CONSTRUCTION MANAGER'S INFLUENCE ON PROJECT SUCCESS

V. LATORRE

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Copyright Statement

Abstract

Construction managers aim to deliver successful construction projects; however it is unclear how they perceive construction project success and how they influence that success.

Focusing on the construction phase of the project, a Systems Conceptual Framework is induced from the literature review. In-depth interviews undertaken by 10 construction managers, whose experience accounts for over 130 construction projects, provide data to derive categories which populate the Systems Conceptual Framework initially developed. By adopting an unstructured approach to the data collection, a holistic view of how construction managers impact the success of construction projects is acquired. The construction managers' influence on success is identified through the skills, competencies and characteristics which enable success of the construction phase (*enablers).*

This inductive-deductive methodological approach allows the identification of categories and relations between them which, along with the Systems Conceptual Framework, form the Empirical Model. A Pareto analysis was carried out in order to determine the relative relevance categories have against each others.

Overall, 56 relations were identified between the 37 categories derived from the data analysis. The results of the research show that the influence of construction managers on project success is determined by twenty *enablers*. According to the Pareto analysis, 6 *enablers* were most relevant; they are separated into two interrelated sets: Communication, Leadership and People Management, and Ability to Pull Back, Experience and Technical Skill. This suggests that construction managers consider mastering 'hard' and 'soft' aspects of the job are both equally relevant to the success of the project. The high interconnectivity between the categories is what allows the Empirical Model to be developed; making it the most important finding of this research.

Evidence indicates that construction managers work with both a subjective (qualitative) and an objective (quantitative) concept of success. The quantitative concept of success can have between two and four success factors, which are prioritised according to the needs of the client; there is always one critical success factors that leads the project. The subjective concept of success incorporates aspects of the end user and personal satisfaction, and specific characteristics of the project. The results also show that the outcomes of construction projects can be three: success, failure, and a third outcome which is neither, an outcome between success and failure. Participants have identified this last outcome as being the most frequent.

Keywords: construction managers, project success, construction industry.

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Author's Declaration

At no time during the registration for the degree of PhD in Civil Engineering has the author been registered for any other University award.

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"Buildings are monuments to the people who built them, for good or ill"

(Fellows, 2002, p.2)

CHAPTER 1: BACKGROUND

This chapter introduces into the topic of this thesis. It shows the relevant information that justifies the need for this research project, presents the research problem and summarises the contents of the following chapters in this thesis.

1.1. The Construction Industry in the UK

This section presents the argument that leads to the research problem. The research project is outlined by the research questions, aims and objectives (Section 1.2).

1.1.1. The Relevance of the Construction Industry

The Construction Industry is relevant to society as a whole (Lim and Zaim Mohamed, 1999). "Construction is a hugely important industry; not only because it accounts for some 8% of GDP, but because the product of this industry – the built environment – affects us all" (Strategic Forum, 2002, p.5). The Construction Industry serves society; construction projects are actually vehicles for improving public services. Buildings and the built environment are essential to development, since they determine the standards of life that the individuals of a community can expect and the services available to them (Bourn for National Audit Office, 2005).

The Construction Industry has a wide and a direct impact on a country's economy. It is responsible for building the economy (Rao, 1998), is one of the biggest employers in any country (Butler, 1992), it trains labour, and it creates new business and investment opportunities.

The Construction Industry also impacts on other aspects of society, like social cohesion (Bourn for National Audit Office, 2005). In summary, it influences society far beyond the direct influence that the built environment has on people.

Consequently, the success or the failure of a construction project has an impact on our society as a whole, and the consequences of such success or failure reach far beyond the stakeholders directly involved in a construction project.

1.1.2. Performance Improvements

In 1994 the publication in the UK of 'Constructing the Team' (Latham); commonly referred to as 'The Latham Report' presented an overall assessment of delivery and productivity standards of the Construction Industry in the UK; it pointed out the need for improvement of the industry's product to achieve worldwide standards. Consequently, the Construction Industry reoriented its focus and efforts towards client satisfaction. It is ultimately the client who detects the need or business opportunity for a construction endeavour, and sets the standards that the industry must satisfy. The Latham Report (1994) encouraged the different actors in the industry to team up, improve team working and move towards the aim of satisfying the client. This Report suggests that the improvement of delivery standards is the path that leads to delivering client satisfaction.

Later, the 'Rethinking Construction' Report (Egan, 1998), or 'Egan Report', proposes to take this delivery drive further, inviting the UK Construction Industry to do things entirely differently from its traditional ways. The intentions from the Latham Report (1994) are transformed into quantitative goals and a deadline of 5 years for their achievement is projected. Figure 1 shows the expected changes and improvement in the key aspects, from which one of the five main drives is client satisfaction ('Focus on Customer').

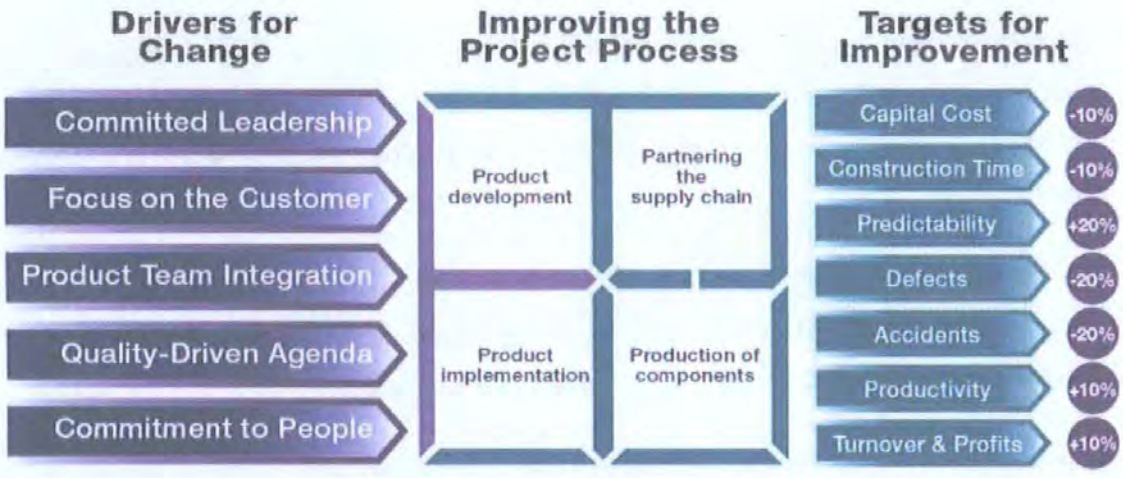

Figure 1: The Egan Drivers or 5:4:7 Model (Egan, 1998)

As shown in Figure 1, five out of the seven targets for improvement are direct responsibility of the construction manager (Capital Cost, Construction Time, Defects, Accidents and Productivity). This highlights the relevance of construction managers in the process of meeting the overall goals set for the industry.

The Demonstration Project Programme, called 'Movement for Innovation' (www.m4i.org.uk), has been developed in order to give an incentive for construction firms to get involved and provides opportunities for those firms to bring forward projects that demonstrate the innovation and change being sought to 're-think construction' and deliver customer satisfaction (Strategic Forum, 2002). In return for this extra effort, construction companies acquire a valuable competitive advantage in terms of both marketing potential and performance improvement.

1.1.3. Measuring Change

Construction projects' performance measurement is key to ensuring that the improvements in the delivery of cost, time and quality are accomplished (Bourn for National Audit Office, 2001).

Key Performance Indicators (KPIs) have been developed as a way to facilitate a valid demonstration of innovation and change (BERR, 2008). To complement them, Design Quality Indicators (DQIs), and Environmental Performance Indicators (EPIs) have been also developed. Demonstration Projects are required to measure their performance against these KPIs, enabling a comparison to be made between all industry performance and that of the Demonstration Projects (Strategic Forum, 2002), in order to demonstrate whether Demonstration Projects achieved (or not) substantially better performance than the average construction projects not included in the Programme. However, all and any construction project's performance can be measured using KPIs.

KPI results indicate that the best outcomes were achieved by Demonstration Projects (Strategic Forum, 2002), and they have been accepted as a valid measurement tool by the Construction Industry as a whole. However KPIs vary according to the perspective of the management (Cox *et al*, 2003). Nevertheless, the results presented for year 2001 (Strategic Forum, 2002) are not only considered as a confirmation that the Movement for Innovation is a successful initiative, but also that measuring performance is important to the improvement of the overall performance of the Construction

Industry: "Our experience tells us that ambitious targets and effective measurement of performance are essential to deliver improvement" (Strategic Forum, 2002, p.7).

As a result, amongst the wide range of alternatives to achieve a client's satisfaction, the Construction Industry is pushed towards meeting Egan's targets by improvement of performance – as is measured using a proposed set of specific indicators, KPIs. Consequently, effective performance assessment is now seen as being the key to meeting the goals set for the industry and to delivering the required improvements, achieving best practice and generating successful outcomes (Egan, 1998).

1.1.4. Construction Management as a factor to improve the overall performance of the Construction Industry

How construction management impacts on project success is a question that remains unanswered. Latham (1994) identifies the need for the industry to determine the effectiveness of construction management. In a later publication, Brown and Adams (2000) stated that the nature of this influence in terms of time, cost and quality outcome has not yet been defined by the literature.

Nevertheless, initiatives which are intended to improve the overall performance of the Construction Industry recommend putting a dedicated effort into improving the management of construction projects (Bourn for National Audit Office, 2005; Strategic Forum, 2002; Egan, 1998; Walsh, 1998; Latham, 1994). Various recommendations as to where to focus efforts in construction management and construction managers have been identified: clearer status within the industry, more training (Latham, 1994), capability of integrating processes throughout a project's life cycle, and proper management of the supply chain (Egan, 1998) are just some of them. These reports then suggest that construction management is relevant to a construction project's outcome, and specifically to the success of construction projects.

Furthermore, it can also be proposed that as the complexity of construction projects increases, performance standards rise, and clients demand more from construction projects, construction managers should have more influence on the outcome of the construction project.

Brown and Adams (2000) identified the need for the UK building industry to determine the impact of construction management on a project's successful outcome. However,

this quantitative study did not derive construction management as a factor critical to the success of the project. This may have been due to the fact that a quantitative approach may not be the most appropriate for answering that research question; it may have also been due to construction management being a process which involves several variables, from which construction managers are just one.

1.1.5. Relevance of the Construction Manager's Role

Decisions regarding construction projects are ultimately part of the construction managers' duty, hence construction management is relevant, if not key, to achieve the changes required by the new approach and leading performance improvement (Egan 1998).

Some specific aspects of a construction managers' duty have been identified as having an impact on project success. However, there is a need to determine how the construction manager impacts the success of a project in a holistic and qualitative approach. Construction is complex (Simiyu, 2004) and dynamic (Tah and Carr, 2001). The three traditional factors of cost, quality and time do not allow to measuring success within the complexity of Construction Industry (Dainty *et al*, 2005). Hughes *et al* (2004, p.31) identified subjective considerations that "can have an important impact on perceptions of project success". Successful delivery requires an integrated process in which design, construction, and maintenance are managed together; factors like risk in every possible aspect should be thoroughly assessed as variables that require good management in order to deliver overall success for the project (Office of Government Commerce, 2003).

Research into project management has evolved to studying the entire life cycle of the project, hence the specific conditions of the construction phase have are not usually considered by research (Jugdev and Müller, 2005). This research studies the construction manager and the critical success factors for construction projects during the construction phase, how the construction manager impacts on the final successful outcome of the project, and to enable a better understanding of the relations that exists between construction managers and construction projects' success. Amongst all stakeholders in a construction project, the construction manager is an essential part of its construction phase, as it is the person who holds the overall responsibility on the site (CIOB, 2002). In order to gather these aspects into one set, and for the purpose of

this research, these characteristics, skills and competences are referred to as construction manager 'Enablers'.

1.2. Research Problem

This section outlines the overall research problem. This is done by presenting the Research Questions, Aim and Objectives.

1.2.1. Research Questions

How do construction managers impact on the success of the construction project?

What do construction managers consider as a successful outcome of the construction phase of a project?

How do construction managers understand and perceive success and failure of the construction phase of a project?

1.2.2. Aim

This research adopts the point of view of the construction manager to determine how construction managers are relevant to the successful outcome of a project, and determines which specific aspects of construction managers are critical to delivering a successful project.

1.2.3. Objectives

To achieve the research aim, the following objectives are set:

Identify the set of construction manager's enablers that are relevant to the successful outcome of a construction project.

Determine the overall influence that construction managers have on the successful outcome of a project, using an Empirical Model.

Propose an Empirical Model which illustrates the relations and interactions between construction manager's enablers and the successful outcome of the construction phase of a project.

A methodology has been devised to achieve these objectives and to provide an answer to the research questions. The methodology is presented, discussed and justified in Chapter 3, Research Methodology.

1.3. Summary of Chapters and Contents

This section describes the main contents of the remaining chapters of this PhD Thesis.

Chapter 2: Literature Review

This chapter presents and discusses knowledge areas relevant to this research. It discusses concepts and ideas related to construction project success and construction manager's influence on construction project success. It presents concepts and ideas, and proposes suitable definitions for the main concepts upon which the research is developed. The outcome of this chapter is the identification of the research gap which this research covers and the set of aspects of the review which inform the Systems Conceptual Framework.

Chapter 3: Research Methodology

The chapter is divided into three sections, Research Philosophy, Characterisation of the Research and Research Scope, and Methodology Plan.

The Research Philosophy section outlines and discusses the foundational philosophy upon which this research is developed. The researcher's paradigm is declared.

The Characterisation of the Research and Research Scope subsection define the overall scope of the research and relates it to the Construction Industry's requirements.

The Methodology Plan subsection presents a thorough revision of all research methods relevant to qualitative research, and discusses and justifies the specific methods chosen for this research project. It presents and describes the research process by which each of the research objectives are achieved, by identifying all tasks involved in answering the research questions.

Chapter 4: Development of a Systems Conceptual Framework

This chapter utilises Systems Theory, the Research Problem and the existing literature in order to sequentially develop a Systems Conceptual Framework to analyse the data collected through interviews.

Chapter 5: Grounded Analysis

This chapter presents the results of the analysis of the interviews undertaken in this research. Firstly, it presents and justifies specific aspects of the interview techniques utilised in this research project. Secondly, separate results for the coding of each category and relations are presented.

Finally, it presents results of an interview undertaken for triangulation purposes and compares the relevant results.

Chapter 6: Development of an Empirical Model

This chapter presents the Empirical Model. It describes all 37 categories and presents the 56 relations which jointly form the Empirical Model.

The Empirical Model is developed from the outputs of Literature Review, Methodology, Systems Framework, and Grounded Analysis chapters. This chapter's most relevant output, the Interconnectivity between categories, is what brings the Empirical Model together and is the most important finding of this research.

Chapter 7: Conclusions, Limitations, Contributions and Future Research

This chapter presents the conclusions derived from all the analyses presented in this research, discusses the implications of the results, describes the scope of the findings derived from the research's boundaries, presents the contributions to knowledge of this research, and proposes future research that originates from the results, and the use of the Empirical Model.

CHAPTER 2: LITERATURE REVIEW

This chapter presents, explores and discusses literature relevant to construction project success and construction managers. It has been separated into four sections. Section 2.1, Project Management Research, presents the concepts of project and construction projects, and discusses the different approaches utilised by researchers to explore project management.

Section 2.2, Construction Project Success, presents different definitions of project success, and discusses the implications derived from those definitions. It also explores critical success factors.

Section 2.3, Role of the Construction Manager, presents different views on the role of project managers, followed by the role of construction managers. This section then presents a succinct overview of different areas in which skills, competences and characteristics have been identified as relevant for project managers and construction project success.

Finally, a summary is presented in Section 2.4. This summary integrates the different views of the literature which have been presented and discussed in this chapter, and explains how this analysis informs the Systems Conceptual Framework.

2.1. Project Management Research

This section starts broadly by identifying the elements which define a project. It also characterises construction projects, presenting the particular features which distinguish construction projects from other projects in different industries. Section 2.1.3 presents findings in the project management discipline, with relation to their research approach. The discussion covers the use of the soft and hard paradigms in project management, the explicit theory of project management, and the use of empirical-based project management research.

2.1.1 Projects

The term 'project' is widely used in the literature. Projects are undertaken in all fields, and therefore, definitions are generic and broad. Definitions include the elements which projects possess and differentiate them from other sorts of endeavours.

Projects are developed to satisfy a need. The need for a project justifies its existence, and is expressed as one or more objective(s); each project has its own specific objectives, which make it unique (Mantel and Meredith, 2003; Young, 2003; Cleland, 2002). The objectives of the project represent previously specified targets or expectations that are measured in order to determine if the need has been satisfied. The objectives of a project are hence their most important element since they justify the existence of that particular project.

Along with objectives, uniqueness is also a characteristic that defines a project. Since a project is developed to satisfy a need, or requirement, they are unlikely to achieve identical results when repeated in the same way (Young, 2003). This suggests that there are factors affecting projects which cannot be controlled, and which therefore influence the outcome of the project. This indicates that the context upon which a project is developed is an influencing aspect which should always be acknowledged when assessing a projects' outcome; despite the fact that it cannot be changed or manipulated. This makes context dependency another relevant characteristic of projects.

Projects have a temporary nature; they clearly specify starting and finishing points (Young, 2003). These points are usually dates, but they can also be certain events or milestones; for example, the finishing date can be specified to be the date in which all objectives have been met. This can also be called 'natural termination' (Cleland, 2002).

Projects consider a set of interrelated activities. The activities of a project are aimed towards accomplishment of the project's objectives. These activities are linked to one another, and there is an organised manner of undertaking these activities, which has derived from those links made between that set of activities (Cleland, 2002; Young, 2003).

In summary, six basic elements define what projects are: objectives, uniqueness, starting date or event, ending date or event, involving a set of interrelated activities,

and context dependency. These are relevant aspects of projects which derive from their unique individual nature. Henceforth, the term 'project' in this thesis is used to refer to a unique undertaking which involves several interrelated activities; these are developed within a defined time frame, for the accomplishment of one, or several, specific objectives.

2.1.2 Construction Projects

The Construction Industry is a project-based industry (Ahuja, 1994) the characteristics of construction projects differentiate these projects from projects within other industries.

The Construction Industry differentiates itself from other industries in at least three different ways. Firstly, there is a factory built on site for the purpose of constructing a building, an enclosure, etc., whereas in other industries the factory has a fixed geographical location. This implies the resources made available throughout the project (materials, subcontractors, qualified workforce) are subjected to the project's location, which in turn impacts upon the constraints imposed to the construction manager. Within other projects, for example in manufacturing, the project manager would have the possibility to access resources from different places, since the factory does not change its location. Therefore, the context of the construction project, as identified by Young (2003), will impose restrictions to the resources available as the location of the project needs to be suitable for the construction project to be developed and finished successfully.

Secondly, the construction industry is a one-time industry; a factory is developed to create a specific product and it will be undone after the delivery of the project. This imposes an obstacle for the development of long term relationships with subcontractors and suppliers, since the construction site exists only for a limited period of time in a certain place.

Finally, the product of the Construction Industry cannot be moved to a different location when there is overstock or it does not respond to the demands of the local market. Therefore, construction projects differ from the general and broad definition of projects, and due to this, the specific characteristics of construction projects must be considered when analysing their outcomes.

Construction projects are projects in which the overall objective is to deliver the product of the Construction Industry, and to generate this product through the process of building. Consequently, in this research 'construction projects' are defined as unique, context-dependent undertakings which involve several interrelated activities; these activities are developed within a specified time frame for the purpose of producing a building or enclosure.

The purpose of delivering a construction project is transferred to the project's objectives. Construction projects are subjected to the particular characteristics of the Construction Industry and, therefore, require particular attention.

The construction phase of a project is one part of a larger project, and therefore is considered by the client to be a smaller part of their overall project. The different stages an overall project moves through have different aims, different stakeholders, and hence are expected to have different objectives (Pinto and Prescott, 1998). When all these objectives are accomplished, they contribute towards the overall objective of the client's larger project.

The focus of this research is the construction phase of an overall project. Henceforth, the term 'construction project' is used in reference to the building phase of a project. The starting date and the finishing date of the construction project are defined by the dates in which the contractor takes, and returns, the ownership of the construction site from the client. On the whole, the objective is to deliver a project which satisfies the specific needs, and the standards, initially set for the project. The specific need for the project and the particular characteristics of the Construction Industry, determine the uniqueness of construction projects and differentiates them from the product of other industries.

In review of the literature, construction projects are characterised by being intricate, complex (Brockman and Girmscheid, 2007; Naaronja and Uden, 2007), dynamic and time-consuming undertakings (Clough, 2000), which are unique and different from each other (Cleland, 2002; Mantel and Meredith, 2003; Young, 2003). Besner and Hobbs (2008) demonstrate that construction projects differ from projects in other industries. In addition to the features singled out by the literature, and in light of the particularities within the Construction Industry, construction projects possess characteristics which justify analysing them separately to projects within other industries.

Judgev and Müller (2005) argue that, over the last four decades, the study of the project management discipline has moved towards considering the whole life cycle of projects. The main consequence of broadening the approach is that the concept of success becomes more general and less specific to the reality, and particularities of the different industries or phases of the project.

Previous research undertaken in the project management discipline, due to the generic approach to project management, fails to identify or acknowledge the peculiar features which reflect the reality of construction projects. For example, Gao *et al* (2002, p.186) declares "Hypothetically, if project processes were implemented using all the key factors related to project success, the project outcome should be a predictable success". Gao *et al's* statement does not recognise that projects, and therefore the success of the project, are related to their specific context. This is even more relevant in construction, a project-oriented industry in which certain aspects, like location for example, define constraints upon the project.

