Significant impact. Planning process adapts to Planning School	Minimal impact	Minimal impact

The collected empirical data, in addition to literature, denotes that the economical conditions for the industry are “improving steadily through a lens of conscious positivism” Peter Beresford (2013a). These favourable conditions although, still with uncertainty, are allowing the three organisations to formulate strategic plans where growth takes central stage.

Organisations have different degrees of formality within their strategic planning processes. However, all the organisations have acknowledged the *importance* and need of formal planning. Within the hermeneutic methodology *importance* does not allow measuring the level of formality; but highlights the need of introducing controlling mechanisms when formulating strategic content decisions. In occasions, formality is not introduced because the decisions makers are so involved in the daily activities that they do not have time to eject it (Structural Solutions). In other circumstances, further formality is not introduced because there is the risk that management may forget the core activities of the business (Engenuiti). Lastly, because formal processes may clash with cultural values (Buro Happold). Consequently the introduction of formality within engineering organisations represent trade-offs that organisations need to deal with.

One of the most common activities managers perform in order to keep up with the environment is environmental scanning (Olsen et al., 1994, p. 3) which is the activity of obtaining information (Aguilar, 1967, p.1). It results in business intelligence, useful to taking decision and developing action plans (Daft et al., 1988, p. 124). There are different techniques to analyse the general environment and the organisations in his study have manifested their preference for informal intelligence rather than formal one. Some of the informal tools used are: following Twitter accounts (Grimes, 2013a); observation of the level of stress of employees, *word-of-mouth* (Grimes, 2013a; Beresford 2013); and level of inquiries (Beresford, 2013). Courtney et al. (1997, p. 68) suggest that under uncertainty and ambiguity, informal means are more suitable than more formal ones. “Things are changing faster and faster and the opportunities are there for those that adapt quickly to the changes” (Grimes, 2013a). In this sense, information is central and informal intelligence goes generally ahead in time than formal one (Ibid).

The findings prove a relational effect of organisations’ size on strategy. First, the size of the organisations affects the decision making speed (e.g. small organisations take faster decisions). Second, smaller organisations are more focus on the task environment rather than the general one, because of the bigger effect of competitors (factor concerning the task environment). Lastly its easier for small organisations to consider more decisions strategic, due to their holistic effect on the organisation; in contrast to larger organisations where strategic decisions are generally spread out on business units.

Implicitly it is understood that organisations have also survived the tough economic conditions by their ability to interact in their business environment with other actors. In such way that the business environment is *relational*. Relationships are internal and external and general factors assist in the development of this at different planes. For any organisation, technology is providing the tools to interact with colleagues in different countries helping to maintain links worldwide (Cook, 2013); in other occasions it is used to facilitate outsourcing to low cost centres (Grimes, 2013a). But technology is only the means to the end: relationships. UK engineering organisations are establishing partnerships with other niche consultancies that complement their breadth of services. These interactions are therefore project delivery oriented; but there are other relations that are focused on winning work by managing clients in different ways: by keeping a strong base of clients and ensuring work continuity (Structural Solutions), by understanding the needs of clients (Engenuiti) or by strength the breadth of clients or helping others to establish overseas (Buro Happold). Therefore, in order to survive in VUCA times, relationships are key.

For engineering consultancy organisations their ability to deal with complexity is nowadays critical. The complexity of the construction industry is greater than most other sectors (Betts & Ofori, 1994, p. 204) and complexity is on the rise. So organisations need to understand the contextual complexity (Vasconelos & Ramirez, 2011, p. 239) and the implications of their interactions in the general environment. However, in a more global world, the ability of the UK engineering consultancy organisations with global perspective to remain competitive and win work is the ability to turn project complexity into simplicity (Westbury, 2013; Grimes 2013b).

7.2. Academic implications

The theoretical background of this research presents multiple scenarios of how the strategic planning and strategic decision making of organisations are affected by the general business environment. This study has strengthened and contradicted some of the assertions prior to this research. Gathered data shows how consulting engineering organisations within the construction industry describe the effect that the environment has on the way they make strategic decisions or carry their strategic planning process. This qualitative study strengthens a research field that lacks theoretical background in the chosen context: engineering consultancy.