2.1.3 Research Approaches to Project Management

The management of projects is a key aspect in achieving a project's goals. Within the literature, an increasing acceptance of the soft paradigm has been identified (Pollack, 2007). Pollack performs an overall review of the literature, and identifies hard paradigms as being supported by quantitative techniques and attributes related to objectivity; the soft paradigm involves qualitative techniques and emphasises on contextual relevance. Furthermore, Pollack argues the use of a hard paradigm fails to provide a reliable representation of the reality of project management, as they identify only a part of the problem. Broader applications of a soft paradigm will allow representing organisations considering the complexity of the people who perform that work. The complexity of construction projects and the Construction Industry should always be a key consideration when analysing project management issues (Bertelsen, 2003)

Koskela and Howell (2002) detected the lack of an explicit theory of project management. By exploring the existing literature, they identify that project management theory is divided into project theory and management theory; therefore declaring the need to develop theory-generating research in project management.

Henrie and Sousa-Poza (2005) performed a review of 770 books and peer reviewed publications, in which it is identified that project management research is mostly theoretical, empirical-based project management research is scant. Hence identifying the need to develop research based on empirical data. Furthermore, Faisol *et al* (2006) identify the one-off project-oriented characteristics of the construction industry as an obstacle to transferring knowledge from other industries.

All together, these five studies suggest, that empirical-based research undertaken upon a soft paradigm will enable the study of complex organisations, such as construction projects. By applying these concepts, this thesis is better suited to respond to the question of how construction managers influence the success of the construction project.

2.2. Construction Project Success

The study of project success is a means to improving the effectiveness of projects (Chan *et al*, 2004). The success of a project has been identified as being strongly linked to an organisation's long term success (Shenhar *et al*, 2001). Therefore, advancements in the understanding of project success lead to improvement of the overall performance of the Construction Industry at both a project scale, and at a higher, organisational level.

The concept of project success is strongly linked to critical success factors, since one cannot be defined or understood in isolation from the other. The identification and understanding of the attributes of project success is relevant to the different stakeholders, and has an impact on the efficient execution of a construction project (Hughes *et al*, 2004; Blockley and Godfrey, 2000).

The definition of project success is complex, and subjective considerations may have significant impact on the perception of success (Jugdev and Müller, 2005; Baccarini, 1999). The definition, or concept, of project success is context dependent, as the success of the project is linked to the context in which it is developed and delivered.

Liu and Walker (1998) highlight that since the definition of project success is dependent on the context in which it is considered, variations of the perception and meaning differ, in turn, according to the stakeholder who is making that judgement. Lim and Zaim

Mohamed (1999, p.244) argue that "project success should be viewed from the individual perspectives" of the different stakeholders. These two views coincide in identifying the existing differences amongst views on project success, and the need to adopt a particular point of view in order to examine a view of project success and provide an understanding of it.

Project success is a concept for which the literature has no agreement yet (Nguyen *et al*, 2004; Prabhakar, 2005). Judgev and Müller (2005) argue that project managers have to constantly redefine success objectively and subjectively throughout the life cycle of the project, in order to assess the performance of different projects at their various stages and milestones. The objective, and subjective, concepts that construction managers have of construction project success is something the literature has not covered at length.

Within the project management discipline, project success has traditionally referred to operational elements of success (Shenhar *et al*, 2001; Belout, 1998); it utilises tangible performance measures of cost, time (schedule) and quality (Belassi and Tukel, 1996). This trilogy is known as 'The Iron Triangle' (Chua *et al*, 1999), and constitutes an objective measure of success. However, other authors have questioned the ability of these operational and objective criteria to provide a complete assessment of the project's outcome (Shenhar *et al*, 2001). In fact, there is little understanding of the subjective definitions, or concept of success, that has been identified by Judgev and Müller (2005).

De Wit (1988) differentiates between success and performance. The measurement of success is an outcome assessment to determine the accomplishment of the objectives; this is then somehow measured against the project's objectives, after or during project delivery. Success criteria are outlined to be standards which are set to determine whether or not a project has been successful. Performance, on the other hand, can be assessed at different moments in time, and at different stages of a project.

Sanvido *et al* (1992) refer to project success as the degree to which the project's goals and expectations are met. This definition is conditional to the interests of each individual project stakeholder; the project stakeholders' expectations can also vary throughout the project. By defining success as the degree to which the expectations are met, it presents success as a position within a scale, rather than a set clear and quantifiable standard goal, which would be straightforwardly measurable. Under this

conception of success, projects can be more or less successful according to how much or how well the different expectations have been met. According to De Wit (1998) project success is defined to be the moment when technical performance specifications are met and the mission of the project is accomplished, accompanied with high levels of satisfaction amongst the key participants. This definition presents the advantage of providing a framework, and by using a framework it is partially easier to determine project success; however it still remains subjective in terms of measuring satisfaction.

A subjective definition of the concept of success is provided by Ashley *et al* (1987), who define project success as the situation where results are much better than originally expected. Exceeding expectations as a measure of outcome takes the concept of success into the realm of subjectivity, which is difficult to identify, measure, and even more difficult for project managers to deliver projects which meet this standard. Therefore, for project managers, a completely subjective perspective on project success is impractical to implement and work with.

From contrasting different definitions of success, the relevance of providing an appropriate definition for project success becomes evident. The chosen definition of project success determines the possible outcomes of a project. For example, Belassi and Tukel's (1996) definition of project success considers meeting targets initially set for the project, which allows for two scenarios. The first scenario is when the targets are met, in which the project would be successful; the second scenario is when the targets are not met, in which the project would have failed. Such an objective quantifiable concept of success seems to suggest no other possible alternatives.

Whereas, by consideration of Ashley's (1987) definition, or the measurement proposed by Sanvido *et al* (1992), the distinction between success and failure as project outcomes, is not as clear. When a project exceeds the expectations initially set, then it is considered to be successful; when the project does not exceed the initially outlined expectations, it would have to be considered a failure. However, when examining the two definitions proposed by Ashley and Sanvido *et al*, it becomes evident that they do not consider the scenario in which the expectations of the project are met but not exceeded. In this third scenario, the outcome would be neither success nor failure.

Theoretically, a new middle ground arises between success and failure; under Ashley's (1987) approach to project success, the number of possible outcomes from a project would increase from two to three. The assessment of project outcomes has a direct

impact upon the results of research within construction management area, and the overall measurement of performance within the Construction Industry. This is a core aspect which requires further discussion and definition in order to develop a study that considers project success or success factors, although this discussion has not been found in the literature. Different definitions and views are presented within the literature, but no further discussion regarding implications of the definitions is examined.

In general, the literature presents possible outcomes of a project as either success or failure. Furthermore, some authors have identified critical success factors as being the same for success and failure. This suggests that success and failure are considered as being opposite from one another; in that sense, the factors that determine success are the factors that determine failure. Although little literature has attempted to define or explore project failure, Pinto and Mantel (1990) identified critical success factors as different from critical failure factors.

In terms of measurement of outcomes, there is no agreement in the literature as to whether success and failure are determined by the same variables or not; research in the project management discipline provides evidence to demonstrate both.

The literature has effectively recognised the existence of subjective aspects with relation to the measurement of a project's outcome, however there is disagreement as to how to consider those subjective attributes as part of a definition, concept, or measurement of success. As highlighted earlier, the disagreement in this definition or concept impacts on the possible outcomes of a project.

The degree to which project objectives have been met determines whether a project has failed or succeeded (De Wit, 1988). Project success tends to be considered as the opposite of project failure, even though there is academic literature which supports a different view, in that success and failure are seen as different but not necessarily opposite to one another (Pinto and Mantel, 1990). For example, De Wit (1988, p.164) states that "good project management can contribute towards project success, but is unlikely to prevent failure". Hence if good project management is a critical factor for the outcome of the project, then it does not affect success and failure in the same way. This implies that projects' critical success factors may not necessarily be the same as the project's critical failure factors; at least no literature has identified evidence to support this view.

The project's success and failure factors have to be taken into consideration when developing a set of success or failure criteria, and also to enable further research to be developed in this area. Overall, the literature suggests that critical success/failure factors should be derived independently.

The research scope is a relevant issue when determining project success or critical success factors (Cooke-Davies, 2002). Construction projects involve different participants for which the business opportunity is different in each case. Blindenbach-Dreissen and van den Ende (2006) determine that some critical success factors are more relevant in project-based firms – for example, engineering and construction firms – rather than functionally organised firms, and other factors are considered redundant. Thus the scope of the research is a key aspect which impacts upon the results of research which aim to identify critical success factors.

Project success impacts the organisation in diverse dimensions (Judgev and Müller, 2005). Hence the project's success is more relevant to companies in the long term. This results with problems of project management and project success seemingly much more relevant at higher levels within the construction firm, than the project level; emphasising the importance of identifying those factors to achieve an overall satisfactory result for the company.

Jugdev and Müller (2005) undertake a literature review to examine the evolution of research on project management for the last four decades. One relevant conclusion of their study is that the scope of research within project management has shifted from being mainly concerned with the implementation phase, towards including the client's view and considering the whole life cycle of the project. One of the consequences of this shift is that a large amount of state-of-the-art research evidence available today is not focused on the construction phase, but pursues the inclusion of all phases of the project. Factors identified as critical or relevant to success belong to all phases of projects; therefore factors relevant to the construction phase (i.e. relevant to the present research) will have to be distilled from a bigger set of factors proposed by the literature. However, the literature generally lacks appropriate definitions for those factors; creating obstacles to applying them to the context of construction projects.

The relevant aspects to take into consideration when exploring project success are namely:

- Definition of success, the concept of success
- Context of the project
- Objectives of the project, the objectives of the project are transformed into targets to which the project manager works towards.
- Phase of the project, the different phases a project goes through involve different stakeholders and different objectives.

Overall, the literature in project success has viewed success in different ways, of which many consider the broad project management discipline. This has caused the implementation of success strategies to fail (Fewings, 2005).

2.2.1. Critical Success Factors

In 1982 critical success factors are defined for the first time by Rockart as the few areas of activity in which favourable results are absolutely necessary for a manager to achieve the goals stated for the project (Sanvido *et al*, 1992; Chan *et al*, 2004a; Li *et al*, 2005). The fact that critical success factors are few might be arguable, this is apparently an accepted definition in terms of the capability of these factors to predict project success. Furthermore, success factors are viewed by the literature as targets to meet, rather than areas of activity.

Critical success factors are the key aspects of the project which lead to the accomplishment of a project's objectives. Identifying the critical factors to a project's success enables adequate resource allocation (Chua *et al,* 1999). The two factors most frequently identified by the literature as critical success factors are time and cost (Naaranoja and Uden, 2007; Gao *et al*, 2002)

Belassi and Tukel (1996) develop a study in which several sets of critical success factors, that have been identified by other authors, are analysed. They grouped together critical success factors based on the relations between them, instead of the identification of individual factors; this in turn provides a basic framework for measuring success. Belassi and Tukel argue that previous work generally tabulated critical success factors, without an agreed framework or criteria to group them. This lack of criteria or framework has generated a wide range of success factors. This not only suggests that frameworks are relevant to the study of project success, but it is also

aligned to the concept that the success of the project, as well as the project itself, are context dependent.

Belassi and Tukel's (1996) paper contains a literature review in which factors and criteria were collected from 16 previously published works. The proposed groups for the different factors are:

- Factors related to the project
- Factors related to the project manager and project team
- Factors related to the organisation
- Factors related to the external environment

There are five factors related to the project: size and value, uniqueness of project activities, density of activities (which is a measurement of relationships between activities), life cycle, and urgency. Six factors are related to the project manager: ability to delegate authority, ability to trade-off, ability to coordinate, perception of his/her roles and responsibilities, competence and commitment. Four factors related to the team are: technical background, communication skills, troubleshooting and commitment. Four factors are related to the organisation: top management support, project organisational structure, functional manager's support, project champion. Finally they also identify eight external environmental factors: political environment, economical environment, social environment, technological environmental, nature, client, competitors and subcontractors.

The outcomes of Belassi and Tukel's (1996) study are purely theoretical, they do not derive from data collected on the field, but from other research. Since it involves the use of results which have been obtained by other researchers at different moments of time (with no attempts to normalise the data to improve comparability), and by different methods, the outputs of Belassi and Tukel's paper have less rigour and the outcomes of less value.

Chua *et al* (1999) provides a multicriteria decision making approach in order to determine critical success factors to project success. This is achieved by consulting experts using the Analytical Hierarchy Process proposed by Saaty in 1980. This approach contributes to answering the question of what is a critical factor by demonstrating that there has to be consistency in nomenclature and scope to be able to effectively determine this set of factors. This need for consistency is a key aspect and has only been taken into consideration in the literature by Chua *et al*. The 67

factors identified were grouped into sets according to characteristics; the following four categories were created:

- project characteristics
- contractual arrangements
- project participants
- interactive processes.

Due to Chua *et al's* (1999) study involving the whole life cycle of the project, the set of critical factors identified cover all stages of a project and are not specific to the construction phase. However, this study identifies the influence of the project manager to the success of the project.

Cooke-Davies (2002) attempted to determine the 'real' success factors on projects by answering three different questions:

- What factors are critical to project management success?
- What factors are critical to success on an individual project?
- What factors lead to consistently successful projects?

With data obtained from 136 projects, Cooke-Davis (2002) derived twelve critical success factors from answering these three questions. The 'real' success factors on projects are:

- Adequacy of company-wide education on the concepts of risk management
- Maturity of an organization's processes for assigning ownership of risks
- Adequacy with which a visible risk register is maintained
- Adequacy of an up-to-date risk management plan
- Adequacy of documentation of organisational responsibilities on the project
- Keep project duration as far below three years as possible
- Allow changes to scope only through mature scope change control process
- Maintain the integrity of the performance measurement baseline
- Existence of an effective benefits delivery and management process that involves the mutual co-operation of project management and line management
- Programme management that allows the firm to resource fully a suite of projects that are thoughtfully and dynamically matched to the corporate strategy and business objectives.
- 'Line of sight' feedback on current project performance.

- Effective means of 'learning from experience' on projects, combining tacit and explicit knowledge.

Cooke-Davies' research does not identify the context-dependency characteristic of projects, which has already been determined by the literature as relevant for appropriate analysis of projects.

Nguyen *et al* (2004) developed a study to determine project success factors in large construction projects in Vietnam. As a result of their study, Nguyen *et al* identify five critical success factors:

- Competent project manager
- Adequate funding until project completion
- Multidisciplinary/competent project team
- Commitment to project
- Availability of resources

Nguyen *et al* identify the competency of the project manager as a critical success factor within the whole life cycle of the project.

Chau (1997) elaborates a ranking for the best journals in construction management. Chan *et al* (2004a) use this ranking system to perform a literature review by reviewing the seven highest scored journals; this is then used to provide academic rigour and value to the results. As a result, Chan *et al* propose to group critical success factors to construction project success into five categories:

- Human-related factors (or Project participants-related factors)
- Project-related factors
- Procurement-related factors (or Project procedures)
- Project management factors (or Project management actions)
- External factors (or External environment)

The different factors (or 'attributes' according to Chan *et al*) are then categorised into five sets. Project related factors include the project's scope, the type of project, the nature of project, the number of floors of the project, the complexity of project, and the size of the project. Procurement related factors include those within which construction projects are produced, acquired, and obtained; these are the procurement and tendering method. The attributes considered as part of the project management factors set are: adequate communication, control mechanisms, feedback capabilities, troubleshooting, coordination effectiveness, decision making effectiveness, monitoring,

project organization structure, plan and schedule followed and related management experience. Human related factors are mostly derived from the client's impact on the project; however they also include project team. Within the project team, the influence of the project manager as team leader is emphasized. Finally, external factors include social, political and technical influences that do not belong to the project's direct context.

Chan *et al* (2004a) claim to propose a conceptual framework and a systematic way to determine success criteria, but the output of the paper is a mere categorisation of factors. The categories and factors are however, useful at this stage of this research in order to collect critical success factors for construction project success.

Chan *et al's* (2004a) conceptual framework is criticised by Acharya *et al* (2005) in terms of identifying factors that only consider the buildings, not the Construction Industry as a whole, and giving relevance to human related factors to the detriment of the other factors.

Hughes *et al* (2004, p.32-33) identify critical success factors (or 'attributes') that are subjective or non-traditional. For this, interviews with ten construction managers were conducted. Construction managers were chosen "due to their critical impact on the administration of a construction project, their control over the allocation of key project resources, by the fact that they are normally considered to be the single point of responsibility for all matters related to the project, and by the fact that they are the individuals who are ultimately held accountable for success or failure of a project". The main outcome is the Construction Project Success Survey, which according to Hughes *et al* (2004) is useful to identify the attributes of a specific project before to the construction phase and then later for success assessment, after project delivery. The categories within which factors are identified are:

- Cost
- Schedule
- Quality
- Performance
- Safety
- Operating Environment

Table 1, Table 2 and Table 3 present a summary of the factors obtained from the literature, where, in order to organise these factors, they have been separated into groups, according to what this research intends to identify: Environment, Project and Project Manager. The factors identified by the literature evidence a wide variety of scopes, concepts of critical success factors and levels of analysis; this wide variety also demonstrates a lack of agreed definitions, concepts and level of hierarchy, which overall does not provide the opportunity to present a complete holistic view. This emphasises the relevance of undertaking research, in construction management, in which there is consistency between scope and depth of analysis. This is an output of the Literature Review which is utilised in the development of the Systems Conceptual Framework. This information is complemented by indicating, for each selected publication, the research method applied.

Author	Research Methods	Project	Project Manager	Environment
Belassi and Tukel (1996)	SURVEY (Large Sample)	SIZE AND VALUE	ABILITY TO DELEGATE AUTHORITY	TOP MANAGEMENT SUPPORT
		UNIQUENESS OF PROJECT ACTIVITIES	ABILITY TO TRADEOFF	PROJECT ORGANIZATIONAL STRUCTURE
		DENSITY	ABILITY TO COORDINATE	FUNCTIONAL MANAGER'S SUPPORT
		LIFE CYCLE	PERCEPTION OF OWN ROLES AND RESPONSIBILITIES	PROJECT CHAMPION
		URGENCY	COMPETENCE	POLITICAL ENVIRONMENT
		CLIENT	COMMITMENT	ECONOMICAL ENVIRONMENT
		SUBCONTRACTORS	COMMUNICATION SKILLS	SOCIAL ENVIRONMENT
		TROUBLESHOOTING SKILLS OF PARTICIPANTS	TECHNICAL BACKGROUND	
		TECHNICAL BACKGROUND OF TEAM	TROUBLESHOOTING	TECHNOLOGICAL ENVIRONMENTAL
		COMMUNICATION SKILLS OF PARTICIPANTS		NATURE
Chua *et al* (1999)	QUESTIONNAIRE	POLITICAL RISKS	COMPETENCY	ADEQUACY OF PLANS AND SPECIFICATIONS
		ECONOMIC RISKS	AUTHORITY	CONTRACTUAL MOTIVATION/INCENTIVES
		IMPACT ON PUBLIC TECHNICAL APPROVAL AUTHORITIES ADEQUACY OF FUNDING	COMMITMENT AND INVOLVEMENT	CLIENT: CAPABILITY OF KEY PERSONNEL, COMPETENCY OF TEAM, TEAM TURNOVER RATE, TOP MANAGEMENT SUPPORT, TRACK RECORD, LEVEL OF SERVICE
		SUPPLIERS: CAPABILITY OF KEY PERSONNEL, TEAM, COMPETENCY, TEAM TURNOVER RATE, TOP MANAGEMENT SUPPORT, TRACK RECORD, LEVEL OF SERVICE		CONTRACTOR: CAPABILITY OF KEY PERSONNEL, TEAM, COMPETENCY, TEAM TURNOVER RATE, TOP MANAGEMENT SUPPORT, TRACK RECORD, LEVEL OF SERVICE
		SUBCONTRACTOR: CAPABILITY OF KEY PERSONNEL, TEAM, COMPETENCY, TEAM TURNOVER RATE, TOP MANAGEMENT SUPPORT, TRACK RECORD, LEVEL OF SERVICE		CONSULTANT: CAPABILITY OF KEY PERSONNEL, TEAM, COMPETENCY, TEAM TURNOVER RATE, TOP MANAGEMENT SUPPORT, TRACK RECORD, LEVEL OF SERVICE
		SITE LIMITATION AND LOCATION		
		CONSTRUCTABILITY		
		PIONEERING STATUS		
		PROJECT SIZE		

Table 1: Summary of Success Factors Identified by the Literature, Part 1

Author	Research Methods	Project	Project Manager	Environment
Cooke-Davies (2002)	HISTORICAL DATA		ADEQUACY WITH WHICH A VISIBLE RISK REGISTER IS MAINTAINED	ADEQUACY OF COMPANY-WIDE EDUCATION ON THE CONCEPTS OF RISK MANAGEMENT
			ADEQUACY OF AN UP-TO-DATE RISK MANAGEMENT PLAN	MATURITY OF AN ORGANIZATION'S PROCESSES FOR ASSIGNING OWNERSHIP OF RISKS
			MAINTAIN THE INTEGRITY OF THE PERFORMANCE MEASUREMENT BASELINE	ADEQUACY OF DOCUMENTATION OF ORGANISATIONAL RESPONSIBILITIES ON THE PROJECT
			MANAGEMENT PROCESS	KEEP PROJECT AS FAR BELOW THREE YEARS AS POSSIBLE
			EFFECTIVE MEANS OF 'LEARNING FROM EXPERIENCE' ON PROJECTS, COMBINING TACIT AND EXPLICIT KNOWLEDGE.	
			LINE OF SIGHT' FEEDBACK ON CURRENT PROJECT PERFORMANCE.	
			PROGRAMME MANAGEMENT DYNAMICALLY MATCHED TO BUSINESS OBJECTIVES.	ALLOW CHANGES TO SCOPE ONLY THROUGH MATURE SCOPE CHANGE CONTROL PROCESS
Nguyen et al (2004)	INSTRUMENTAL CASE STUDIES	CLEAR OBJECTIVES	UP TO DATE TECHNOLOGY UTILIZATION	ADEQUATE FUNDING
		SCOPE	EXPERIENCE	COMPREHENSIVE CONTRACT DOCUMENTATION
		FREQUENT PROGRESS MEETING	COMMITMENT TO PROJECT	AVAILABILITY OF RESOURCES
		COMPETENT PROJECT TEAM		INVOLVEMENT OF STAKEHOLDERS
		CLEAR COMMUNICATIONS/INFORMATION CHANNELS WITHIN PARTICIPANTS		TOP MANAGEMENT SUPPORT
				COMMUNITY INVOLVEMENT

Table 2: Summary of Success Factors Identified by the Literature, Part 2

Author	Research Methods	Project	Project Manager	Environment
Chan et al (2004a)	LITERATUR REVIEW OF SELECTED PUBLICATIONS	TYPE	COMMUNICATION SYSTEM	CLIENT: EXPERIENCE, SOURCE OF FUNDING, SIZE OF ORGANIZATION, EMPHASIS ON LOW COST, EMPHASIS ON HIGH QUALITY, EMPHASIS ON QUICK CONSTRUCTION, ABILITY TO BRIEF, ABILITY TO MAKE DECISIONS, ABILITY TO DEFINE ROLES, CONTRIBUTION TO DESIGN, CONTRIBUTION TO CONSTRUCTION
		NATURE	CONTROL MECHANISMS	LEADER: EXPERIENCE, TECHNICAL SKILLS, PLANNING SKILLS, ORGANIZING SKILLS, COORDINATING SKILLS, MOTIVATING SKILLS, COMMITMENT TO COST, TIME, AND QUALITY, INVOLVEMENT, ADAPTABILITY TO CHANGES, WORKING RELATIONSHIP WITH OTHERS
		NUMBER OF FLOORS	FEEDBACK CAPABILITIES	PROCUREMENT METHOD
		COMPLEXITY	PLANNING EFFORT	TENDERING METHOD
		SIZE	DEVELOPING AN APPROPRIATE ORGANIZATION STRUCTURE	ECONOMIC ENVIRONMENT
			IMPLEMENTING AN EFFECTIVE SAFETY PROGRAM	SOCIAL ENVIRONMENT
			IMPLEMENTING AN EFFECTIVE QUALITY ASSURANCE PROGRAM	POLITICAL ENVIRONMENT
			CONTROL OF SUBCONTRACTORS' WORKS	PHYSICAL ENVIRONMENT
			OVERALL MANAGERIAL ACTIONS	INDUSTRIAL RELATIONS ENVIRONMENT

Table 3: Summary of Success Factors Identified by the Literature, Part 3

Tables 1, 2 and 3 have presented a selection of factors relevant to the success of projects; it is not clear which of these factors is relevant to the construction phase of the project, it is therefore important to look at the role of the project management in detail.

2.3. The Role of the Construction Manager

Project management is defined as a profession (Meredith and Mantel, 2003) or discipline (CIOB, 2002) considered key to project success (Belassi and Tukel, 1996). The project manager optimises the resources necessary to successfully completing a project (Lock, 2003). Over time project management has evolved in order to plan, coordinate and control the complex and diverse activities of modern industrial projects (Grundy, 2002). Project delivery implies the constraints of limited resources of budget, time and quality imposed.

The project manager must foresee or predict the dangers and problems in order to plan, organise and control activities, so that the project is completed successfully in spite of all the risks involved (Grundy, 2002).

In the Project Management Book of Knowledge, project management is defined as an application of knowledge, skills, tools and techniques to project activities in order to meet stakeholder's needs and expectations from a project (Project Management Institute, 2000).

Chan *et al* (2004b) hypothesises that when overall managerial actions are effective, and project team leaders are competent and experienced (amongst other factors), the project will be executed more successfully. But as seen earlier in Section 2.1, it is just one of the factors that could lead to project success.

Project management is one of the most relevant aspects to the delivery of project success (Hubbard, 1990); it is a crucial aspect of the construction process, and without it even the best conceived projects may fail (Levy, 2000).

De Wit (1998) states that is essential to make a distinction between project success and the success of the project management effort. Project management success should be measured against budget, time and quality, whereas the project management efforts is a wider concept, and has other aims.

Besner and Hobbs (2008) conducted a survey of 750 project management practitioners. Their study detects elements which are common to all project managers, irrespective of the industry in which they work, and also identify elements which are specific to the Industry and the type of project being developed. This demonstrates that construction management utilises, as any other discipline within the broad project

management area, generic and specific tools. The project management discipline is context specific and therefore requires different tools for different types of project. For example, Besner and Hobbs identify Planning and Control as tools highly used by Engineering and Construction (E&C) projects and IT projects, whilst for example value analysis is more present in E&C projects than it is in IT projects.

Both the specific characteristics of the Construction Industry and the differences identified between general project management practice and construction management indicate that the analysis of the reality of project within a specific industry should be oriented at identifying the particular aspects of that discipline.

Adrian (1981) identifies construction management as a process of delivering acceptable, if not optimal, construction quality to the project owner in minimal time and cost.

The Chartered Institute of Building (2002, p.xxiii) defines construction project management as "the overall planning, co-ordination and control of a project from inception to completion aimed at meeting a client's requirements in order to produce a functionally and financially viable project that will be completed on time within authorized cost and to the required quality standards". It involves the use of project-orientated management principles throughout the life cycle of the project, and adding specific value to the project.

2.3.1. Project Manager

The project manager is the single point of responsibility for the project performance (Burke, 2003). The project manager must be able to develop a fully integrated information and control system in order to plan, instruct, monitor and control large amounts of data (Burke, 2003). As projects get more complex, the challenges for project managers are increasing in number and variety. Nowadays, the role of the project manager is not fulfilled with only the skills acquired from an engineering background (Levy, 2000). In fact, the academic literature provides various attempts to identify the factors that belong to a new range of characteristics the project manager is expected to have or develop.

Chua *et al* (1999) identifies four main project aspects under the project management factor, these are: skills, commitment, competence, experience and the authority of the project manager.

Belassi and Tukel (1996) identify five key aspects of the project manager's performance that are key to project success, these are: effective planning and scheduling, effective coordination and communication, effective use of managerial skills, effective control and monitoring, and effective use of technology.

Clough *et al* (2000) approaches the project manager role by identifying six essential categories of attributes: practical construction experience; expertise and experience in the application of specialised management techniques to the planning, scheduling, and control of construction operations; the capacity to step back from daily construction and look into the future; and must have the personality and insight that will enable him to work with other people.

Practical knowledge or practical experience is not greatly referred to as an aspect relevant to project management success or project success. It appears that due to the latest research focusing in the whole life cycle of the project, some relevant variables to the implementation phase have disappeared.

The literature provides several different names for identifying the person who holds the overall responsibility on site. Hughes *et al* (2004, p.35, p.32) utilise "project manager of the construction project" or "construction project manager" indistinctly, to refer to the role of the individual who holds overall responsibility for the construction site and the overall success of the construction phase. This research adopts this view

2.3.2. Enablers: Skills, Competences and Characteristics

This subsection presents different areas in which project management literature has identified a need for the project manager to be competent.

In order to deliver project success, project managers have to perform several and varied tasks. Different projects will demand different levels of development to be performed at the standards required to deliver the project according to its objectives. In the relevant literature the word 'skill' is often used (Clough *et al*, 2000). The 'competency' involves the ability to perform a task to a certain standard; the characteristic is a specific feature of the person performing a role.

The use of innovative technologies has been considered as the factor which raises the expectations of society as a whole, and therefore the risks of not meeting the expectations of customers could have serious consequences for the contractor company (Webb, 2002).

Large undertakings (such as construction projects) require mastering a wide range of technical competences (Young, 2003).

Knowledge in the field has been identified as relevant by project management literature, but not for construction management. The Construction Industry has characteristics which make it necessary to look in depth.

Risks exist in every human endeavour. Health and safety is one of the most typical factors within this category (Levy, 2000), however there are risks related to every aspect of construction projects. For example, Li *et al* (2005) identified appropriate risk allocation as one of the three most important factors to deliver project success.

Large undertakings often require the involvement of large numbers of people (Young, 2003); effective teamwork is a critical determinant of project success (Cleland, 2002). Hence project managers must develop the ability to work with people and vice versa (Levy, 2000). Project management requires competence to communicate, negotiate and influence others to keep focus on the project objectives (Young, 2003).

Team building is a crucial ingredient for the successful completion of a project (Hassan, 1995); one key aspect of team building is trust. It is defined by Cleland (2002) as the ability to rely on the integrity, ability and character of a person or thing.

The human resources management related factors help to smooth out the work's progress (Acharya *et al*, 2005).

The project manager manages resources indirectly. Essentially the project manager is managing information and utilising systems to achieve the project objectives (Ahuja, 1994). Therefore project managers must be highly competent in managing information properly and also in using the relevant information management tools.

Overall, several areas of relevant project managers' competency are identified by the literature. Most of it is related to the broad project management area.

2.4. Summary

This review has identified that research in project management has moved from purely hard paradigms to soft paradigms, since utilising a hard paradigm approach will not provide a reliable representation of the reality of the problem. Furthermore, there is a need to undertake empirically based research in this field.

Despite that no agreement has yet been found in relation to construction project success, the high context-dependency of projects justifies looking at construction projects separately from other industries, in order to incorporate the particularities of the Construction Industry. At the same time, evidence shows that success has different meaning for different people and at different stages of the project. Due to the key role of construction managers within the decision making process of construction projects, it is relevant to gain understanding into what they perceive as construction project success and how they may influence it.

Projects are characterised by their uniqueness and context dependency. In construction projects, due to working with higher levels of uncertainty, uniqueness and context dependency become more relevant in terms of the influence they have on the outcome of a project. Defining project success requires, therefore, the identification of the relevant aspects of its context.

Success is also perceived differently from the different participants in a project, therefore there is a need to adopt a particular point of view when studying project success in depth. The construction manager is accountable for all events on-site and for the outcomes of the project. Consequently, construction managers have been utilised by previous research studies in order to identify relevant aspects of construction project success.

The overall impact of construction managers on construction project success has not been determined yet. Some skills have been identified, at the broad project management level as favouring the delivery of successful projects.
Overall, research results identified in the literature review show that there are different views on what a critical success factor is, therefore leading to a wide range of variables (critical or relevant to success) which have been independently identified by one or several studies. The relations between each other have not been an element of analysis in any of these publications. This specific issue -the lack of relations between

variables- is what prevents the development of a holistic overview of how different variables relate to construction project success. This thesis looks into this topic with a holistic approach and will, therefore, emphasise on the interconnectivity between variables, which will create the Empirical Model.

The literature has also indicated that the utilisation of frameworks for undertaking research into success or success related topics provides better results. The development of the Systems Conceptual Framework (Chapter 4) incorporates aspects like the context dependency of projects (young, 2003), by incorporating the environment that surrounds the project, allowing the Empirical Model to show and illustrate the relevant factors outside the project that have an impact on it. At the same time and due to the discrepancies shown in the literature as to how project success is perceived and measured, the framework developed later (Chapter 4) must include concepts of objectively measured success (through critical success factors) and the more subjective concepts; separating one from another may lead to a better understanding of the phenomena.

CHAPTER 3: RESEARCH METHODOLOGY

This chapter is divided into three sections; each one of them covering three general aspects of the research methodology; the first section, Research Methodology, presents the philosophy that underpins this research project. The second section describes the characteristics of the research, presents the needs of the construction industry, and the Research Scope. Finally the third section, Methodology Plan, discusses and describes the research design.

The four aspects that have to be declared by the author are: Epistemology, theoretical perspective, methodology and methods (Crotty, 1998). All these aspects are presented in this chapter.

3.1. Research Philosophy

Research practice is underpinned and bounded by the understanding and perspective of the researcher. Gummesson (1991) states that no researcher is able to achieve an absolute truth or point of view from which to look at the phenomena they study. Consequently, the specific stance of a researcher must be declared in order to provide scientific rigour (Popper, 1972a) and advancement in knowledge. The particular choice of methodology selected for a research reaches into the researcher's assumptions of reality, into the understanding of what knowledge is, and what it entails (Crotty, 1998). However, this discussion needs not to be conclusive: qualitative researchers "can use methodological debates constructively in their research practice without necessarily having to solve paradigmatic disputes" (Seale, 1999, p.3) The following section provides the background to the researcher's stance in regards to the development of this research project in particular, and scientific research knowledge in general.

Understanding the philosophical aspects underpinning scientific research assists the researcher in choosing the design that best suits the research problem, clarifying the design of the research. It allows for the freedom to overstep the boundaries of classical views and incorporate, or even create, designs that may be outside of their specific subject area (Easterby-Smith *et al*, 2002).

Furthermore, declaring the philosophical stance of a research project, and explaining how it derives onto a sound methodology is of major relevance in a PhD project (Remenyi *et al*, 1998); it reflects an overall understanding of every premise that lies behind the methods used. Seidman (2006) considers that an understanding of the paradigms upon which doctoral research is based are of critical relevance, as well as the paradigms of the researcher, since they both determine the research's position, and the implications they have on the future career development of the researcher.

Methodology is the set of techniques which are used in combination to inquire into a particular situation (Easterby-Smith *et al*, 2002). Some methodology effectively evolves from practice exclusively, however methodology is more than just an organised set of procedures utilised for the achievement of something (Corbin and Strauss, 2008). It is influenced by the researcher's world view and a perspective chosen for the research. "No research method is self-validating" (Hughes, cited in Remenyi *et al*, 1998, p23), each methodology is rooted within a specific view of the world, how knowledge is created from that world, and it is as relevant to the value of the scientific findings as results themselves are. Without that theoretical standpoint, research findings are meaningless.

3.1.1. Paradigm

Paradigm is the set of personal values, standards, frames of reference, perspectives, theories and ideas, amongst others, which determine and define the reference point that is chosen to look at the world and discover it. In research, paradigm is the set of basic premises held by the researcher before starting an undertaking of any kind or nature (Creswell, 1998; Creswell, 1994), and shapes his or her idea of what should be done and how it should be carried out in a research project (Gummesson, 1991).

Detecting and declaring these basic premises is of high relevance to scientific research. The greater the awareness the researcher has of their own paradigm, the better the research that can be then carried out (Corbin and Strauss, 2008; Popper, 1972a; Myrdal, 1970). By declaring their own paradigm the researcher increases the rigour of their own work and results (Popper, 1972a). Identification of a researcher's own paradigm requires regular and systematic self-scrutiny.

Declaring the personal paradigm of the researcher involves two stages:

- Overcoming their own ignorance (O'Dell and Jackson Grayson, 1998)
- Identifying the implications they impose upon the research

Overcoming their own ignorance is the first stage of identifying the researcher's paradigm. It is almost inevitable for researchers to bring assumptions into their research (Crotty, 1998; Miles and Huberman, 1994), and they are not always conscious of their presence. In fact, people are only aware of knowing only a part of their total knowledge (O'Dell and Jackson Grayson, 1998). Polanyi (1958) calls it "tacit knowledge". Overcoming their own ignorance involves precisely identifying the set of preconceptions that inform the personal paradigm of the researcher; it involves discipline and self-scrutiny (Popper, 1972a). The ability to detect and declare the personal paradigm has been widely discussed by the research literature (Gummesson, 1991); however the argument surrounding the ability of the researcher to achieve this level of self-awareness still remains inconclusive.

The second stage involves defining how the constructs and preconceptions that inform the personal paradigm impose boundaries on their research. Usually, there is a considerable gap between people's actions and what they tell about their actions (Argyris and Schön, 1974).

3.1.2. Preunderstanding

Preunderstanding is the term used by Gummesson (1991) to identify the set of personal experiences and knowledge, derived from the experiences of others, which a researcher possesses before undertaking a research project. It is an important element of the research paradigm.

Preunderstanding is characterised by the lack of formal knowledge that derives from different sources (Gummesson, 1991), and it cannot be independently verified (Gingele, 2001). These two characteristics, lack of institutionalised knowledge and the inability to be verified independently, make self-awareness a difficult task for researchers. Preunderstanding is the part of the paradigm that researchers are aware of.

Gummesson (1991) distinguishes Preunderstanding from Understanding. The latter refers to discernment acquired through an assignment, this is an output. In contrast, Preunderstanding is an input, it is the set of insights into a social context before they start a research endeavour. Preunderstanding is not, however, constant in time. The Understanding (output) will provide the Preunderstanding for future endeavours.

3.1.3. Inquiry Mode

The mode of inquiry is the nature of the process chosen to find answers to the research questions. Kumar (2005) identifies two modes of inquiry, structured and unstructured. Quantitative research is characterised by a structured approach in which objectives, design, sample and measurements are predetermined (Kumar, 2005).

Qualitative research provides an unstructured and flexible approach to all aspects of the research process. The unstructured approach is better suited to exploring and understanding the nature of a problem (Kumar, 2005).

King *et al* (1994) postulate that qualitative and quantitative research provide the same scientific value, as they constitute different styles of research which share the same framework and underlying logic of inference. Therefore, the author agrees with the view that qualitative and quantitative approaches have both a legitimate scientific value, and researchers choose their approach according to what is being sought and the nature of the problem.

Researchers such as Miles and Huberman (1994) suggest that qualitative and quantitative research serve as a complement to each other. This research has been designed, however, to produce the data required to generate robust qualitative analysis but not to produce any meaningful statistical analysis.

3.1.4. Qualitative Research

A qualitative approach emphasises the need to understand how actors in a social context perceive and interpret phenomena (Sumner in Jupp, 2006a; Collis and Hussey, 1997). Qualitative approaches are relevant when patterns and trends, in the understanding of phenomena, are to be identified and described (King *et al*, 1994; Miles and Huberman, 1994).

Corbin and Strauss (2008, p.25) add that qualitative approaches are "characterised by generating understanding rather than testing". They claim that this particular characteristic of qualitative research allows the researchers access to the inner experiences and views of participants and their real issues. Studies that use a qualitative approach aim to understand the complexities of the world.

> *The author applies an unstructured qualitative inquiry mode to allow the participant's input to determine the relevant aspects of the problem. Hence, the dimensions of the research problem and specific methods presented in Section 3.3 were not entirely determined at the outset, to allow the data to determine the boundaries of the research during the process.*[1]

3.1.5. Ontological and Epistemic Stances

Ontology is concerned with the existence of reality (Gummesson, 1993). It is the philosophy of the structure and nature of reality (Crotty, 1998). The nature of the research problem and methodological stance are intimately related. Each research problem justifies a certain ontological and epistemological stance (Section 3.1.6), both of which will underlie the research study (Barron in Jupp, 2006). Consequently, the ontological stance of a research study is the set of assumptions that are made about reality and its nature (Easterby-Smith *et al*, 2002).

In a social research context, ontology refers to the existence of what is being studied (Barron in Jupp, 2006, p.202). The ontological underpinning idea that is more recurrent in the social domain, justifies this research as well: the world is complex. "This is a universe where nothing is strictly determined" (Corbin and Strauss, 2008, p.5).

Epistemology, on the other hand, is the philosophy of knowledge. Every methodology rests on the nature of knowledge and knowing (Corbin and Strauss, 2008; Charmaz, 2006), its ambit of relevance, and its boundaries (Crotty, 1998; Sumner in Jupp, 2006b). In conjunction with Ontology, informs the theoretical perspective upon which it is undertaken (Crotty, 1998).

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[1] *Paragraphs written in italics explain how the contents discussed have been applied to this research project, as representing the author's stance.*

There is a wide range of epistemic stances: Positivism and Constructionism (Easterby-Smith *et al*, 2002); Crotty (1998) added Subjectivism.

Positivist paradigms seldom lead to the creation of new knowledge (Corbin and Strauss, 2008; Charmaz, 2006), and frequently leads to perfecting theories. In social sciences Positivism is rarely used as it is an approach that will not lead to profound understanding to complex problems (Remenyi *et al*, 1998).

Constructionism is the epistemological perspective that qualitative researchers tend to adopt; it claims that "meanings are constructed by human beings as they engage with the world they are interpreting" (Crotty, 1998, p.43). Boulding (1956) defines knowledge as a function of human beings and organisations, without a knower there is no knowledge.

In Constructionism, generalisation is achieved by theoretical abstraction and requires only a small sample, whereas positivist epistemologies involve large samples, in order to provide validity to statistical analysis (Easterby-Smith *et al*, 2002; Gummesson, 1991).

In Subjectivism, the object of study makes no contribution to the creation of meaning (Crotty, 1998); knowledge is a creative process displayed by humans.

> *This research adopts a constructionist epistemic and ontological stance. The research accepts and agrees with the positivist view that there are 'facts' which independently exist from any cognitive process; however it contends the view that there is no more to the creation of meaning than the facts themselves. In scientific research, even at a basic descriptive level or stage, meaning is provided not only by the phenomena, but by the researcher's understanding also; the observer is an essential part of the creation of meaning.*
>
> *This research is based on the researcher's paradigm that, in a social context, theories and concepts can be constructed by researchers based on the data gathered from participants; when researchers and participants make sense of their experiences, knowledge is created.*

3.1.6. Scientific Knowledge

Science is a constant and persistent search for answers (Gummesson, 1991).