This study concurs with prior theories that the strategic decisions are directly related to the organisations planning process and both are influenced by the business environment. Although it is been proven that the effect of the business environment has on the organisation varies depending on their nature (e.g. size, structure) and context. In addition the interpretation of those individuals managing the organisations is the determinant factor on how their strategic decisions and strategic planning process is shaped.

Nevertheless, notions were develop from this study, which add value to prior knowledge in the strategy field. The research findings established that independently of the context and nature of the organisations through an unstable environment formal planning features are advantageous in order to survive, sustain the status quo and reach growth aspirations. Furthermore, the findings reinforce the statement that strategic decisions concerns trade-offs (Porter, 1996, p.3). However, there are strategic decisions surging from the general environment (e.g. legal ones) that do not involve trade-offs because of their mandatory nature. Moreover, some strategic decisions are taken without being considered as strategic, but changes and circumstance convert them into strategic.

These observations lead the authors to believe that there is no enough knowledge about the strategic decisions and strategic planning processes in unstable environments, and that further research is needed, in particular in the consultancy engineering sector. Additionally these authors concur that the findings of this study cannot be generalised because of its nature and context. Nonetheless, the depth of the theoretical framework and context provided in conjunction with the top management standpoint used to gather the data, and the comprehensive analysis and discussion contributes to knowledge accumulation.

7.3. Managerial Implications

The prior literature and specially the empirical data findings have several managerial implications. Regarding nature and context it is clear that there is no specific strategic planning that fits all organisations. However this study do provide practitioners with awareness and serves as guide about several elements that need to be taken in consideration in order to improve their strategic planning and strategic decision making. In this regard, the following observations could be of value and considered as a managerial asset for practitioners carrying any strategic or managerial role.

First, it is important for managers, decision makers and leaders to take in consideration the effect the business environment has on organisations; at both general and task levels. Awareness of the current state and rapid change of the business environment may result, for instance, on opportunities arising from the technological field (BIM, video, etc.) that allow outsourcing or gain market share. Additionally the awareness insulates organisations against financial crisis or increased competition. Managers' attentiveness to their environment allows them to be prepared to face changes and adapt: this is in generally known as agility in leadership terms. Therefore impacts of the general environment are mitigated either by being pro-active and anticipate to the upcoming changes, or by reacting fast and putting measures in place before the environment creates chaotic situations upon organisations.

Second, it brings description about the characteristics and benefits of emergent, planned-emergence and formal planning. Decision makers must be aware that formal planning features should be carried on in every organisation regarding their nature, context and the business environment they exist in.

Furthermore, this study illustrates how the general business environment affects organisations strategic planning and decisions: reactions to contemporary environmental events; and how the participant organisations adapt to their business environment changes. These observations may serve as an eye opener to build contingency plans and consider factors that can be potential opportunities or threats.

Lastly, it elucidates the reader about the acronym VUCA: volatility, uncertainty, complexity and ambiguity to characterise the contemporary environmental conditions. VUCA variables are not considered constant features. Perception matters: all the VUCA environmental variables are dependent on the perceptions of individuals within an organisation or the organisational culture. VUCA impact on strategic decisions may be impossible to assess meticulously; nonetheless the indirect impact is evident. 'Undoubtedly however the paper has proved instrumental in shaping a debate regarding' (Haniff & Fernie, 2008) VUCA.

7.4. Ethical and Social Considerations

The topic of this study comprises ethical and social aspects from a managerial perspective within an organisation. With an eye on the environment and social issues, it is an imperative that organisations no longer solely focused on turning a profit. A top priority for organizations today is to formulate their strategy following ethical standards, which focuses on their ecological, social and economic impacts. It is important that mangers are capable of evaluate and understand the organisation's

overall environment and the impact that these have in society, in a way that allow them to make decisions that strengthen and promotes development.

This research elaborates on the importance of managers understanding their environment in order to develop the organisation's strategy. At the same time it brings awareness of the impact their decisions have on their environment. Taking the right ethical decisions would maintain the organisation image and empower their effect on the society.