The generation of knowledge is contextual and dynamic. Knowledge is a "fuzzy phenomenon" (Gummesson, 1991, p.6). The issues regarding generation of knowledge are applicable to studies in all areas, therefore, they are also valid for the ideas and concepts related to both scientific research and scientific knowledge. Shipman (1997) argues that objectivity is a central concern to all researchers.

The duty of people within the field of science is to contribute to knowledge by constantly raising questions and subsequently answering them according to a set of rigorous principles; researchers believe that this will lead to a correct and truthful answer (Popper, 1972a; Popper, 1959). It can be argued that scientific research is an ideal; that "even the most rigorous researchers" (King *et al*, 1994, p.7), whether qualitative or quantitative, can approximate, but never get to.

Science is a social enterprise (King *et al*, 1994); the outcome of the endeavours of individuals or teams; their ability to detect their own mistakes, errors, and the limitations of their own knowledge will inevitably bound their findings. In this research, science is seen as a process by which researchers create knowledge in an understanding of the world. This knowledge is created from scientific research and has a value on its own, which is detached from the researcher.

> *This research is developed on a constructionist stance. The author recognises independent value on the knowledge created, once verified. This research is aligned with the premise that objective knowledge exists independently from the researcher responsible for creating it.*

This view is consistent with Popper's claims of a manmade, constructed, objective knowledge, which he designated "the third world" (1959, p.106). Popper represents his epistemological stance through the existence of three worlds. The first world is the realm of physical objects. The second world is made of mental states and consciousness. The third world is where the objective contents of thought are, and where scientific knowledge is. Popper grants his third world independent existence.

Derived from and related to this philosophical stance, the author also accepts the views on knowledge from Corbin and Strauss (2008, p.11): "Knowledge may not mirror the world, but it does help us to understand it". This view is also supported by Popper (1972b; 1963). Researchers all over the world are constantly developing new answers to the same questions by the use of new technologies, new tools, new strategies or even new data.

3.1.7. Rhetoric

Rhetoric refers to the issue of how to appropriately use language to present results of a research study. Language, and specifically written language, is the enabler of the constant growth of scientific knowledge (Popper, 1972b). Qualitative inquiry modes acknowledge the scientist as a vital element of the research instrument, thus several research reports, papers and theses are written in the first or second person (Creswell, 1994). This is specifically intended to account for the involvement of the researcher in the process of knowledge creation.

> *The paradigm adopted in this research recognises the value of knowledge independently from the author; hence the style adopted is traditional, and written in the third person.*

3.1.8. Induction and Deduction

Induction is the process by which theories are developed from the data obtained through observation (Miles and Huberman, 1994; Popper, 1972a). Deduction, in contrast, develops a theory and then tests it through the use of empirical observation (Collis and Hussey, 1997; Miles and Huberman, 1994).

> *This research uses an inductive-deductive approach. It first looks at the literature to derive from it a conceptual framework. It then applies a deductive approach to identifying the categories which populate the conceptual framework initially induced.*

3.1.9. Grounded Theory

This subsection presents the underpinning ideas of Grounded Theory within its context, and explains how these ideas have been applied to the data collection process of this research.

Creswell identifies five traditions of enquiry based on their distinctive qualitative approach, namely:

- Phenomenological Approach
- Grounded Approach
- Ethnographical Approach
- Case Study Approach (1994)
- Biographical Study (1998)

From these five approaches, Case Study and Grounded Theory were relevant to this research. They can both use different data collection systems, including interviews, surveys, questionnaires, observations. Grounded Theory allows the data collection system to shape the knowledge (Charmaz, 2006). Hence, providing the flexibility this research requires in order generating knowledge from the participants (Induction).

Case studies provide an understanding and insight into complex, real world, situations (Yin, 2003a; Yin, 2003b; Stake, 1995; Gummesson, 1991); they are appropriate when the researcher has little control over events (Yin, 2003a). Case studies will not work as expected; hence making case studies not suitable for this research project, in which a specific outcome is part of the problem that is being studied. Selecting a case that ends in project failure would not be applicable. For this reason, case studies were disregarded as a suitable alternative for this research project.

A Grounded Theory approach differences itself from a case study in that most of the time is spent understanding the views presented by participants (Creswell, 1998). Grounded Theory allows theory to be built or modified from the data collected (Harding in Jupp, 2006; Sheppard, 2004). Grounded Theory does not necessarily provide a whole theory as an outcome, but generates concepts and constructs, which contribute to the overall understanding of a certain phenomenon (Easterby-Smith *et al*, 2002). It allows participants to total freedom to discuss all aspects that, in their view, relate to the subject in study. The researcher derives a theory by using multiple stages of data

collection (Corbin and Strauss, 1990). The qualitative data from the participants is systematically collected and analysed to construct theories "grounded" in that data (Charmaz, 2006).

Two primary elements of a grounded methodology are the constant comparison of data with emerging categories, and theoretical sampling, these "allow the researcher to identify similarities and differences in the data obtained from different participants" (Creswell, 1994, p.12). This data is then classified into categories and relations (Corbin and Strauss, 2008; Creswell, 2007; Creswell, 1998; Creswell, 1994).

The focus of this research is in the views of construction managers on their role into the successful outcome of a construction project. This research applies a grounded approach to the collection of data and development of constructs and causal relationships between categories presented by construction managers.

3.1.10. Theory Saturation

Theoretical Saturation occurs when there is enough data for the researcher to comprehensively explain a category (Corbin and Strauss, 2008) and data is gathered until all categories have been saturated (Creswell, 1998), or when future inquiry seem "unlikely to be fruitful for practical purposes" (Seale, 1999, p.93). When categories are saturated; the sampling process has been completed (Seale, 1999).

In this research, theory saturation was achieved after the interview with the 9th participant, UK-6. This was noticed since the comments with which UK-6 contributed to the research did not provide further understanding of the categories or the research problem. Participation of UK-7 (last participant) confirmed that theory saturation had occurred.

3.1.11. Theoretical Generalisation

Theoretical generalisation in qualitative research is based on logic and not statistics. That allows the findings of a qualitative research project to relate to a wider population. The cases studied may not be representative; however the clear logic and induction

process allow the researcher to ascertain that those findings do relate to a wider group of individuals than the ones that participated in the research (Harding, 2006).

3.1.12. Theoretical Sampling

Theoretical Sampling is a process by which the researcher sets out to find a specific case in order to achieve theoretical saturation (Seale, 1999) and is relevant when the account of specific experiences is being sought. Qualitative researchers need to provide a clear rationale to justify the decision of including certain individuals in a study (Creswell, 1998) and the quality of the results depends on the quality of the data (Triola, 2001).

> *British construction managers who participate in this research constitute a homogeneous sample in which all individuals have commonly experienced the action or process.*

3.1.13. Sensitivity and Scepticism

Sensitivity is the ability which enables the researcher to adopt both a sceptical attitude towards the findings of the research, and to understanding the views of the participant, detached from their own preconceptions.

Sensitivity is the ability to detect the meaning in the information received from participants and it "stands in contrast to objectivity" (Corbin and Strauss, 2008, p.32). Sensitivity is to qualitative research what objectivity is to quantitative research (Creswell, 1998).

King *et al* (1994) define scepticism as the process by which there is systematic questioning of causal inference. In qualitative research, scepticism and sensitivity allow the researcher to investigate and analyse the data rigorously and scientifically.

Sensitivity requires the researcher to become involved with the study, to immerse in the subject content and data. The concept of sensitivity acknowledges value in the personal paradigms of the researcher, and highlights the relevance of declaring his or her paradigms.

3.1.14. Validity

In scientific research, validity is "measuring what we think we are measuring" (King *et al*, 1994, p.25; Kumar, 2005). Conclusions are valid if they provide an accurate explanation of what occurs (Jupp in Jupp, 2006). The literature identifies three aspects of validity: validity of measurement, validity of explanation, and validity of generalisation (Jupp in Jupp, 2006). The validity of using the measuring instrument (interviews in this case) is discussed in Chapter 5, Grounded Analysis, and it explains how the questions in the interview relate to the research problem. Validity of explanation refers to the ability of the conclusions to explain correctly the phenomena in the relevant subject area, which is discussed and presented in Chapter 6, Development of an Empirical Model. Finally, validity of generalisation is addressed in Subsection 3.1.11, Theoretical Generalisation.

3.1.15. Reliability and Uncertainty

Results are reliable if samples obtained at different moments in time will provide the same results, unless some event has modified the object observed (King *et al*, 1994). However, it cannot be demonstrated that the participants, when faced with the same interview questions, would provide the same responses, or similar points of view, as they did on the interview undertaken for this research.

Uncertainty, as opposed to reliability, is a key aspect of all research undertakings. Achieving perfectly certain conclusions from uncertain data is impossible (King *et al*, 1994).

> *Construction managers' views related to construction project success may change in time, due to them facing different experiences at work. To prevent this from affecting the reliability of the findings of this research, an inductive-deductive approach with several sources of data has been adopted.*
>
> *Theoretical Saturation of the categories ensures that the overall findings of the research are reliable.*

3.1.16. Replicability

Replicability applies to the data and research methods utilised. By having access to the complete set of data from a research study, any qualified researcher should be able to reproduce the study and results obtained (King *et al*, 1994).

All specific methods applied in this research are described and justified in Section 3.3. All evidence of the data collection in this research have been kept and filed separately, which is and has been of access to the researcher only, in accordance to the confidentiality clause incorporated in the consent forms.

3.1.17. Interpretivism

Interpretivism is an approach to explain actions and behaviour in the light of, and in relation to, a set of concepts in which it is surrounded. It is a type of enquiry which searches for meaning, as opposed to searching for laws (King *et al*, 1994).

> *This research applies an interpretive approach to the phenomena, deriving the theoretical explanation and understanding from the analysis of the data in its context. This is to allow the participants' data to generate the answers to the research questions.*

3.1.18. Bias

Bias has been defined as a "systematic deviation from the rational pursuit of inquiry" (Hammersley in Jupp, 2006, p.18). Unbiased results, on the other hand, are defined as "correct on average" (King *et al*, 1994, p.27). The exercise of declaring the personal paradigms of the research is the main contributor to prevent bias (Gummesson, 1991).

> *This research study adopts an unbiased approach to the inquiry of the construction managers' points of view, and from it creates an understanding of the success of the project and how construction managers view their contribution to that success. This is achieved by restricting categories and causal relations to the data provided by construction managers only.*

3.1.19. Triangulation

In qualitative research, triangulation provides discipline in order to prove that the interpretations are correct and in accordance to the research problem (Gummesson, 1991). Triangulation is a verification of the meaning by several approximations (Stake, 1995). As it consumes resources, only key interpretations and critical assertions require triangulation. Therefore, only the main findings of this research have been triangulated against CIOB data (Section 5.3).

3.1.20. Summary of Research Philosophy

This section has presented the paradigm and philosophical stance upon which this research study has been developed; this is in order to increase the scientific rigour of this research.

This research utilises a qualitative inquiry mode, based on a constructionist epistemological stance in which knowledge is created by both the mind of the researcher and the world outside it. The ontological assumption is that there is an absolute truth 'out there', which can be approximated to by scientific knowledge. Scientific knowledge, or objective knowledge, is a representation of the world; it may not be the exact copy of it, but can explain phenomena to an acceptable level.

This research adopts an inductive-deductive approach, in which an Empirical Model is derived from the data collected from construction managers.

3.2. Characterisation of the Research, Needs of the Industry and Research Scope

The following section presents the characterisation of the research, the needs of the Construction Industry and the research scope, in order to explain how the context and unit of analysis, as well as justifying the specification of construction managers in order to be within the scope of this research.

3.2.1. Characterisation of the Research

Research in any field can be either an experiment or an observational study. Experiments measure the effectiveness of a certain 'treatment' by comparing results with a control group (group that has not received that 'treatment') (Triola, 2001); experiments require freedom to control variables (Yin, 2003a). On the other hand, observational studies measure without modifying the subject(s) being studied (Triola, 2001).

Applied research looks into different aspects of the phenomena and provides better understanding and information for decision making (Kumar, 1999). Most research in the social field is applied, particularly in management related disciplines, where the research aims are oriented to enhancing the performance, decision making or creating understanding. Social research, on the other hand, studies in which people investigate organisations and other people (Gummesson, 1991).

This research constitutes observational study in that it intends to obtain data that reflects the reality of the situations studied. In order to obtain that insight on the construction manager's views, interviews have been undertaken and are analysed using an inductive-deductive approach. It does not intend to modify or interfere with the behaviour of construction managers or the performance of construction projects. [2]

This research constitutes applied research, for it contributes to the definition of success by providing an insight into the perspectives of construction managers as to how they influence the achievement of a successful outcome of the construction project.

This research study constitutes social research as it investigates construction managers within the social context of other professionals on site and other stakeholders.

[2] *Paragraphs written in italics explain how the contents discussed have been applied to this research project.*

3.2.2. Needs of the Construction Industry

The Aim (Subsection 1.2.2), outlines the contribution this research generates for academia and for the Construction Industry. Blockley and Godfrey (2000) point out that the different stakeholders involved in a construction project will have different understandings of construction project success. Delivery of successful projects is the aim of all stakeholders in the construction industry. Construction managers are a key stakeholder of the construction project.

> *This research project increases the understanding of the different dimensions of success through the construction managers' influence on the successful outcome of the construction project.*

3.2.3. Research Scope

The Research Scope defines what is being investigated, the unit of analysis, and in which context. The unit of analysis are the individuals or groups that are being studied (Miles and Huberman, 1994). Methodologies are context dependent (Corbin and Strauss, 2008); therefore in order to understand the research design, the unit of analysis and the context of the research have to be outlined and described.

Hughes *et al* (2004, p.32, p.33) conducted qualitative interviews with 10 experienced construction managers in order to identify qualitative aspects of construction project success. "Project managers were selected due to their critical impact on the administration of a construction project [...] they are normally considered to be the single point of responsibility for all matters related to the project", and they are "ultimately held accountable for the success or failure of a project". This research follows Hughes *et al's* approach.

> *The unit of analysis in this study is the construction manager, defined as the individual who has overall responsibility for a construction site (CIOB, 2002). The context is determined by the construction site and the construction project.*

Under a positivistic point of view, the legitimacy of the views a professional has regarding their own work and how it impacts or influences the overall success of the enterprise can be argued in terms of bias or objectivity. However, under a constructionist or qualitative point of view the legitimacy of the views a professional has on their own practice has a positive effect on the research process and findings; it enables the understanding of the construction managers' definition of success as a reflection of their experience, which is the aim of this research. The perspective of each construction manager allows this research to discover what is, in fact, important to construction managers; and from the relevant aspects, the relative importance between them.

For the construction manager's views to provide informed views of the phenomenon of success, it is required that the construction manager has sufficient experience. Sufficient experience allows the construction manager to justify opinions and views based on more than a single construction project. Those opinions are the reflection of a pattern or trend, or a real causal relation between factors, not an opinion biased by one single experience which may not reflect the generality of cases.

Brown (1973, cited in Seale 1999) highlights that Grounded Theory is a suitable methodology when there are certain elements of a process that are repeated, so that if they are missed once, they can be observed and detected the next time. Therefore, construction managers were required, in order to participate in this research, to have completed at least two construction projects. During the interviews participants will draw their opinions from their whole experience as construction managers. Therefore the opinions upon which this research is developed come from at least 132 construction projects (Appendix A), of different size and type, from which they have on-site experience. The construction projects that contribute to the experience of the interviewed construction managers have taken place in different locations of Britain, despite construction managers selected for this research working in the South West at the time they undertook the interview. With Chilean construction managers the case is similar; the selected construction managers were working in Santiago at the time the interview took place, but their experience is derived from construction projects from all over the country.

For this research study, it is considered that they should have fully completed at least two construction projects as construction managers, and therefore be able to provide sound opinions based on their experience.

Their background experience will be taken into account (when available) in order to help the understanding of the opinions and views provided by the construction managers, and it might be relevant when construction managers refer to projects they have done in the past.

This research explores the views of construction managers on their role and how it impacts on the successful outcome of a construction project. It considers construction projects and hence looks at situations observed on the building site or directly related to the processes that take place on a construction site. This defines the context of the research scope.

This research adopts a holistic view to determining which elements of construction management enable construction projects' success, and examines and assesses how construction management will affect the success of a construction project.

3.3. Methodology Plan

Methodology is the "combination of techniques used to enquire into a specific situation" (Easterby-Smith *et al*, 2002, p.31). The specific methods applied to a research study are of critical importance to its quality (Gummesson, 1991). This section of Chapter 3 describes the research design and explains how an inductive-deductive approach has been applied to the context and development of this research project.

Section 3.3 is divided into the different parts of the research process undertaken. For each of these parts the aspects are justified and the relevant phases are identified and described.

Figure 2 shows a flow diagram which illustrates the research process, as it is explained in this section. The research starts by forming the research questions, which leads to the literature review, which covers elements of the research question and elements of

the methodology. The methodology proposes the creation of a Systems Conceptual Framework and determines the data collection strategy. From the methodology and the System Conceptual Framework a qualitative interview is designed and tested by means of a pilot interview. The results from the pilot interview allow the development of a final interview design, which is used to collect the data from the construction managers participating in this research. A grounded analysis of the data allows the development of an Empirical Model which explains how construction managers view their influence on the construction success of a project, and their perceived concept of success of a construction project. This Empirical Model is discussed in the light of the literature review.

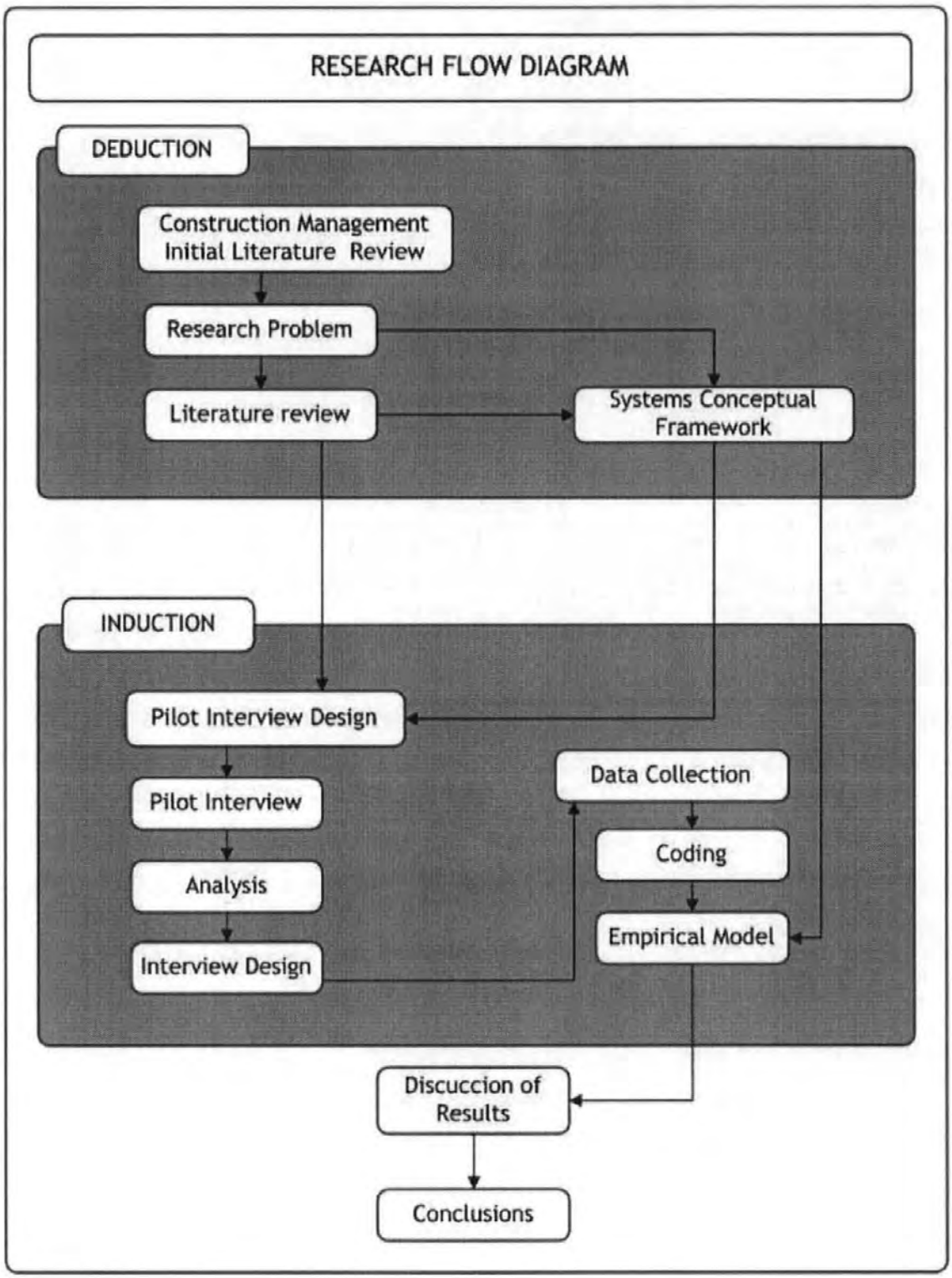

Figure 2: Research Flow Diagram

3.3.1. Research Question

The research problem is defined by the research question or questions (Creswell, 1994). For qualitative research purposes, Corbin and Strauss (2008) recommend the research question to be framed "in a manner that allows the researcher enough flexibility and freedom to explore a topic in some depth" (Corbin and Strauss, 2008, p.25; Locke, 2007).

During the first part of this research, the research problem is outlined by means of research questions, aims and objectives.