7.5 Research Limitations

Strategy is a dynamic concept. It describes a modus operandi more than a position, a process more than a state (Miller and Friesen, 1982, p. 1020). Since strategy is a making process, a longitudinal analysis would have been the best research approach. This offers the evolution over time of organisations to the challenges arising by their business environment, and how interactions relate to patterns of planning formulation (Stone & Brush, 1996, p. 648). However, only a cross-sectional analysis has been possible to conduct offering a snapshot of the strategic planning process and the decisions taken by the participant organisations. Also related to time was the limited availability of the participants. Engineers' time is highly priced (Sheikh, 2011, p. 1125), in addition all respondents' hold an executive position in their respective organisations. These authors were always aware of possible time constraints. Therefore at the beginning of each interview, the respondents were asked how much time was available in order to structure the interview accordingly. Saunders et al. (2009, p. 324) claims that managers always prefer to be interview instead of completing questionnaires or other techniques, given that they can reflect about the discussed topics without having to write anything down. In addition the fact that our respondents hold executive positions the level of knowledge they have of their organisation and its strategy is optimal, resulting in detailed and concise responses (Ramanujam, 1986, p. 354). Nevertheless, it would have been desirable to conduct more than one interview with the participants. After conducting the interviews and work with the data, questions surged which the authors were unable to question back missing additional insights into the topic under investigation.

Literature suggests that the use of only single respondents to make inferences about the strategic planning is a limitation, even in situations when the information comes in first source from the top management. This is explained by Bowman & Ambrosini (1997, p. 119) whom conclude that the use of single respondents is unreliable since strategy often induces wide variations in responses between members of the same top team. Nevertheless, other authors such as Snow & Hrebiniak (1980, p.320) suggest that "top managers have the best vantage point for viewing the entire organisational system". In this research only top management perspectives have been provided. Consequently, the authors agree with Snow & Hrebiniak and believe that the information giving by all these partners is valid and accurate (Nandakumar et al., 2010, pp.929-930) because they have shaped their organisations since inception. The approach of using single respondents is also extensively used in strategic management research (Ibid). Nonetheless, the researchers believe that to have undertaken more interviews within the participant organisations would have been beneficial adding different perspectives and enhancing its validity.

Regarding case study strategy, there is the limitation of generating findings that can be scientifically generalised (Yin, 2009, p. 15). In contrast to this argument Yin (2003, pp. 31-32; 2009, p. 15) claims that case studies can provide analytic generalisation of theoretical propositions rather than statistical generalisation of a population or universe. In addition, Flyvbjerg (2006, pg. 227) states that case studies constraint capacity to provide generalisation is compensated with its ability of facilitating knowledge accumulation. Regarding this research, the purpose has been to describe and explain the effect of the business environment on the strategic planning process and strategic decisions of the selected organisations; in such way that extrapolation of the findings to other industries or organisations is restricted.

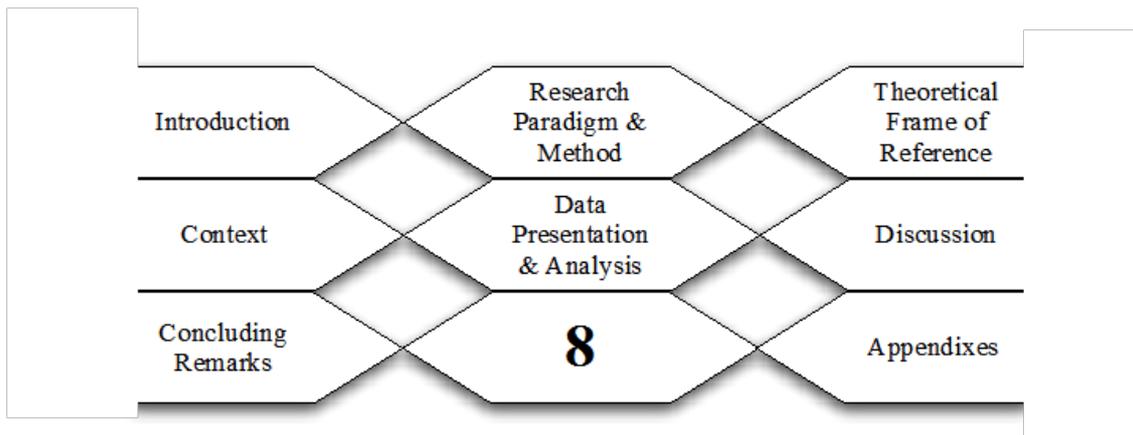
Despite the limitations mentioned, the gathered data within the three organisations under investigation have provided insights. The study however has also allowed the researchers to identify some potential areas for further research.