3.3.2. Literature review

After the research problem has been outlined the Literature Review, Chapter 2, introduces and discusses the knowledge in the subject area that is relevant to the research problem. There are core differences between the use of the literature in a qualitative inquiry mode, and the use of literature in a quantitative inquiry mode. Qualitative studies use the literature during the analysis and writing stages, whereas quantitative studies use it at the very beginning, since the theory is 'tested' with the data later collected.

Despite the fact that qualitative researchers recommend to review the literature during the data analysis (Harding in Jupp, 2006; Creswell, 1994), a wide literature review was regarded as necessary and to be carried out initially in this research mainly because of four factors. Firstly, to properly frame the research problem, and clearly define the gap in knowledge that the research is set to cover. Secondly, to determine the most suitable research design. Thirdly, due to the inexperience of the researcher; inexperienced qualitative researchers need to cover the literature in the subject before the data collection and analysis, otherwise there is risk of data overload and lack of criteria to discriminate the relevant elements of data from the irrelevant pieces of information (Miles and Huberman, 1994). Lastly, to achieve good quality in qualitative research, training and knowledge are needed. It takes practice to sit with an open mind and an open agenda and not let nervousness get in the way of the free flow of

information (Corbin and Strauss, 2008). Knowledge can help provide confidence to the inexperienced interviewer.

This Literature Review aims to clearly outline the knowledge gap this research covers and to establish the framework upon which this research is developed. It enables the researcher to acquire basic and general knowledge regarding the construction industry in the UK during the last two decades. The review of the relevant literature covers the main aspects of the research problem. These are:

- The construction manager's role.
- Construction project success.

These two main aspects of the review create a backdrop for the further development of the Systems Conceptual Frame, which allows a structured analysis of the interviews and the later development of an Empirical Model to explain how construction managers influence the success of the construction phase.

The literature review also covered research methods in order to determine the design that was best suited to this research project, as well as the underpinning philosophical ideas upon qualitative research projects stands.

During the Literature Review, an obstacle to this research was identified. Journal publications which study construction success and derive critical success factors do not provide definitions for those factors or elements. The meaning of those factors determines how relevant they may be to this research study. This problem has been identified by Creswell (1998) that postulates that the difficulty in reviewing other publications is that they present an incomplete version of them, in order to comply with the requirements of the journals. In order to overcome this, the researcher attempted to contact the authors of all publications for which definitions were required, via e-mail (see example in Appendix B). No researchers replied to this first email. Further emails were sent, however no response was received. Therefore, the researcher used only the information available on publications in order to undertake the literature review.

3.3.3. Systems Conceptual Framework

A Conceptual Framework is a frame developed through a sequential process for the qualitative analysis that is undertaken in a research project. It builds upon the

Research Problem and the Literature Review, before the analysis of the data takes place.

The development, creation or use of a Conceptual Framework is recommended to prevent data overload and helps the researcher to focus on the main aspects of the research problem (Miles and Huberman, 1994). The use of frameworks has been recommended by Miles and Huberman (1994) and Creswell (1998, p.140), argues that "there is no consensus on how to analyse qualitative data, but it is useful to set some framework at the outset".

This research studies construction managers and construction project success. The Construction Industry is complex and dynamic by nature. System Theory provides an analytical framework appropriate for looking at complex and dynamic problems (Blockley and Godfrey, 2000), therefore it is suitable as a tool for the analysis of the Research Problem (Section 1.2).

Systems Theory is also appropriate when there are several factors interacting in a situation (von Bertalanffy, 1971). This research aims to collect a holistic view on the impact construction managers have on the success of construction projects, thus making Systems Theory appropriate as a theoretical background for the analysis of the interviews and the development of an Empirical Model.

A Systems Conceptual Framework is developed for this research study, based on three main inputs, namely: Qualitative Analysis concepts from Miles and Huberman (1994), Research Problem (Section 1.2), and from Systems Theory it applies ideas from von Bertalanffy (1971) and Bockley and Godfrey (2000). It is developed in order to focus the analysis of the qualitative data gathered through interviews undertaken by construction managers, hence making Systems Theory appropriate for the analysis of the data collected in the interviews.

The Systems Conceptual Framework is the first output of this research, and it is developed and presented in Chapter 4.

3.3.4. Sampling

In order for this research's results to be a true representation of the complete group of people, the researcher has to choose the participants carefully. This subsection

discusses the methods used for selecting the construction managers who have participated in this research.

Population is the complete collection of elements to be studied (Triola, 2001). According to the Scope of the Research (Subsection 3.2.3) the population for this research are all construction managers who have completed two or more projects in which they have been the overall responsibility for the site. The size of this population is too large for the researcher to be able to collect information from every element of the population. Samples are a subset of the population which, when chosen carefully enough, will show results that still represent the whole population, or most of it (Triola, 2001).

> *Initially, the population only considered British construction managers. A need was identified to prevent cultural issues from being an obstacle for the development of a generic Empirical Model. Chilean construction managers (who met the same experience requirements) became part of this research's sample. Chilean Construction Managers were chosen according to sampling by convenience.*

A large sample is not necessarily a good sample. The size of the sample has to be large enough to enable the data to show the true nature of the phenomena in study. But more important than the size of the sample is how the elements have been chosen so that the sample is representative of the population (Triola, 2001).

In a qualitative study, sampling is intended to explore the problem. Gummesson (1991) argues that, in qualitative studies, a large sample is not needed to achieve deep understanding. Theoretical Sampling is discussed in Subsection 3.1.12.

Sampling methods are the mechanisms used to determine if an element of the population will be included in the research (Triola, 2001). Sampling methods include: random sampling, simple random sampling, convenience sampling (also called incidental sampling by Polgar and Thomas (2000)), stratified sampling, cluster sampling and snowball sampling.

A combination of snowball and convenience sampling is suitable to find people that meet the requirements the research has established for the results to be valid within the Scope of the Research, presented in Subsection 3.2.3. Sampling by convenience

is used in the first instance, and later snowball sampling. Out of the 10 participants, 8 construction managers were identified by convenience and the other 2 were contacted through other participants in the research.

Convenience sampling is when the sample is chosen amongst the elements that are already known to belong to the population, instead of randomly choosing elements of the population that might be difficult to clearly identify and obtain data from them (Triola, 2001).

Convenience sampling considers choosing the elements without a random criteria; they are chosen because they comply with certain requirements (usually various and quite specific (Triola, 2001)). Amongst the alternatives available for sampling, convenience sampling was chosen since it is recommended when the research does not consider a large population, and the population in this research is not large and difficult to determine. The population of British or Chilean construction managers is difficult to determine since construction manager is a post or role, and the number of construction sites in a country is constantly changing.

Snowball sampling utilises the contacts from the individuals that are already part of the sample as potential elements of the sample. This is particularly useful when the criteria used to determine the population generates a very specific group that is difficult to reach otherwise; it is expected that people or organizations that develop the same kind of activity or work on the same niche will know each other. It is still part of the researcher's responsibility to verify that these new elements are actually part of the population.

Sampling by convenience might lead to biased sampling which is not representative of the population (Polgar and Thomas, 2000). Even more, when participation is voluntary (as it was in this research) it may be that all participants of the research have strong opinions about the research problem (Triola, 2001). This obstacle cannot be overcome easily, and it constitutes a limitation of the research. At the same time, success is a concern of all construction managers; therefore it can also be argued that the construction managers who volunteered to participate in this research are more willing to discuss the relevance of their job, or have personal characteristics which make them more committed to research in their aspect of the industry.

Construction managers were initially invited to participate in this research study by means of a letter (Appendix C), and they were later contacted by phone.

3.3.5. Informed Consent, Ethics, Confidentiality and Anonymity

Participants in this research study may express their opinions on sensitive issues such as their own company policies, performance of their colleagues and senior management, and performance of government agencies, amongst others.

The University of Plymouth's guidelines for research ethics (Appendix D) have been followed in this research.

The Data Protection Act 1998 c.29 states that for research purposes data may be kept and stored indefinitely if such sensitive data complies with the following two relevant conditions: "that the data are not processed to support measures or decisions with respect to particular individuals, and that the data are not processed in such a way that substantial damage or substantial distress is, or is likely to be, caused to any data subject".

In order to comply, after this research has gone through the examination stage, the following data will be deleted:

- Participants' contact details,
- Correspondence with the participants,
- Interviewer's notes from interviews,
- Consent forms,
- All additional documents provided by the participants (amongst which there are CVs, background information, project's information or documentation, construction firms' brochures, etc),
- Every original interview transcript.

Audio files from the interviews will be edited to delete all information that may lead to the identification of the participant, and kept for future research purposes. However, the voice of the participants may lead to the identification of their identities.

The Data Protection Act 1998 c.29 also refers to results being suitable for publication if they "are not made available in a form which identifies data subjects". That allows the

publication of this thesis and journal papers based on the data collected for the purpose of this research.

Due to the editions and deletions mentioned above, the replicability of this research might be compromised as the participants will not be identifiable. However, methods and major conclusions of this research are not affected by the impossibility of identifying the participants.

Consent is the acceptance of the participant to participate in a research study. Informed consent must be sought before any research has taken place. The researcher has to ensure that participants clearly understand what they have been invited to do and what they will be asked to do (Hallowell *et al*, 2005; Miller and Bell in Mauthner *et al*, 2002).

Four elements define the concept informed consent (Homan, 1991). Two of them constitute what 'informed' is, and the other two define 'consent'. 'Informed' entails that:

- The researcher has disclosed all relevant aspects of the research process and the potential consequences they may have on the participants;

- The participants are capable of understanding all the information they have been provided with.

A participant's 'consent' is legitimate when their competency allows them to make a rational judgement, and when the agreement to participate is entirely voluntary. The freedom to choose not to participate is a key aspect of the informed consent (Miles and Huberman, 1994).

Particularly in qualitative research, some authors consider verbal consent valid and sufficient enough for research projects. However, there is an increasing number of researchers using the written consent, due to institutional policies (Miller and Bell in Mauthner *et al*, 2002).

Gate-keepers are the people that give access to the information required. Gate-keepers allow the researcher to have access to the participants; they may provide access to less powerful groups (Miller and Bell in Mauthner *et al*, 2002).

In this research project no gate-keepers were found when contacting construction managers, as they were contacted directly. However, the interview with CIOB required access through a gatekeeper.

Anonymity and confidentiality are key factors to obtaining the consent of a participant (Homan, 1991). A researcher must protect the anonymity of the informants (Creswell, 1998). To gain support from participants, a qualitative researcher conveys to participants that they are participating in a research, explains the purpose of the research, and does not engage in deception about the nature of the research (Creswell, 1998)

All data collected from participants that is presented in the transcripts (Appendix E.1 to E.11) has been anonymised. Anonymising the data is a process by which all information that could lead to the identification of the participants is edited (deleted or changed) from the original data (transcripts). The process usually involves changing irrelevant facts, omitting names, and changing genders (Homan, 1991).

All transcripts have been anonymised so that the participants cannot be identified by means of specific examples of practice that they have provided. No gender changes were made, all construction managers participating in this research are male.

Confidentiality and anonymity generate a bond of trust between research and participant, and hence the responses from the participants are more likely to be honest and candid, as the participants are not trying to create a good impression on the researcher or any other member of the public who might have further access to that data (Homan, 1991).

Locating the individual and establishing rapport is important to gathering good data from the participants.

3.3.6. Data Collection

The data collection strategy chosen for this analysis is interviewing, in alignment with the grounded approach. In this approach, data collection strategies can be: interviewing, observation, researcher reflection, journaling, participant journaling, focus groups, amongst others. However, Creswell (1998) categorises all but interviews as a

secondary means of data collection, and Sheppard (2004) considers interviews to be the most insightful method within the qualitative data collection strategies.

The interview is a "core method of qualitative research" (Sheppard, 2004, p.137) which covers a variety of practices. These practices range from structured interviews that apply closed questions, to unstructured interviews that use open-ended questions (Seidman, 2006). An interview can be defined as a "conversation with a purpose" (Sheppard, 2004, p.137). It postulates that it is the mode of this conversation (that takes place during the interview) which allows the researcher to gain insight on the participant's account of their experience, perceptions and circumstances in relation to the specific research questions the interview is addressing (Sheppard, 2004).

Focus groups were considered as an alternative to interviews for this research. However, they were not considered suitable for this research for four main reasons. Firstly, during the focus group, the researcher is outnumbered and participants may interact with each other and change each other's point of view, the researcher has partial control the topics of the conversation (Polgar and Thomas, 2000); therefore potentially increasing the difficulty of keeping to the topics initially set out to be covered in order to gather the required data. Secondly, due to the busy schedules of construction managers and the different locations in which they work, it is unlikely that a group of them can gather at the same time and place. Instead, interviews were undertaken at a time and place of choice of the construction manager. Thirdly, the conversation might be biased towards certain topics due to a few construction managers having common experiences; this would present an obstacle for the Empirical Model to be generic. Finally, focus groups are better utilised at earlier stages of data collection (Easterby-Smith *et al*, 2002), as they mainly allow the identification of trends or topics of relevance. The latter stage has been, in this research, provided by the Systems Conceptual Framework.

Surveys present a much simpler and structured data collection strategy. They present the advantage that they only provide the information that is being sought. This would not suit this research, as construction managers require more freedom in order to provide their views without externally imposed ideas.

Although interviews are a data gathering strategy that requires considerably more preparation than other data collection methods (Creswell, 1998), for example, questionnaires, they have been chosen as the data collection strategy since they

provide more insight regarding the construction management and construction success (Stake, 1995). Therefore, this makes interviews appropriate for the detection and identification of variables that the literature in construction management has not incorporated yet.

Interviews are the preferred method of data collection in Grounded Theory (Corbin and Strauss, 2008; Creswell, 2007; Creswell, 1998), but the use of Grounded Theory is not restricted to interviews only. Seidman (2006) recommends utilising a three-interview approach, which has proved to be effective when trying to understand the individual's personal experience, their history, emotions and feelings (Corbin and Strauss, 2008; Gubrium and Holstein, 2001). This three-interview method is reliant on the availability of the participants, who are required to undertake three different interviews. On the other hand, it is unlikely that construction managers will be able to offer such kind of availability in order to participate in this research.

> *This research is focused on the role that construction managers perform. Therefore, this research utilises a one-interview approach. This interview is aimed at accessing the views of the construction manager based on their overall experience.*

The interview design is a key element within the overall research methodology as interviews are the instrument that allows access to the construction manager's view and understanding of construction project success. When the insight on views is sought, Seidman (2006) recommends the use of open ended questions. They allow the researcher to explore more into the participant's understanding of their role in the success of the project, and their views on construction management.

An interview schedule was devised and tested in a pilot interview (Appendix F), which was undertaken by a male construction manager in February 2007. The interview was designed as a semi-structured interview. The aim of the pilot interview was to assess the ability of the questions to provide data that would provide answers to the research questions, therefore the results of this interview are not considered as part of the data analysed in Chapter 5, Grounded Analysis.

One of the aims of the pilot interview schedule was to allow the construction manager to include all aspects thought relevant to the success of the project. The schedule of questions devised for the pilot interview covered all aspects relevant to the research

question and research aim, however it did not provide enough flexibility for the participants to introduce aspects that they thought were relevant, or prioritise those aspects.

Polgar and Thomas (2000) recommend using a non-schedule interview approach. A non-schedule interview approach entails no set questions; in this approach the researcher creates the questions based on both the topics the participant is including as part of the conversation, and the problem the researcher is studying. The responses can be recorded in the participants' own words, which is believed to be more effective at preventing bias through interpretation than in structured interviews, which use a set of predetermined questions that the participant has to answer. When using this approach, the researcher identifies (prior to the interview) a set of topics to be covered during the interview. During the interview, the particular questions and their order are decided by the interviewer according to how the conversation develops.

> *The data collection has been undertaken using a non-schedule approach to the interview, in order to provide a flexible frame in which the participant has input in the agenda (Polgar and Thomas, 2000), which allows the researcher to identify, from the construction managers' views, what is relevant to them. It also provides the opportunity to look more deeply into the aspects that are more relevant to each construction manager.*

Interviews are "commonly used to collect data from people" (Kumar, 2005, p.123). The non-schedule approach entails unstructured interviews. The most data dense interviews are the unstructured interviews, the ones that are not determined by any predetermined number of questions (Corbin and Strauss, 2008). To provide enough valuable data, interviews are recommended to be about one hour long (Creswell, 1998). Hughes *et al* (2004) successfully utilised interviews along with open ended questions, in order to identify qualitative aspects related to construction managers and project success.

The interviews were designed to last between 45 minutes to an hour, however construction managers were allowed to extend that time as much as they wanted. All construction managers were provided with a succinct description of the research project prior to the interview (Appendix G).

The researcher acted as the interviewer in all interviews that are part of this research (pilot interview, UK, Chile and CIOB).

All interviews were voice-recorded and transcribed by the researcher in full prior to the Grounded Analysis (Chapter 5), the complete transcripts are available in Appendices E.1 to E.11.

Different researchers have used several terms to refer to people that are being interviewed. Seidman (2006) identifies: Interviewee, Respondent, Subject, Informant, Co-researcher, and Participant. These different terms represent, according to Seidman, the different levels of involvement the researcher allocates to the interviewees. This research adopts a view in which the interviewee is an active part in the generation of knowledge, hence in this thesis the term 'participant' are used to refer to the people that undertake the interviews.

When identifying ideas from participants, it is advisable not to use a single item. Single-item measures are less reliable and less valid than multi-item measures (Partington, 2002).

Overall, 10 one-to-one interviews were undertaken for this research, 7 British construction managers and 3 Chilean construction managers participated in this research.

In order to validate the data contained in the transcripts, and to ensure that they were a true reflection of the construction managers' point of view, the researcher offered to send all the participants the transcripts so that they could make changes, additions or modifications to them; this also gave construction managers the opportunity to indicate which information they would want to be anonymised. Of all the participants considered in this research, only one construction manager did not want to receive the transcripts. The transcriptions were sent to the remaining 9 construction managers (via email or printed copy). Of the 9 construction managers that expressed their interest in looking at the transcripts, one did not reply, but sent a confirmation that he had read the email. In this case, the researcher assumed that this construction manager did not require amendments to the transcript. Three expressed that the transcripts were a true reflection of their points of view; 5 construction managers made minor amendments to the transcript (for example see final comments added by Participant CH-3 in Appendix

E.10, who summarised the opinions he expressed during the interview in L135[3], L147, L169, L205, and L229). This ensures that the construction managers' point of view have not been modified by the researcher during the transcription. The interview transcripts used in this research (Appendix E.1 to E.11) are the final version of the transcripts, and all relevant information has been anonymised.

In order to triangulate the data obtained from construction managers with another source of data, the Chartered Institute of Building was invited to participate in this research. The researcher contacted the Director of Professional and Technical Development, who acted as a gatekeeper by allowing access to two managers who were, at the time, involved in the Construction Manager of the Year Awards. The two managers undertook an interview in February 2007. As agreed with the participants, the transcripts of the interview were sent via email to one of these managers, however no reply was received. At a later date, the transcripts were sent to the Director of Professional and Technical Development, who in return replied that "the content of the transcript and the discussion are not correct" (Appendix H).

A second interview was undertaken in March 2008, in order to gather data to enable triangulation with the results obtained from construction managers. On this second occasion, the participant undertaking the interview was a consultant who supervises the Construction Manager of the Year Awards' process on behalf of the CIOB. The transcripts and recording from the first interview have been deleted and excluded from this research, upon request of the CIOB. The transcripts of the second (and final) interview can be found in Appendix E.11, and it has been confirmed by the CIOB as a reliable reflection of the truth. The analysis of this transcript is presented in Chapter 5, Grounded Analysis.

3.3.7. Grounded Theory and Coding

Coding is the process by which the relevant data is extracted from the data collected throughout the study (Corbin and Strauss, 2008), it is usually utilised in Grounded Theory research. The applications of Grounded Theory in management areas are few when compared to the times the ideas related to Grounded Theory are referred to in the literature (Bryman, 1998 in Partington, 2000). Partington (2000) argues that

[3] *When referring to the transcripts of the interviews, the following will be used: Appendix E.1, L222, in order to refer to the interview transcript presented in Appendix E.1, line number 222.*

researchers find it too complex to be applied; instead, he proposes to use a revised approach with emphases on causal models, providing an understanding of how different aspects of a problem relate each other. This revised approach to Grounded Theory is aligned with Gibbons *et al's* (1994) Mode 2 of knowledge, in which knowledge created is directly related, and of use to people far beyond the sphere of academia. It is in that light that this research adopts this view into analysing data and providing an understanding of the influence construction managers have on the success of project. Hence only the relevant elements of Grounded Theory, as originally presented by Glasser and Strauss (1967), will be utilised and applied.

> *The emphasis of the grounded analysis in this research is to understand how construction managers view their influence in the successful outcome of the construction project. The personal aspects of their experience as an individual are not part of this research.*

Grounded Analysis is the process by which the interviews are analysed. The term 'grounded' here is used to point out that knowledge is developed through and by the analysis.

A Grounded Theory research generates or discovers a theory, an abstract representation schema of a particular situation. This situation is one in which individuals interact, take actions, or engage in a process in response to a phenomenon. To do this, the researcher collects data (primarily interviews) develops and interrelates categories of information, writes theoretical propositions and presents a visual picture that illustrates the findings (Creswell, 1998, p.56).

Coding is the process by which the researcher identifies key information in the data and groups them into categories, which distinguish from each other as all elements of data within the same category aim to explain or describe something (Partington, 2000). Each category represents a unit of information composed of events, happenings and instances. Data collection in Grounded Theory is a constant comparative process which alternates between collecting information in an interview and analysing that information. The researcher does this alternating process until all categories of information have been saturated. That happens when new data does not provide any new categories.