7.6. Further Research Directions

Besides the already indicated methodological limitations, there are many directions that a research with the same context could take; mainly due to the broad nature of the topic under investigation which intrinsically allows multiple ramifications. The research gap identified could be filled with more studies about engineering consultancy organisations, which are critical in the development of modern economies.

Beyond the research gap, to investigate strategic planning process and strategic decisions in a quantitative manner by means of survey or similar could be attempted, in such way that generalisation could be achievable. Additionally, within the same context it would be interesting to investigate another sector within the construction industry like architectural organisations to understand how their strategic behaviour and decisions has been in the last years and compared it against engineering consultancy organisations. This could be extended to other construction actors, gaining a broad picture of the effect of the economic crisis in the UK construction industry. Naturally the study could be extrapolated to another country. However if this is attempted the researcher should be aware that the PESTEL factors and the implications are in occasions local to the organisations. In any case an analysis in different countries may show behavioural patterns.

Finally, the authors consider that to research the strategic decisions that may not be considered strategic when taken, but time proves to be strategic due to the evolution of the general environment may be an interesting topic.



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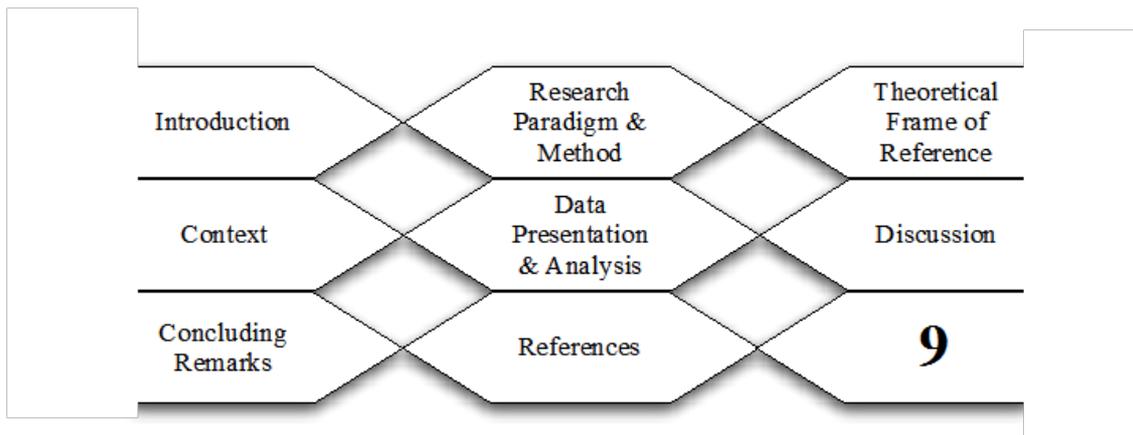
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Appendixes

Appendix 1. Interview acquisition contact details

All of the below listed email addresses were obtained from direct contact or organisations' official web pages.

Denotes organisations that take part of this research.

Organisation	Email address	Direct contact
AKT II	stella.conabeare@akt-uk.com	
Alan Baxter	abaxter@alanbaxter.co.uk	
Buro Happold - #		x
Eckersley O'Callaghan		x
Engenuity - #		x
Expedition	info@expedition.co.uk	
Jenkins Potter	London@JenkinsPotter.co.uk	
Price & Myers	david.derby@pricemyers	
Packman Lucas	info@packmanlucas.co.uk	
Structural Solutions - #		x

Appendix 2. Standardised email for initial contact

Dear Sir,

My name is Victor Frutos-Juarez and I am a student of Masters in Strategic Project Management European <http://www.mspme.org/>. I have worked for a top consultancy engineering organisation in the UK for 6 years.

I am currently working on my dissertation together with my thesis partner Jose Osorio (copied in this email). The title of our research is:

Strategic Planning process in a VUCA (volatility, uncertainty, complexity and ambiguity) business environment - An empirical case study of strategic planning process in the United Kingdom engineering consultancy within the construction industry.

I have attached the research proposal for your information. The main idea behind is to carry on a cross-section analysis of the consultancy engineering sector looking for the differences and commonalities in their strategic planning.

As mentioned, we have a background within the engineering consultancy industry in the UK, and 3 consultancy engineering organizations (micro-firm, small one and big international consultant) have agreed to take part in the research.

We are looking for a medium size organisation as XYZ that it would be keen to collaborate in our research:

Your collaboration would be in form of a semi-structured interview to be conducted during the next 10 days at your convenience.

The interview would be with one of the persons that shapes the strategy at XYZ.

All the information would be confidential and if you wish XYZ would be anonymous.

Naturally, within the research you will be fully acknowledged.

We have conducted some interviews and the feedback we are receiving from the hosting organisations is very positive as the interview is serving as reflection about their approach to strategy in the unstable times we are living.

We hope you are interested in our research and would like to take part.

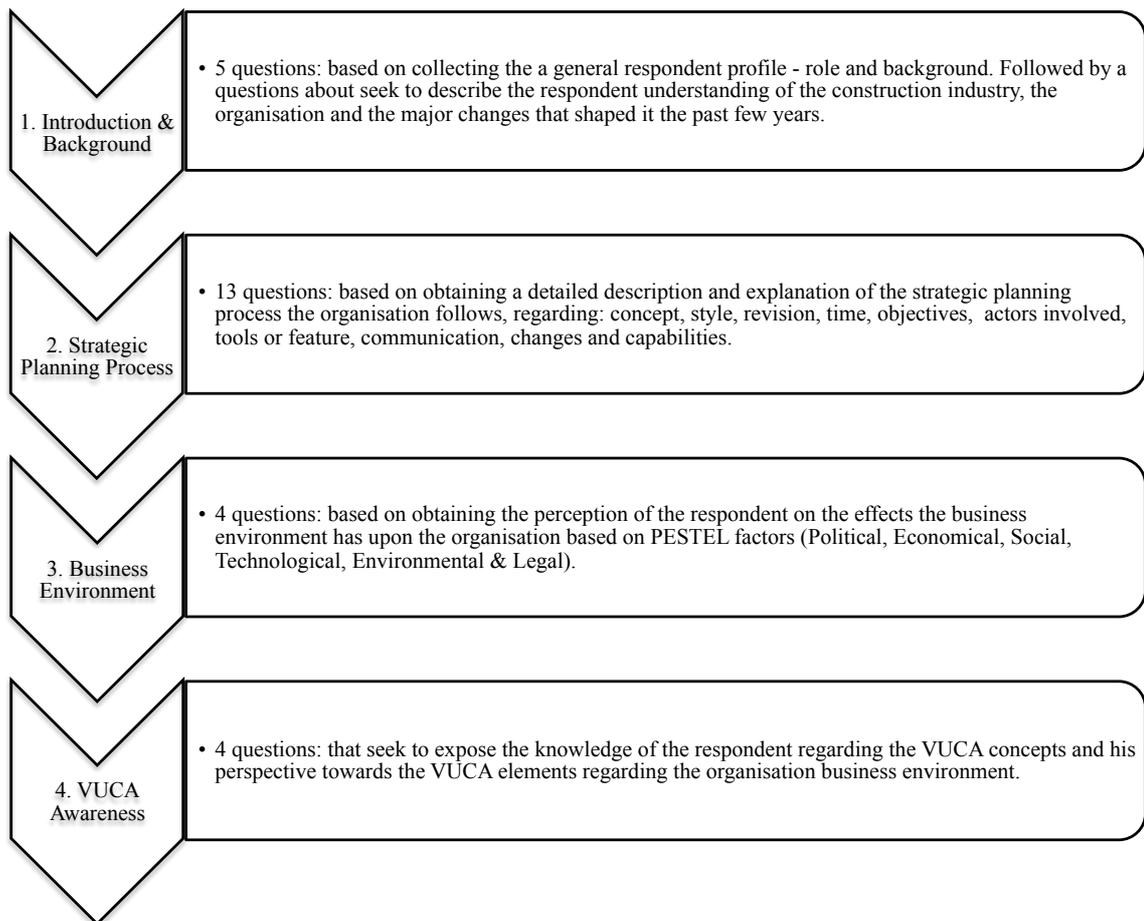
Please do not hesitate to contact us if you have any issues. We can email you additional information if required (e.g. CVs).