In this research, categories and the relations between them were derived from the data collected in the interviews in two stages. In the first stage, each individual voice recording and transcript were analysed separately to identify categories and relations between relevant ideas. Then categories and relations from each one of the different participants were compiled in one set. The second stage involved analysing the transcripts and voice recordings from each participant for a second time, in order to find all the data that was relevant to each of the categories and relations. Each comment was tabulated into the relevant category, separated by participant, indicating the line number where it was taken from so comments could be tracked back.

To ensure that all relevant data had been considered, this second stage included a cross examination of codes for categories and relations. The coding process was performed without software assistance.

Bias of the coding process has been prevented by using only categories which have been explicitly identified by construction managers during the interviews. The results of the overall analysis have been tabulated in Section 5.2, Analysis of Interviews.

3.3.8. Development of an Empirical Model

The development of an Empirical Model is presented in Chapter 6, in which all the individual results from each interview are gathered; derives from those findings, a definition for each one of the categories and puts them together in one model which includes elements from the environment, the success of the project, the success factors and the construction manager enablers. The Empirical Model comes together into one whole representation because this research has identified the Interconnectivity between all categories.

3.3.9. Summary of Methodology Plan

Providing a clear account of the methodology is a key aspect to the determination of the quality of a research project (Gummesson, 1991). Section 3.3, Methodology Plan, justifies the research design for the development of this research project. This allows

the comprehensive understanding of all the research process undertaken for the submission of this thesis.

In qualitative studies like this one, the research problem is defined by the research questions and the research aim; these two are presented in Chapter 1, Background. Following the problem statement, the literature review explores and discusses aspects of critical success factors, construction manager's enablers (skills, competences and characteristics), and methodologies; this last section of the literature review allows the development of a research design which is consistent with the research problem. This research uses interviews to develop an understanding of the relation between the factors that define the success of the project and elements of the construction management that enable that success. Interviews are the preferred data gathering tool of Grounded Theory, and despite the fact that this research develops an inductive-deductive approach; data has been collected in alignment with this recommendation. Aspects of theoretical sampling have been discussed.

Based on Miles and Huberman's (1994) qualitative analyses recommendations, and System Theory ideas, a Systems Conceptual Framework (Chapter 4) is developed in order to enable a structured and systematic analysis of the data. In Chapter 5, Grounded Analysis, this Systems Conceptual Framework is populated with categories derived from the analyses of the 10 interviews undertaken and the different categories derived from each one of those interviews. After the analyses, and based on the Systems Conceptual Framework, an Empirical Model is developed. This model explains how a construction manager impacts on the success of the construction project he is responsible for, according to construction manager's point of view.

CHAPTER 4: DEVELOPMENT OF A SYSTEMS CONCEPTUAL FRAMEWORK

This chapter describes and presents the development of a Systems Conceptual Framework, which is utilised for the qualitative analysis of the interviews undertaken in this research. This Systems Conceptual Framework then enables the creation of an Empirical Model, building upon the results from these interviews.

The Systems Conceptual Framework is developed sequentially based on the Research Problem and the literature review; together with Creswell's (1998) recommendations, guidelines proposed by Miles and Huberman (1994), General Systems Theory (von Bertalanffy, 1971) and Soft Systems (Checkland and Scholes, 1999). This Systems Conceptual Framework is the first output of this research, hereafter it can then be utilised in future research related to construction project success, within the Construction Industry or others of similar characteristics. The Systems Conceptual Framework is presented in Subsection 4.1.8.

4.1. Conceptual Frameworks in Research

Better qualitative research is undertaken when a conceptual framework is developed prior to, and for, the analysis of the data (Miles and Huberman, 1994). The conceptual framework emerges from the field of study, and creates a backdrop for the analysis of the qualitative data; enabling this analysis to focus upon the relevant data.

Miles and Huberman (1994) suggest that the framework (which can be presented in either a narrative or graphic form) has to be robust enough to support the analysis process, but at the same time loose enough to ensure sensitivity to the data; therefore allowing the results to shape the knowledge. The conceptual framework should provide freedom for the data to be used for the creation of knowledge or understanding about the phenomena in study. Therefore, this (systems) conceptual framework may be transformed through the analysis process by the data itself (Miles and Huberman, 1994).

There are two views regarding the use of conceptual frameworks. On one hand, some qualitative researchers who utilise Grounded Theory support the idea that structures

must be kept to a minimum during the early stages of the research (Corbin and Strauss, 2008; Charmaz, 2006). However, the lack of bounding and focusing may lead to indiscriminate data collection; data overload can be a challenge to inexperienced researchers. On the other hand, the 'looser' the initial design, the less selective the analysis of data, and therefore the use of frameworks for qualitative analysis of data is recommended. At the same time, a conceptual framework provides focus, which is of particular importance to novice researchers (Miles and Huberman, 1994).

Wolcott (1982, p.157) unites these two views, which may seem contradictory, however, by postulating that researchers do have a clear idea of what they are looking for when they embark on a research project, he notes that it "is foolish not to make that quest explicit". In fact, a conceptual framework is about "making explicit what is already in your [*the researcher*] mind" (Miles and Huberman, 1994, p.22). Creswell (1998) argues that all researchers, no matter how inductive, have a preconceived idea regarding the sets of variables that will arise during the analyses. Each set of variables has a label, a name given to it in order to identify the nature of variables which it contains; these labels are called 'conceptual tags'. Miles and Huberman (1994) think of them as 'bins', which are developed prior to the analyses and then 'filled' with the data obtained.

Conceptual frameworks are defined by four elements: Unit of Analysis, Boundary, Conceptual Tags and the Relations between those conceptual tags.

4.1.1. Unit of Analysis

The unit of analysis is the focus of the research, what the research is exploring and is the first element to define within a conceptual framework. A single unit of analysis can be an individual, a role, a small group of people, or an organisation, however, it can also be a place, a period of time, or an event (Miles and Huberman, 1994). Multiple units of analysis provide a deeper understanding of processes and outcomes, as well as a strong and deeper understanding of the interconnectivity between variables (Yin, 2003a; Miles and Huberman, 1994).

> *Following Miles and Huberman (1994), and Yin (2003a), this research studies multiple construction managers to provide a better understanding on how categories interconnect. The unit of analysis in this research is a 'role', and not an individual, therefore the emphasis of the data collection is*

put on the role of a construction manager and what that entails, rather than the individual's personal experience.

4.1.2. Boundary

The boundary defines what is within the problem and what is not. The problem is viewed as a phenomenon which takes place within a bounded context, and the boundary is the edge of this context (Miles and Huberman, 1994). The boundary is defined by the context, time, and size of the unit of analysis, as well as by location and sampling (Miles and Huberman, 1994). The context is made of all the elements that surround the unit of analysis which are relevant to a study.

The boundary by time is the construction phase. This research specifically explores the experience the construction manager has gathered during all their years of experience on site, as construction manager or in a different capacity. The boundary by location is the construction site.

The sampling process is also bounding to the data collection. As pointed out in Subsection 3.1.12, Theoretical Sampling, qualitative researchers work with small samples, and sampling is a purposive, rather than random process (Miles and Huberman, 1994).

The boundary by sampling is derived from the Scope of the Research. Construction managers who have managed the completion of two or more projects are considered to be experienced enough to provide a satisfactory line of argument regarding their impact on the success of project.

4.1.3. Conceptual Tags

When analysing qualitative data, information is classified in units of meaning, these are called "codes" (Miles and Huberman, 1994, p.56); codes are grouped into categories according to their similarities. The process by which these units of meaning are identified and organised into categories is called Coding (Creswell, 1998) and is explained in Subsection 3.3.7, Grounded Theory and Coding.

A Conceptual Tag is the label or name of a set of categories which help to explain the problem that is being studied. These categories do not emerge from the codes until the

analysis; however the conceptual tags can be derived from the Research Problem and Literature Review.

This research derived the conceptual tags for the conceptual framework from the research problem and literature review. The conceptual tags initially proposed in the model are: critical success factors, construction project success, construction manager enablers and environment.

A critical success factor is an area of activity in which favourable results are absolutely necessary for a manager to achieve the goals previously determined for the project (Li et al, 2005; Chan et al, 2004; Sanvido et al, 1992). The Critical Success Factors Conceptual Tag gathers categories which construction managers identify as critical success factors from the construction phase of the project.

The Construction Phase Success Conceptual Tag incorporates all other aspects to success that are not necessarily measurable, or cannot be quantified, but are relevant to determining the success of the project. This conceptual tag aims to identify the qualitative aspects of construction success.

Construction manager's enablers makes reference to all skills, competences and characteristics that a construction manager needs to possess, which the participants in this research regard relevant to delivering a successful outcome of the construction project.

Finally, in order to incorporate the context dependency of construction projects (Young, 2003), the Environment conceptual tag is included. The Environment gathers all aspects significant to the research problem which are beyond the boundaries of the construction phase of a project.

4.1.4. Interconnectivity within the Conceptual Framework

The relations between categories are a key aspect of this research; they show the interconnectivity between variables which has not been identified by the literature. Relations are defined by the links made between those categories or conceptual tags.

The categories and the relations between them were derived from the grounded analysis (Chapter 5), however, initial relations between conceptual tags can be derived from Research Questions and Literature review.

4.1.5. Limitations of the Conceptual Framework

This conceptual framework imposes two main limitations upon the qualitative analysis of the data. The first limitation imposed is that it does not allow for the uncovering and exploration of the relations between the context of the problem and the Environment; since the boundary, as defined by Miles and Huberman (1994) in an effort to refine the problem, differentiates what is studied, from what is not. Construction projects are situated within a larger social structure and therefore they interact with their environment. At the stage where the conceptual framework is under development, the relationship between the construction phase and the environment cannot be ignored. If ignored this would truncate the possibilities of determining how construction managers achieve the success of the construction project with a holistic approach. An appropriate framework for this research must include this aspect.

The second limitation relates to the development of the analysis and the descriptive relations that exist between categories. In turn this poses an obstacle to the representation of the complexities of the context, upon which the construction manager aims to achieve success. An appropriate framework for this research must eliminate the limitations initially created in their development.

4.1.6. General Systems Theory

In 1950, Von Bertalanffy (p.135) identified that "similar fundamental conceptions" had developed independently in different fields of science, irrespective of the subject of study. These remarkable similarities were developed based on different facts, and even contradictory philosophies. General Systems Theory (GST) is developed by identifying why these 'isomorphisms' (similarities in shape) exist. Although the similarities were initially detected in the realm of the exact sciences, it extends to other disciplines and is not restricted only to mathematical forms. GST is not intended to be the general theory of everything (Boulding, 1956, p.197); such a theory would be able to explain very little, as "we always pay for generality by sacrificing content".

GST is an appropriate theory for this research because it allows the mapping of processes with a holistic approach; this is particularly relevant to the aim of this research which is the development of an Empirical Model, which emphasises the interconnectivity of the categories. This theory provides a general framework which allows the development of models (Boulding, 1956) and provides discipline to interdisciplinary research; hence making GST applicable to the development of an Empirical Model which is immersed in the multidisciplinary field of the Construction Industry.

The application of GST facilitates the description and understanding situations that have a complex set of elements which relate to each other in different ways; it has been applied in several fields, organisations and their complexities (Thiétart and Forgues, 1995).

The relations within this conceptual framework can be transformed into interactions by adding the principles of GST; this allows the mapping of the interactions which are identified in this thesis. By doing so, this framework is better suited for its application in this research.

The application of GST in the Construction Industry's related problems should be beneficial, since, by looking at a problem as a whole, the improvements generated will also benefit all stakeholders.

Construction projects are social organisations which are temporarily established for the delivery of a product (Bertelsen, 2003). Boulding (1956) defines nine different levels of systems, according to their complexity. Social Organisations (in Level 8) are open systems, meaning that the system interacts with the surroundings in order to maintain itself. The most distinctive characteristic of this level, in comparison to Level 7, is that human beings have a 'role'. In fact, Boulding (1956) argues that only a partial view can be obtained at this level, as humans do not exist on their own. At Level 8, the level in which humans interact, the emphasis has to be put in the content and the meaning of messages (Boulding, 1956). The latter suggests it is relevant to utilise a qualitative approach for analysing systems which are social organisations. This aligns with the Constructionist paradigm upon which this research is developed.

GST is used to simplify analysis of, and solutions to, problems. GST can be used to represent either the stages, or a specific scenario of a construction project. It can also

be used for a superficial approach or a deeper analysis; however it will depend on the problem and the perspective used to study the problem. Within a system there are subsystems which, in turn, are systems themselves.

GST includes the concept of dynamic homeostasis. It is the property of systems by which they tend to maintain a specific stable condition. When systems change their condition for any reason, they show a tendency to go back to that state of equilibrium. In the construction process, homeostasis refers to the tendency of projects to reach a state. This might be thought of as an industrial inertia in that construction projects tend to achieve a similar state, in terms of organisational structure and general management systems, as other projects. This might be seen as an advantage for construction researchers in that is permits more confidant generalisations of qualitative research outputs.

Within each system there are processes and every process has an owner (Blockley and Godfrey, 2000, p.260). The construction manager is responsible for the success of the construction process based on site. Each role to be carried out within a system requires particular skills, education or experience (Blockley and Godfrey, 2000).

> *The Systems Conceptual Framework incorporates the characteristics of GST to the Conceptual Framework initially developed. By incorporating GST it is possible to acknowledge the complex and dynamic nature of construction projects and its relation to the environment; as well as being able to recognise that the different elements of a construction project together constitute a whole, which is more than the sum of the parts. It also becomes possible to identify the characteristics of the construction manager's role which impact upon the success of the construction project, and how they relate to each other.*

4.1.7. Soft Systems

Soft Systems are systems which involve people and their purposeful actions. Organisations are Soft Systems. Hard systems, on the other hand, are concerned with the mechanics of the problem.

The difference between Soft Systems and hard systems is not formal but paradigmatic. The soft paradigm is concerned with underlying social processes, involves interpretive

epistemology, inductive reasoning, and qualitative techniques. Whereas the hard paradigm is usually positivistic, deductive, utilises quantitative techniques and is characterised by a reductionist approach (Pollack, 2007).

Pollack (2007) identifies that the utilisation of the hard paradigm to project management is based in assumptions. These assumptions may not reflect the reality of project management, and there is strong evidence of a growing acceptance, albeit implicit, of the soft paradigm in project management.

The ontological and epistemic stance of Soft Systems is one where there is a socially constructed view of reality; representations of that reality structure the knowledge derived from them, and where Systems Thinking is the process of building the model (Rose, 1997). This research utilises a Soft Systems approach, which is in alignment with the ontological and epistemic stance of this research.

Galanakis (2006) has utilised a Soft Systems approach as it incorporates qualitative variables, and enables the representation of the influence between the different elements of the system. Soft Systems have also been applied in the Health and Social work arena by Rose and Haynes (1999) in order to devise an Empirical Model, for description of a case. Thus, providing evidence that a Soft Systems approach is better suited to this research.

In Soft Systems, the concept of 'holon' has been developed. Coined by Koestler (1967), the term holon refers to the abstract idea of a whole, which has processes, levels and properties (Checkland and Scholes, 1999). Checkland and Scholes (1999) use the term holon instead of system, in order to distinguish between a system (which exists in the real world) and the holon, the perception that somebody has of that system. A holon is the representation of a system which, in turn, is the problem or process in the real world.

> *The Systems Conceptual Framework here developed is a holon, in that it is a representation of the research's problem. The Empirical Model presented in Chapter 6 is also a holon, in that it does not exist in the real world, but it present an understanding of things, which is aligned with the theoretical generalisation of this research.*

Van Brusel *et al* (1998) have applied Checkland's ideas to the manufacturing industry, and categorised holons into three basic types: resource holon, product holon and order holon. The resource holon is the type which holds the resources; the product holon holds the "process and product knowledge to assure the correct making of the product with sufficient quality" (van Brussel *et al*, 1998, p.256); the order holon is the task to be performed.

According to this categorisation, the Systems Conceptual Framework is a product holon, as the role of the construction manager is to oversee the process to ensure the delivery of the project.

4.1.8. Systems Conceptual Framework

The Systems Conceptual Framework is developed by incorporating the properties of Systems, particularly Soft Systems, to the conceptual framework developed so far. The Systems Conceptual Framework is a system in which the categories that will be identified by construction managers are elements of a system. The relations become interactions, and hence the link between both is unique to the two elements. Conceptual Tags (Construction Phase Success, Critical Success Factors and Construction Manager Enablers) become subsystems of the Construction Project System.

The Systems Conceptual Framework is presented in Figure 3. Categories derived from the interviews will be allocated to the different Conceptual Tags presented in the Empirical Model.

Systems incorporate the relations with their surrounding environment; by incorporating GST and Soft Systems to this framework allows the consideration of the interactions with the categories that belong to the Environment Conceptual Tag. It also allows to incorporating their potential relation to the context of the success of the construction project. At the same time, the boundary between the Unit of Analysis and the Environment acknowledges the existence of relations between the Construction Manager Enablers, Construction Phase Success and Critical Success Factors, and the Environment Conceptual Tags.

The relations within the Systems Conceptual Framework are descriptive and causal. They are descriptive as they explain how the construction manager and the

construction phase success relate to each other; it is causal as it allows to explain how different categories impact on each other.

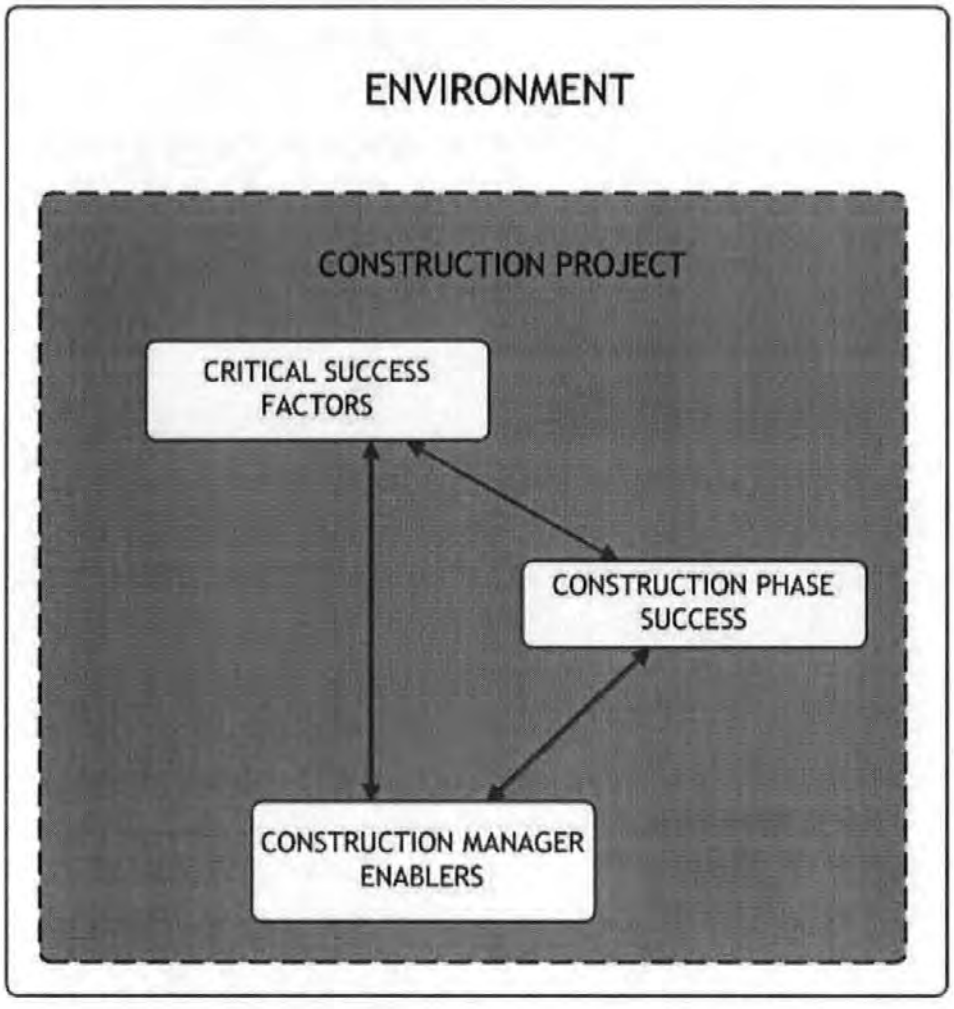

Figure 3: Systems Conceptual Framework
Source: Representation developed for this research based on Miles and Huberman (1994), von Bertalanffy (1971), and Blockley and Godfrey (2000)

In Chapter 5, this Systems Conceptual Framework is utilised for the analysis of the interviews, the different categories that arise from each interview will be allocated to the Conceptual Tags of this Systems Conceptual Framework. In Chapter 6, Development of an Empirical Model, the findings of the Grounded Analysis build upon the Literature for the development of the Empirical Model, which explains how construction managers influence the success of the construction project.

4.2. Summary

This chapter has developed a Conceptual Framework, which utilises Creswell's (1998) recommendations, Miles and Huberman's (1994) guidelines, whilst including GST's principles and Soft Systems. This Conceptual Framework was improved by the incorporation of GST concepts and related ideas, such as Soft Systems. As a result, a Systems Conceptual Framework is devised.

The Systems Conceptual Framework has its boundary, conceptual tags (which equate subsystems) and categories (which are equivalent to the elements of the system).

For ease of understanding on the use of the Systems Conceptual Framework in chapters 5, 6 and 7, the terms 'conceptual tag' and 'category' will be hereafter used throughout this thesis.

CHAPTER 5: GROUNDED ANALYSIS

This chapter justifies the design of the interviews which forms the data collection strategy of this research (Section 5.1). It presents the categories identified by each participant, and the coding results for each category (Section 5.2). This is in order to present categories, and relations between them, from the views expressed by construction managers. It describes the triangulation process (Section 5.3).