Looking forward to hearing from you.

Kind regards,

Victor Frutos-Juarez & Jose Osorio

Appendix 3. Interview Structure and Guideline



Part 1 – Introduction: Organization background and industry

- Could you please tell us about the organisation you work for and your role in this organization?
- Could you please describe the industry where your organization operates, main characteristics?
- What are the most significant threats and opportunities that your industry face?
- How the organization has change in the last five years (e.g. *economic crisis*)?
- What are the most significant threats and opportunities your organization face in the short and long term?

Part 2– Strategic Planning Process

- What do you understand by strategic planning?
- According to this, do you think your organization strategic planning is formal or informal?
- In the last five years is there any change in the strategic planning process, from formal to informal, from informal to formal or it has remained the same?
- Independently of having a formal or informal strategic planning process what type(s) of information and tools (input) are used to develop the strategic plan.
- Do you conduct any type of business environment analysis to aid the strategic planning process? If yes, please describe.
- What is the revision frequency of the strategic plan?
- Has the short time horizon of the strategic planning in the last 5 years become shorter, remains equal or is longer?

- What is the time horizon of the strategic plan?
- Which are your strategic planning goals in general terms?
- Who is involved in the strategic planning? Are there any specific roles of those involved?
- Are there any special features of the strategic planning system?
- Is the final outcome communicated to all the organization? How?
- Is there any shift of decision making responsibility from top-down to business-level managers (bottom-up) in the last 5 years?
- Which ones have been in the last 5 years the most critical decisions taken in the organisation
- Do you have explicit development actions to build / improve organisational capabilities?
- What approach do you follow in order to remain competitive and win work?

Part 3 – Business Environment Analysis and PESTEL

- What do you consider is the impact of the business environment on your organization?
- Would you consider the following factors affect your organization? If yes: how, what has been the effect in the organization (e.g. meaning strategy) and what have you done to counteract it?
 - Political Factors
 - Economical Factors
 - Social Factors
 - Technological Factors
 - Environmental Factors
 - Legal Factors
- Have you changed your organisational structure as a consequence of environmental conditions?

Part 4 – VUCA

- What adjectives would you use to describe the business environment where you operate?
- Do you consider the business environment where your organization operates to be Volatile, Uncertain, Complex and Ambiguous?
- Do you think there are relationships between Volatility, Uncertainty, Complexity and Ambiguity?
- Where you aware of the VUCA acronym ?

Appendix 4. Association of Consulting Engineers (ACE). Benchmarking

The Association of Consulting Engineers provides benchmarking at two different categories. The first category is designed specifically for organisations with up to 50 employees in comparison with larger players. Table 01 (below) summarises the main findings extracted from the following reports: ACE Benchmarking Lite Industry Overview 2011, 2012; and ACE Benchmarking Report Industry Overview 2011, 2012.