The design of the final interview included devising and using a pilot interview and the results then compared with the Research Objectives and the Systems Conceptual Framework. The design of the pilot interview schedule is discussed in the light of the data obtained from it, and an improved interview design was generated.

The results for each one of the 10 participants are presented by populating the Systems Conceptual Framework developed in Chapter 4 (Section 5.2.1). The results of the coding process are presented separately for the 37 categories (Section 5.2.2 to Section 5.2.5).

An interview was undertaken with a Chartered Institute of Building's (CIOB) representative; this person is the consultant who runs the Construction Manager of the Year Awards for the CIOB. This interview was carried out in order to provide data which will allow triangulation of the results obtained from the construction managers' interviews.

5.1. Interview Design

In this research, the design of the interview involves two stages. Initially, a pilot interview schedule was devised (Appendix F). The data obtained from the pilot interview enabled analysis by comparing the results with the Research Objectives and the Systems Conceptual Framework. (Subsection 1.2.1); from this analysis an improved interview design was generated. This final interview schedule (Appendix I) has been utilised for all of the interviews undertaken by construction managers, British and Chilean, in English or Spanish languages respectively.

Sheppard (2004) postulates that qualitative interviews can take three different forms: an information-gathering exercise, an exercise in the creation of meaning, or a social situation with its own expectations. Interviews are an information-gathering exercise when the participant's role is reduced to the one as the repository of information. Qualitative interviews are an exercise in the creation of meaning when the researcher guides the participant through their own process of creating a narrative of their own perspective on the issues being discussed. A social situation with its own expectation includes characteristics from the information-gathering and creation of meaning exercises.

> *During the interviews construction managers are asked questions that require reflection on their own professional practice and about their own impact on the success of a construction project; which entails creation of meaning. They are also asked to explain the relations between the aspects they declare relevant to the success of a project. The qualitative interviews undertaken as part of this research study are in Sheppard's (2004) third form, a social situation with its own expectations; in alignment with the ontological and epistemic stance (Subsection 3.1.5) in which the participant is an active part of the creation of knowledge.*

In this research, participation was voluntary and participants were contacted by means of a formal letter (Appendix C). When participation is voluntary, the participants are likely to be people who have clear opinions about the subject, or would like their opinion to be known (Triola, 2001); this could be interpreted as having a sample that does not cover the whole spectrum of views. However this has, in turn, a positive impact upon this research project, since to carry out one-to-one interviews, the researcher needs individuals who are not hesitant to speak or share ideas (Creswell, 1998); a "less articulate, shy interviewee may present the researcher with a challenge and less adequate data" (Creswell, 1998, p.124).

> *The sampling methods utilised in this research project have been selected in order to allow the researcher to contact people who are willing to actively engage in both aspects of the interview: information transfer and creation of meaning.*

Projective techniques are an oblique approach to gathering the data that the researcher requires (Jupp in Jupp, 2006; Worcester and Downham, 1988). They are based in the rationale that when presented with vague stimuli, participants will project their own meaning upon the stimuli. Projective techniques gather information beyond the surface (Worcester and Downham, 1988). Interviews are amongst the data gathering tools which can apply projective techniques (Easterby-Smith *et al*, 2002).

> *The interview design considered the use of projective techniques when the researcher realised, during the interview, that more information was needed and was not achieved by a direct question (see Appendix E.4, L136 and L145[4], Appendix E.2, L16-L18).*

5.1.1. The Researcher's Role as the Interviewer

Within the one-to-one format adopted in this research, the answers "are not simply given to the questions, but to the researcher who poses the questions" (Shah, 2004, p.554). Therefore, the researcher's role in the interview needs to be explored and its impact explained.

Since the interview is an exercise for the creation of knowledge in which researcher and participant are involved, the impressions of the preconceived ideas that the participant or the researcher may have will impact on the results of the data collection. At the same time, it is important that the interviewer creates an environment in which all participants feel comfortable to share their views. In order to achieve this, the researcher collected a set of recommendations from the literature; these recommendations were followed by the researcher for all interviews, including the pilot interview. These recommendations are outlined below:

- Begin by informing the participant about the research question or research aims, this maximises the utility of this method (Johnson in Gubrium and Holstein, 2001).
- "Be a good listener" (Creswell, 1998, p.125).

[4] *When referring to the transcripts of the interviews, the following will be used: Appendix E, L222, in order to refer to the interview transcript presented in Appendix E, line number 222.*

- Be unobtrusive: as a researcher, do not interfere with the development of events (Stake, 1995). The researcher was constantly aware of the need to let the participants finish their answers without interrupting them.
- During the interview, stay focused on the subject, "complete within the time specified (if possible), be respectful and courteous, and offer few questions and advice" (Creswell, 1998, p.125). All participants were offered, at the end of the interview, the opportunity to add any comments they considered to be relevant to the interview topic; or to complement one or more of their responses. This confirms that the data gathered during the interview is a reliable reflection of what the construction manager thinks about the subject. Also if the researcher had omitted an important aspect the participant had the opportunity to include it at that stage.
- Develop a protocol or take notes from the comments made by the participant: "Interview protocols enable a person to take notes during the interview about the responses of the interviewee" (Creswell, 1998, p.126). Protocols are also useful since participants may share information 'off the record' or after the researcher has stopped recording (Creswell, 1998). Not all participants find the same meaning to questions that have been worded similarly; during the interview the researcher made notes of the words that were used by the participant, so that the following questions can be worded using a language which is familiar to the participant (Sheppard, 2004). For example, during the interviews the researcher refers to the 'project manager' rather than 'construction manager', as this is the term used by participants to refer to construction managers (Appendix E.2, L125; Appendix E.5, L380, L387).
- Use the appropriate dress code (Berg, 2000, cited in Sheppard, 2004); the researcher was able distinguish between interviews that would take place on site and the interviews that would take place within an office; using different dress codes for both, in order to give the impression that the researcher could belong to that particular environment. Appropriate dressing contributes towards creating an atmosphere in which the construction manager would feel more comfortable to speak his mind about the matters discussed during the interview.
- Location: the interview must be undertaken in a place in which the participant feels comfortable and they can express their views without any fear of being over-heard or misinterpreted (Weiss, 1994). In order to ensure this, the locations of all interviews were chosen by the participants.

Some researchers look for interviewers with whom the participants can empathise. Sheppard (2004) used interviewers of the same gender as the participants, as it created empathy and made participants feel that the interviewer is a potential participant. This research does not involve analysing gender issues related to construction management, and hence matching the gender of the researcher (female) with the participants (all males) was deemed not necessary.

Women are under-represented in the Construction Industry, particularly at a management level (Fielden *et al*, 2000; Gale, 1994), and this may have led to some prejudices affecting the interview. However, due to the voluntary involvement of participants in this research, it has been assumed (for the purpose of this research) that the participants were comfortable with undertaking an interview with a female researcher.

Cross-cultural issues can arise in interviews (Shah, 2004); the researcher is a Chilean citizen and this is considered to have a positive impact on the ability of the researcher in being able to relate to the Chilean participants. These Chilean participants then feel more comfortable when undertaking the interview if they engage in a conversation with an individual of their same nationality, and with whom shares elements of their background.

On the other hand, for the interviews undertaken with the British construction managers the cross-cultural issue may have been a setback, however, it proved to be an advantage. The construction managers were naturally inclined to go into more detail in order to fully ensure that the researcher understood what they were referring to; for example, see transcript for Participant UK-3 in Appendix E.3, L53. Shah (2004) argues that researchers investigating other cultures may encounter cultural barriers to the development of their research projects, as they might not have an awareness of the patterns of social interactions required to gain access and create meaning. The interviews in this research were carried out after the researcher had been familiarised with the local culture, and therefore this is not considered an obstacle to her understanding of the information provided by the participants. At the same time, the flexibility of the unstructured interview format allowed the researcher to ask questions in order to clarify, or confirm, the information provided by the construction manager.

The participant may want to impress the interviewer or present a narrow view of the totality of the truth, as they see it (Sheppard, 2004). In order to address these two

aspects, the Consent Form (Appendix J) that participants were asked to sign before the beginning of the interview stated that all data would be anonymised; and, as a result, there would be no immediate benefit from impressing the interviewer, or on the other hand, no reason for not sharing their whole views on the subject.

5.1.2. Pilot Interview Design

This one-to-one semi-structured interview was undertaken in the UK, in February 2007. The voice recording is 67:06 minutes long. The interview has not been transcribed or analysed for this thesis, due to it only serving the purpose of method design. This information was clearly stated to the participant in the Pilot Interview Consent Form (Appendix K).

A schedule was initially developed for this pilot interview (Appendix F). One male construction manager undertook the interview in order to assess its effectiveness with respect to three main aspects of the pilot interview design. The first aspect involved answering the Research Questions, the second aspect was the need to provide the participant with the freedom to incorporate all aspects that were deemed relevant to him, and the third was the duration of the interview.

The pilot interview proved that the forecasted length of the interview was correct. However in terms of content and data gathered, the structure of the interview failed to provide the flexibility for the participant to incorporate the aspects he found to be relevant; which is what this research aims to explore. In fact, more valuable data was obtained from the questions the researcher asked based on the data already provided by the participant; this suggested that an unstructured approach would be better suited to the purposes of this research.

According to Sheppard's (2004) categorisation of qualitative interviews, this semi-structured approach is closer to an information gathering exercise, and therefore presents obstacles for the creation of meaning.

When an interview is designed based on a specific set of questions, there are five main setbacks:

1. The researcher assumes that the questions are comprehensive enough to provide all the information relevant to the subject.
2. The researcher implicitly assumes that the questions have been worded so that subjects can clearly understand what they are being asked.
3. The researcher expects, albeit inexplicitly, that participants from different backgrounds, or cultures, attribute identical meaning to each question (Sheppard, 2004).
4. The "participant may not answer the question being asked" (Creswell, 1998, p.126).
5. There is the underlying assumption that the ideas the researcher may have regarding the research topics are accurate (Sheppard, 2004), which creates an obstacle to the generation of knowledge collected from the data provided by the participants. Consequently, the interview protocol was redesigned, using a non-standard or 'unstandardised' approach (Sheppard, 2004).

In a social study, it cannot be assumed that different people have the same understanding of things (Sheppard, 2004), therefore the researcher has to acknowledge that each participant has their own background and views on specific topics. Therefore, a non-schedule approach is appropriate to this research, as it allows the researcher to make use of the vocabulary that the participant employs, and can also emphasise on certain aspects the construction manager declares as more relevant.

5.1.3. Final Interview Design

The non-standard approach assumes there is little known about the subject before the data collection starts, and this aligns with the research's aim of deriving the knowledge directly from the construction managers, as purely as possible. This prevents the researcher's preunderstanding of the problem being imposed onto the interview with the result of creating an undesirable bias within the answers provided by construction managers. When using the non-standard approach, it is important that the researcher tries to remain neutral and make the fewest possible assumptions about the participants and the views they might hold.

The non-standard interview has a dynamic of its own (Sheppard, 2004), the researcher and the participant actively engage in the creation of knowledge. The participant, therefore, has an input on that dynamic; this is aligned with the constructivist stance of this research and therefore justifies the use of the flexible approach that the non-standard interview provides. In this unstructured type of interview, the researcher must generate questions and explore, in more detail, the elements of the participant's response that are relevant to the research problem. This allows for flexibility to deepen the understanding of specific aspects the participants find relevant to construction project success.

The interview schedule (Appendix I) covers, therefore, two main areas. The first area investigates the aspects that construction managers consider relevant in order to determine if the project has been a success or not, and this corresponds to the first question in the schedule. This area provides data to determine the critical success factors along with aspects of the construction project success. The second area explores which characteristics and skills a construction manager requires in order to deliver a successful project; the second question of the schedule is aimed at this. During the interview, the researcher takes notes of the aspects identified by the participants, and in return asks questions about those specific aspects in order to gain a better understanding of the views held by the participants. These questions are generated during the interview, and cannot be created beforehand, as they are based on the answers of the participant to the two initial questions. The third question proposed in the schedule uses projective techniques, in case the researcher does not collect relevant data through a direct question.

In order to undertake full analysis of the data provided by participants, various tasks were undertaken. Firstly, each interview was voice recorded, and notes were taken throughout the interview. The notes taken by the researcher were to enable a record of aspects to be kept and this allowed the researcher to go back, later in the interview, and ask the participant to elaborate on certain aspects; these notes have not been included in the analysis. After the interview, the voice recording was transcribed verbatim by the researcher. This initial verbatim transcription was then anonymised, deleting information that would lead to the identification of the construction manager. During this process, some of the information that participants had already requested to be deleted were either replaced or deleted from the transcripts.

The anonymised transcripts were then sent to the construction managers; either a printed or a digital copy, as they preferred. After receiving the transcript, construction managers read the text in order verify that the transcript was a truthful reflection of their thoughts and ideas; construction managers were also offered the opportunity to make amendments or additions to the transcript. This was the stage in which construction managers approved the contents of their responses, which would then be used in the analysis and subsequently published as part of this thesis.

The overall analysis coding process has been presented in Subsection 3.3.7.

Interconnectivity between categories is the most relevant contribution of this thesis. Section 5.2.6 presents the 56 relations identified in this study; these relations are derived from the analysis of the interviews. The Systems Conceptual Framework is used a means of organising the categories and the relations between those categories.

5.2. Analysis of Interviews

This section shows the results of the coding process for all interviews undertaken in this research. Firstly, the categories and relations identified by each participant are presented by means of populated Systems Conceptual Frameworks (Section 5.2.1). Secondly, the coding for each category within each Conceptual Tag is presented (Section 5.2.2 to 5.2.5). Relations are presented in Section 5.2.6. To provide an overall view, the complete list of categories for each conceptual tag, along with the frequency for each category (Pareto analysis), is presented in Figure 15 (Section 5.2.1). Table 4 provides detailed information from the participants and interviews of this study.

5.2.1. Use of Systems Conceptual Framework

It is necessary at this point to introduce one of the conclusions of this research. Namely, the Populated Systems Conceptual Framework, in order to present clearly, in more detail, the contribution of each one of the participants to the overall results.

The Empirical Model to be presented in Chapter 6 has been developed from categories and relations identified during the analysis of all the participants' interviews.

The analysis of each of the ten construction manager's interviews produces ten sets of categories and relations derived from each of the construction managers; each set is then individually mapped onto the Systems Conceptual Framework derived in Subsection 4.1.8. This produces ten different populated Systems Conceptual Frameworks. This set of ten individual Systems Conceptual Frameworks is then put together in Figure 4 to produce one completely Populated Systems Conceptual Framework for this research representing the whole group. This completely populated Systems Conceptual Framework is then used as the basis upon which each of the ten individual sets of categories and relations are mapped, these are shown in Figures 5 to 14. In this way it becomes easier to assess the views of individuals against the summary findings of the whole group. It is considered necessary to present results in this manner, as it facilitates the representation of the individual contributions of each participant towards the development of the Empirical Model (Chapter 6).

Participant	Date	Duration Tape	Transcript in Appendix	Experience		Professional Body Membership	Gender
				Overall	Construction Management		
UK-1	02/04/2007	55:29	E.1	30+	20+	MCIOB	Male
UK-2	02/04/2007	55:47	E.2	20+	10+	---	Male
UK-3	30/04/2007	42:24	E.3	20+	13+	---	Male
UK-4	02/05/2007	66:06	E.4	29+	19+	AIB	Male
UK-5	14/11/2007	54:08	E.5	23+	13+	MICE	Male
UK-6	05/03/2008	53:40	E.6	20+	3+	---	Male
UK-7	18/03/2008	49:10	E.7	20+	10+	AIEMA	Male
CH-1	26/12/2007	40:33	E.8	14+	14+	C.Ch.C.	Male
CH-2	02/01/2008	76:01	E.9	15+	7+	C.Ch.C.	Male
CH-3	03/01/2008	38:17	E.10	37+	15+	---	Male

Table 4: Participants' Information

For each participant's Populated Systems Conceptual Framework (Figures 5 to 14), relations between categories have been identified with arrows. To simplify representation, each of these figures representing the individual construction managers are colour coded. The categories identified by the particular construction manager are represented with the colour white, whereas categories within the summary framework

which were not identified by that particular construction manager have been coloured grey.

As a summary, and before the coding by categories is presented (Subsections 5.2.2 to 5.2.5), Figure 15 shows the Populated Systems Conceptual Framework with frequencies for each category.