Benchmarking Indicator	Year	UK small organisations (≤50 employees)	UK medium & large organisations (>50 employees)
Increase of revenue	2011	-1.6%	-3.3%
	2012	0.4%	2.2%
Profit margin improvement	2011	10%	4.2%
	2012	13.9%	5.1%
Average debt collection period	2011	78 days	80 days
	2012	90 days	77 days
Fee earner's cost (% of revenue)	2011	58%	59.4%
	2012	54.8%	61%
Increment of overhead cost	2011	21.6%	21.6%
	2012	23.5%	22.2%
Total fee income per project hour	2011	£60 per hour	£59.3 per hour
	2012	£60.3 per hour	£63.2 per hour
Level of revenue earned per £1 of employee costs	2011	£1.61	£1.56
	2012	£1.79	£1.49
Success rate for competitive tendering	2011	65%	48%
	2012	48%	53%

The second category is between consultancy organisations in Europe against the UK ones. Table 02 (below) summarises the main findings extracted from the following reports: ACE Industry Overview € version 2012, 2013.

Benchmarking Indicator	Year	UK organisations	European organisations
Increase of revenue	2011	2.2%	7.6%
	2012	1.2%	7.5%
Profit margin improvement	2011	7%	7.3%
	2012	6%	6.1%
Average debt collection period	2011	77 days	100 days
	2012	80 days	90 days
Fee earner's cost (% of revenue)	2011	61%	57.3%
	2012	58.5%	61.6%
Increment of overhead cost	2011	22.2%	20%
	2012	21.3%	22.1%
Total fee income per project hour	2011	€66.3 per hour	€82.4 per hour
	2012	€77.1 per hour	€91 per hour
Level of revenue earned per €1 of employee costs	2011	€1.56 (average between both)	
	2012	€1.5	€1.43
Success rate for competitive tendering	2011	53%	35%
	2012	43%	48%

Appendix 5. The interdependency of the VUCA variables

Chapter 4 introduced the idea that the four variables forming the acronym VUCA have a dependent relationship. This **Appendix** has the aim to explore by examining the four interrelated dimensions: volatility, uncertainty, complexity and ambiguity against a reductionist perspective. Hayek (1952, p.47) underlines that it is through the understanding of the relationships among the elements that the talk “about the whole being more than the parts becomes more than an empty phrase”.

Volatility induces uncertainty (Downey and Slocum, 1975, pp. 573-574; Tung, 1979, p. 675; Bourgeois, 1980, p. 33; Bourgeois, 1985, p. 554; Gioia et al., 2012, p. 368) being for Tosi et al. (1973, p. 31) these two variables highly correlated. Environmental volatility is the most important cause of perceived uncertainty for decision makers in organizations (Duncan, 1972, p. 325). It produces non-linear changes (property of complexity) and less predictability, consequently uncertainty cannot be modelled because it is not possible to predict the likely future state (Milliken 1987, p. 135; Eisenhardt & Martin, 2000, p.1111). This cause (volatility) and effect (uncertainty) is typical of strategic decisions (Eisenhardt, 1989, p.545). Bourgeois (1985, p. 571) researched organisational goals and concluded that in high volatile environmental settings attempts to avoid uncertainty may be more harmful than helpful.

Nonetheless, volatility not only produces uncertainty, also ambiguity (Mosakowski, E., 1997, p. 422; Gioia et al., 2012, p. 368) and this varies with market dynamism (Eisenhardt & Martin, 2000, p.1114). Carson et al. (2006, pp. 1058-1059) close the loop decomposing uncertainty into ambiguity and volatility. The former refers to uncertainty about past and present situations, and it is related to perception of the environment independently of its change over time. On the contrary, volatility denotes the unpredictability of change and the speed of this in an environment and is linked to the future. Lawrence & Lorsch (1967, p.14) and Stoffels (1994, p. 21) also think that environmental uncertainty has two aspects: speed and frequency of change.

Furthermore, volatility creates complexity (Gallati, 2003, p. 16). The accelerated change in different fronts (e.g. technological, political, economical, etc.) results in an operating environment that grows in complexity (Ho, 2012, p. 82). Besides, the relationship between volatility and complexity is bi-directional. According to Emery & Trist (1965, p.31), volatility results from one of the inherent properties of complexity: the multiple character of the casual interdependencies among parts, actors, systems, etc.. However, for McCann & Selsky (1984, p. 467) complexity creates volatility when skills and resources are strained. Bourgeois (1985, p. 554) argues that volatility is opposed to complexity being the former the most difficult variable for effective strategy making.

In different ways, complexity also produces uncertainty (Dees and Beer, 1984, p.56; Milliken, 1987, p. 135). For Osborn (1976, p.180) environmental complexity is a combination of uncertainty and reliance. For Brugnach et al. (2007, p. 1081) the complex dynamics of business environments induces uncertainty as result of the multitude of processes that interact in a non-linear fashion making predictions virtually impossible; they also provide a synergetic statement when mention that dealing with uncertainty becomes complex (p. 1089). Huber and Daft (1987, p. 134) build around interaction and interdependency of a larger number of diverse agents, elements, etc. to propose that this increment of complexity is translated into increased uncertainty. McCann & Selsky (1984, p. 461) and Davies (2004, p. 20) agree: escalating complexity

increases uncertainty. Taleb (2007, p.16) presents a different perspective, since categorisation always produces reduction in true complexity, this reduction also eliminates sources of uncertainty which ultimately offers a misunderstanding of the fabric of the world. Consequently, complexity in the business environment is positively associated with a high degree of perceived uncertainty (Downey and Slocum, 1975, p. 574).

Other authors have proposed the link between complexity and ambiguity. Reed & Defillippi (1990, p. 91) propose that ambiguity arises as result of complexity. Along similar lines, Martin (1992, p. 134) express that ambiguity is subjectively perceived, interpreted and felt; and occurs when something is complex. Thus, the complexity of the business environment may affect the ambiguity experienced (Mosakowski, 1997, p.421) as this environment presents situations that are characterised by multi-causality and ambiguity (Ho, 2012, p. 84). Finally, Ball-Rokeach, (1973, p. 379) argues that ambiguity is a function of, again, the interdependency of variables that define a situation.

In the other hand, ambiguity may create uncertainty (Lissack, 2011, p. 202). For example, ambiguous situations in the business environment as result of regulations leads to high environmental uncertainty (Lopez-Gamero et al., (2011, p.429) and this is reflected in a lack of willingness to act (Lissack (2011, p. 202). Ambiguity also creates uncertainty when there is lack of information (North & Macal., 2007, p.13). Other authors have a different view: uncertainty results in ambiguity (Axelrod, 1997, p. 74). This happens in decision making situations under uncertainty where there is either incomplete information about the likelihood of present events (Eichberger & Kelsey, 2009, p. 114); or inability to predict all the relevant variables that define the future (Courtney et al., 1997, p. 72). As a result, holistic view of uncertainty must embrace variability and ambiguity (Chapman & Ward, 2003, p.319). In both cases ambiguity is created as result. Other authors go beyond, Dewulf et al., (2005, p.116) claim that in the current environment characterised by volatility, uncertainty, complexity and interdependency of the context, the decision making may result in ambiguity.

All the same, the relationships between ambiguity and uncertainty seem to complement each other. Schrader et al. (1993, p.76) and North & Macal (2007, p. 13) define ambiguity as lack of clarity; uncertainty is simply lack of information. On the same thought, Weick (1995, p. 27) strongly claims that “the problem is that there are too many meanings, not too few. The problem faced by the sense maker is one of equivocality, not one of uncertainty. The problem is confusion, not ignorance.” Schrader et al. (1993, p. 77) explain the differences between uncertainty and ambiguity bearing on the problem-solving process. Uncertainty is the situation created when the problem solver has, in his/her view, a sufficient clear understanding of the problem to resolve, however individuals or organisations do not know with precision the outcome of the problem solving exercise; in this case, it is required more information in order to make predictions about the future. On the contrary, ambiguity happens when the problem solver is not satisfied with his/her understanding of the problem and consequently of the process to follow and the outcome: too much information floating around being individuals and organisations confused by the multiplicity of ideas, perceptions, etc. happening simultaneously. In any case, Schrader et al. (1993, p.76) sustain that the decision making is mostly carried out under conditions of ambiguity rather than uncertainty.

Appendix 6. Data Analysis

Figure below shows the different techniques used during the data analysis off this research that have lead to concluding remarks.