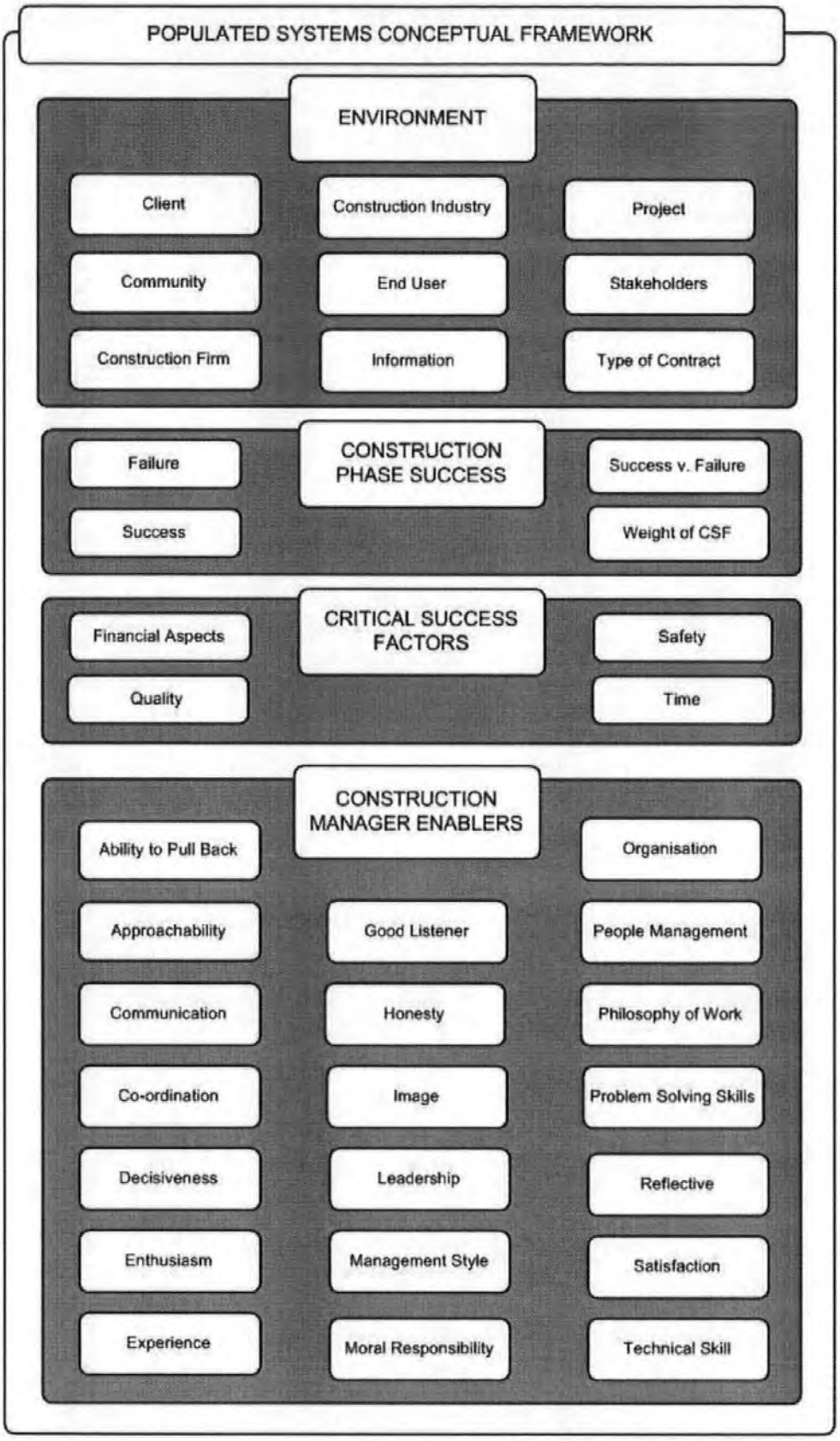

Figure 4: Populated Systems Conceptual Framework

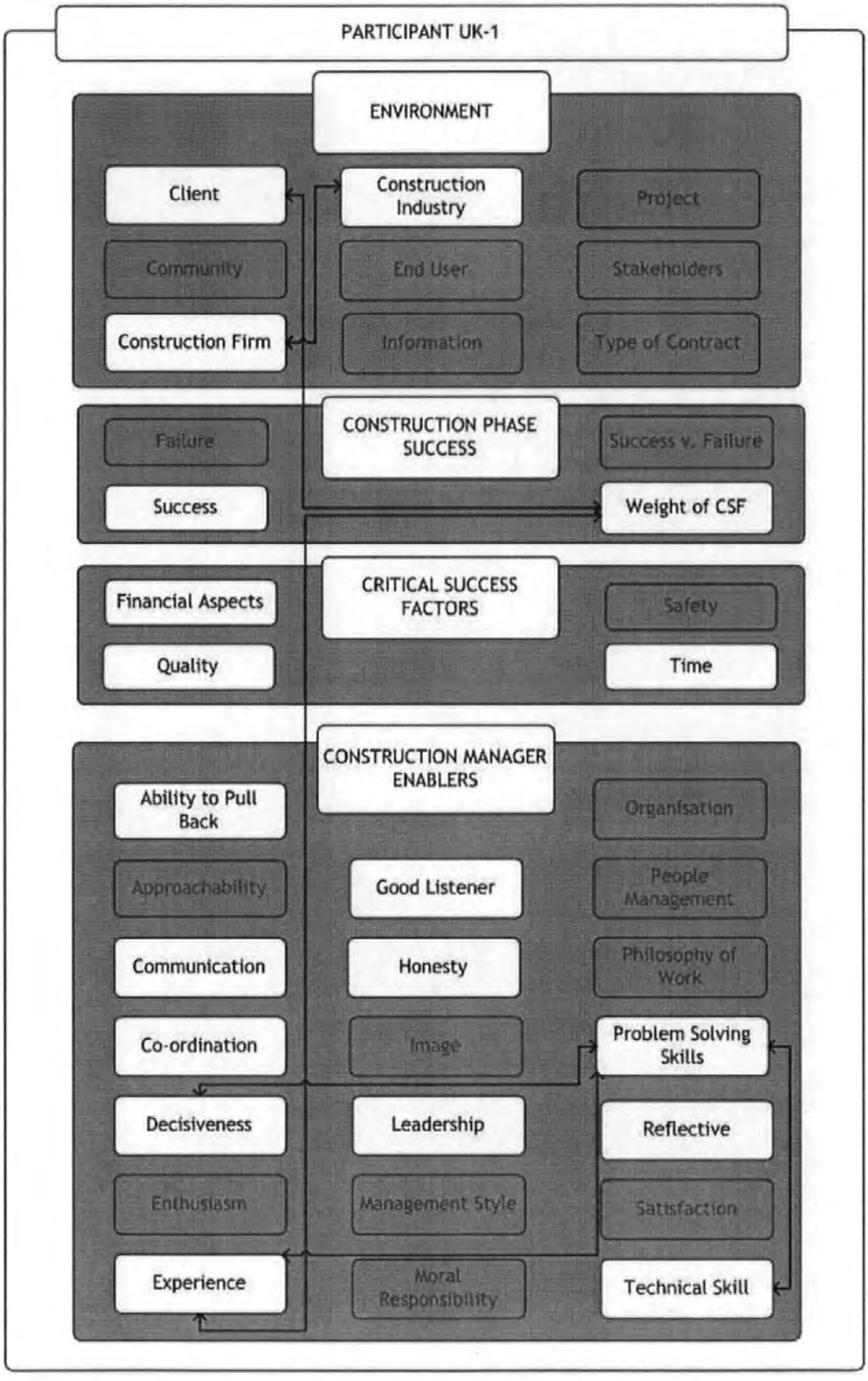

Figure 5: Systems Conceptual Framework for UK-1

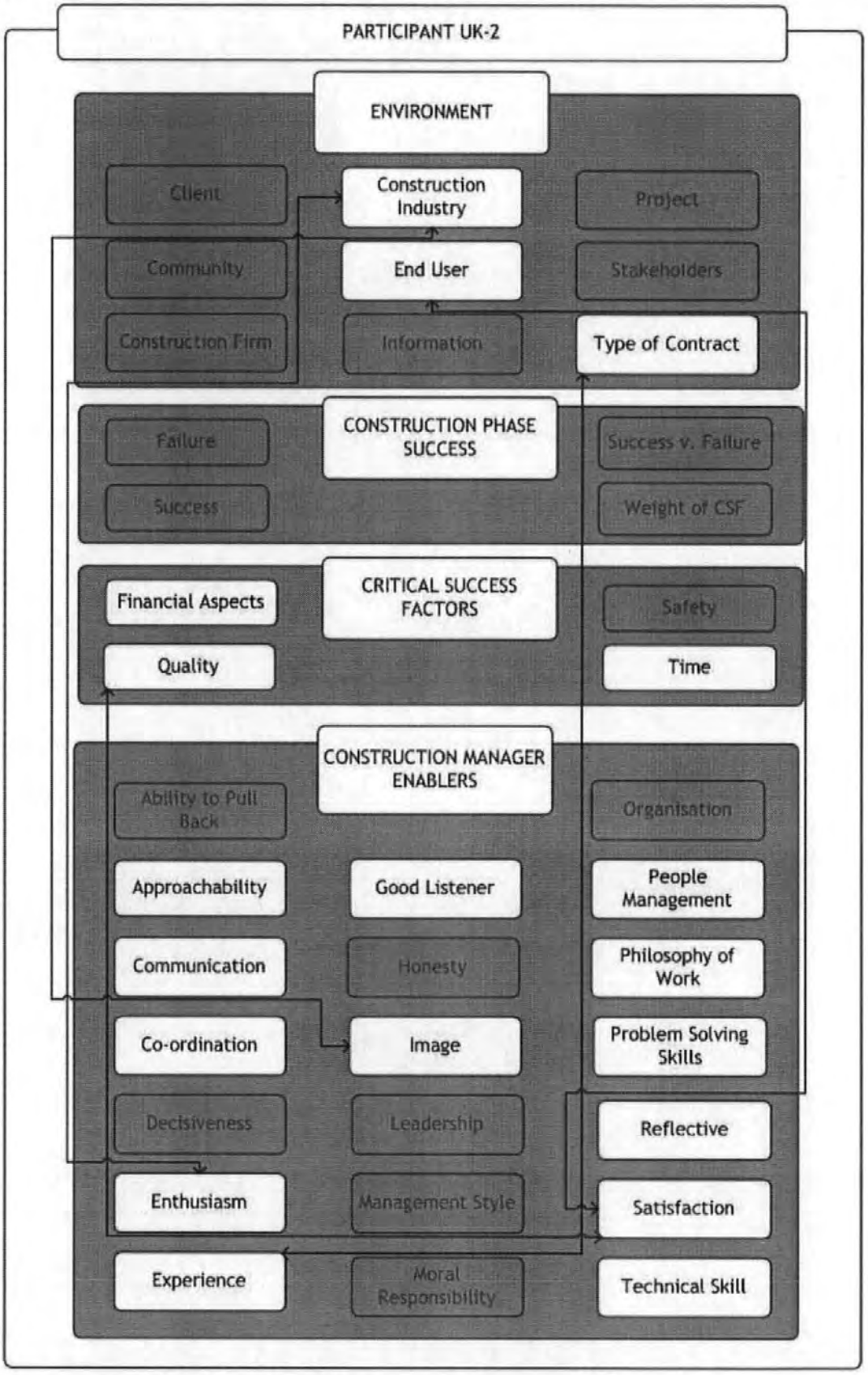

Figure 6: Systems Conceptual Framework for UK-2

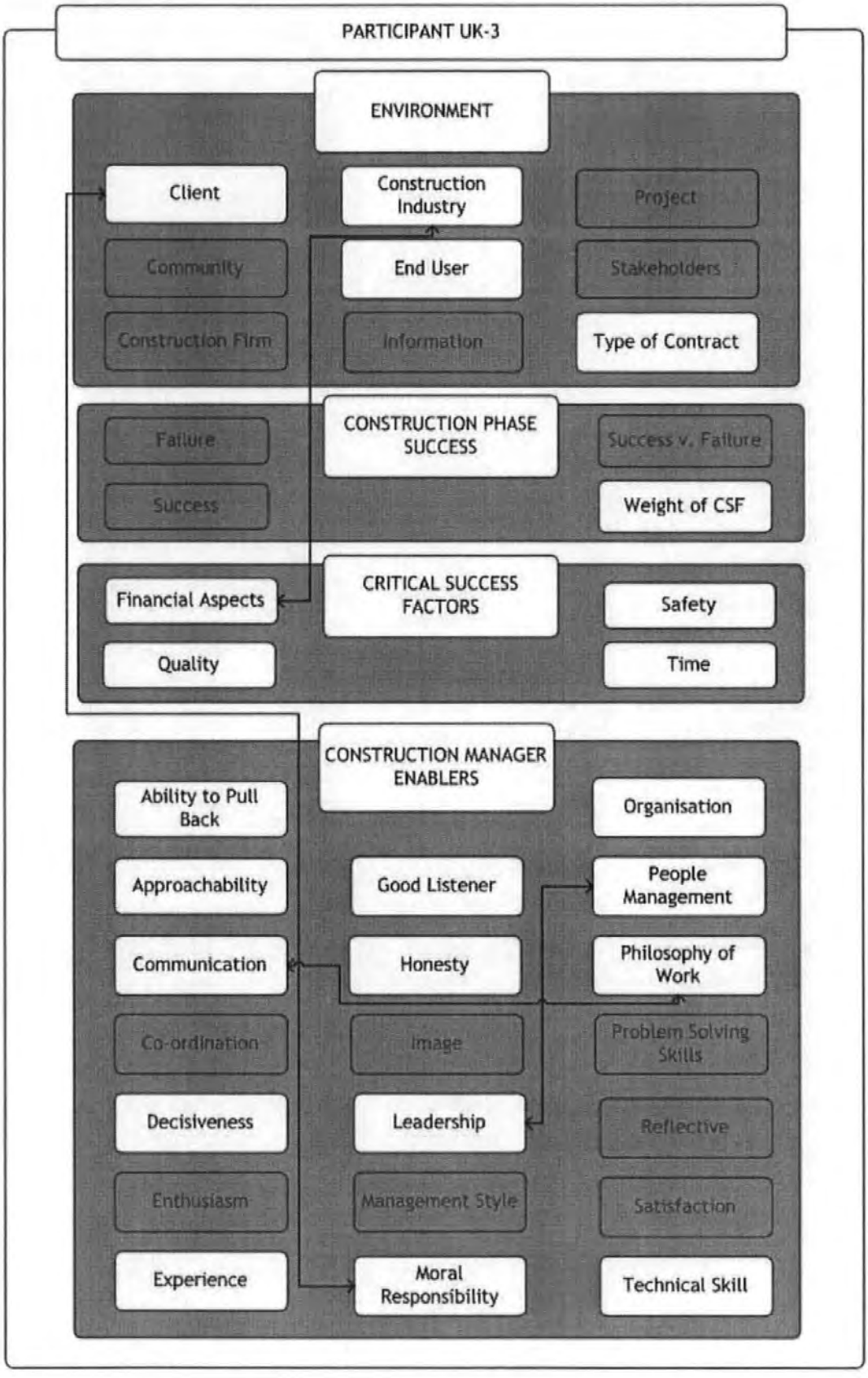

Figure 7: Systems Conceptual Framework for UK-3

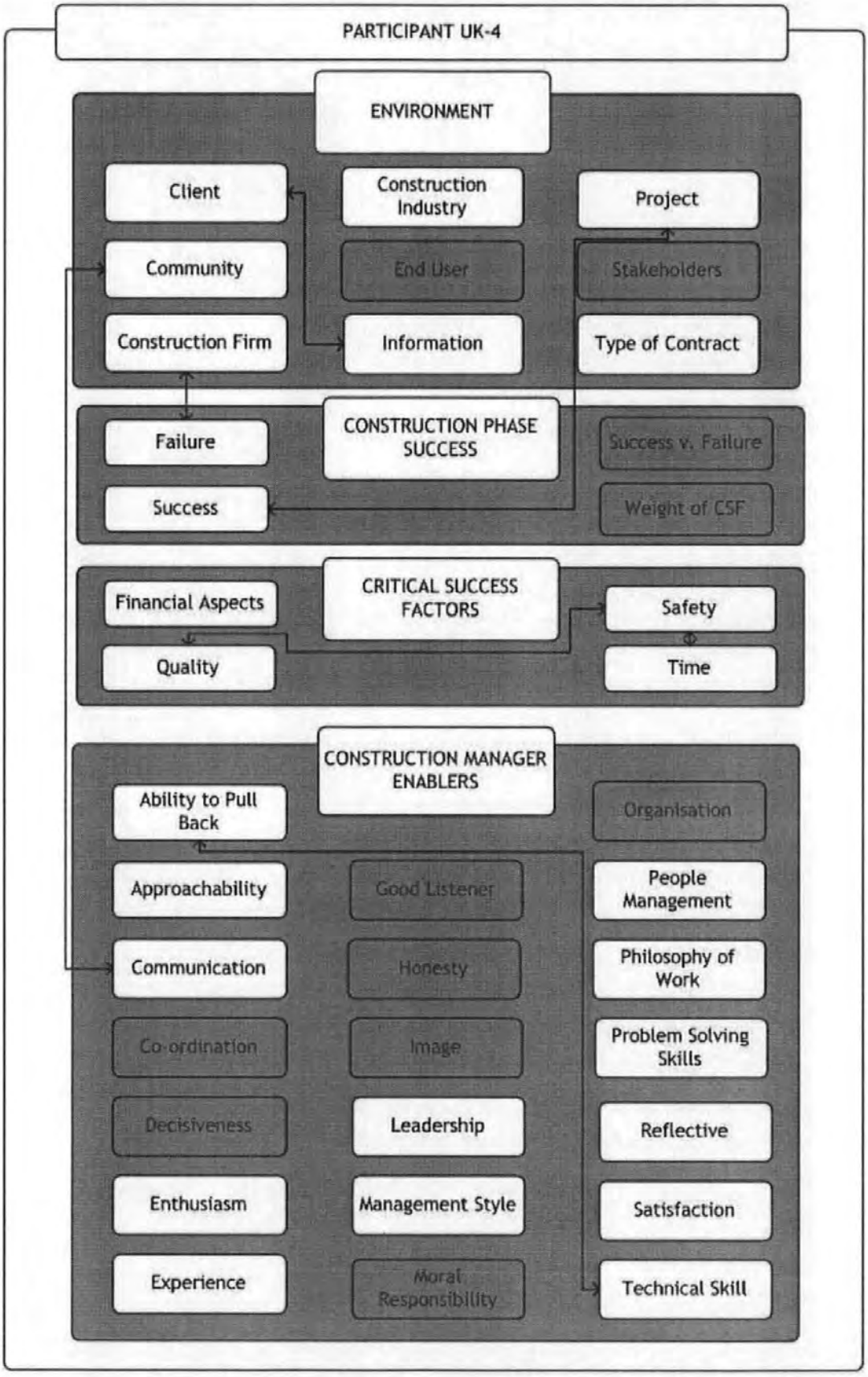

Figure 8: Systems Conceptual Framework for UK-4

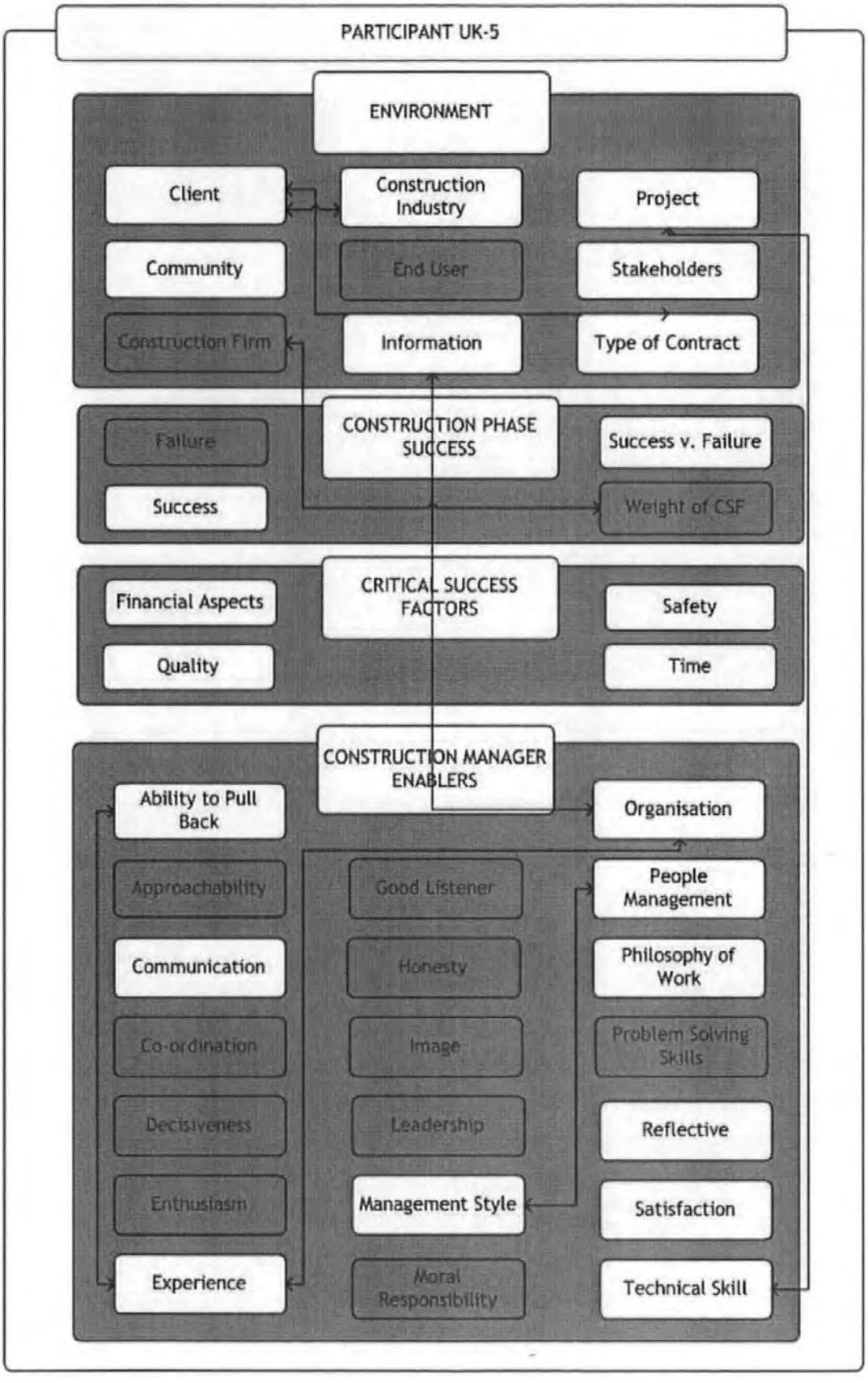

Figure 9: Systems Conceptual Framework for UK-5

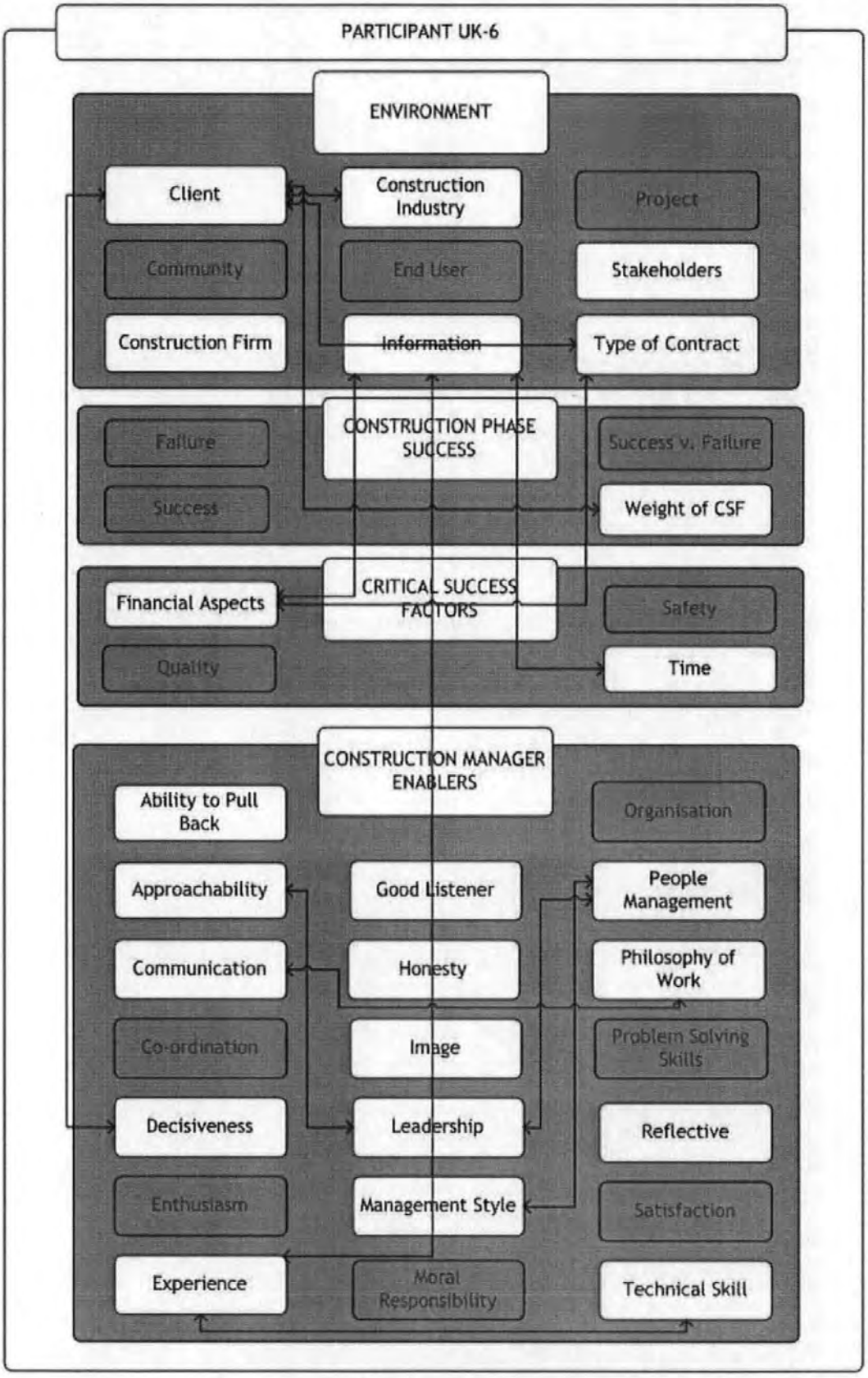

Figure 10: Systems Conceptual Framework for UK-6

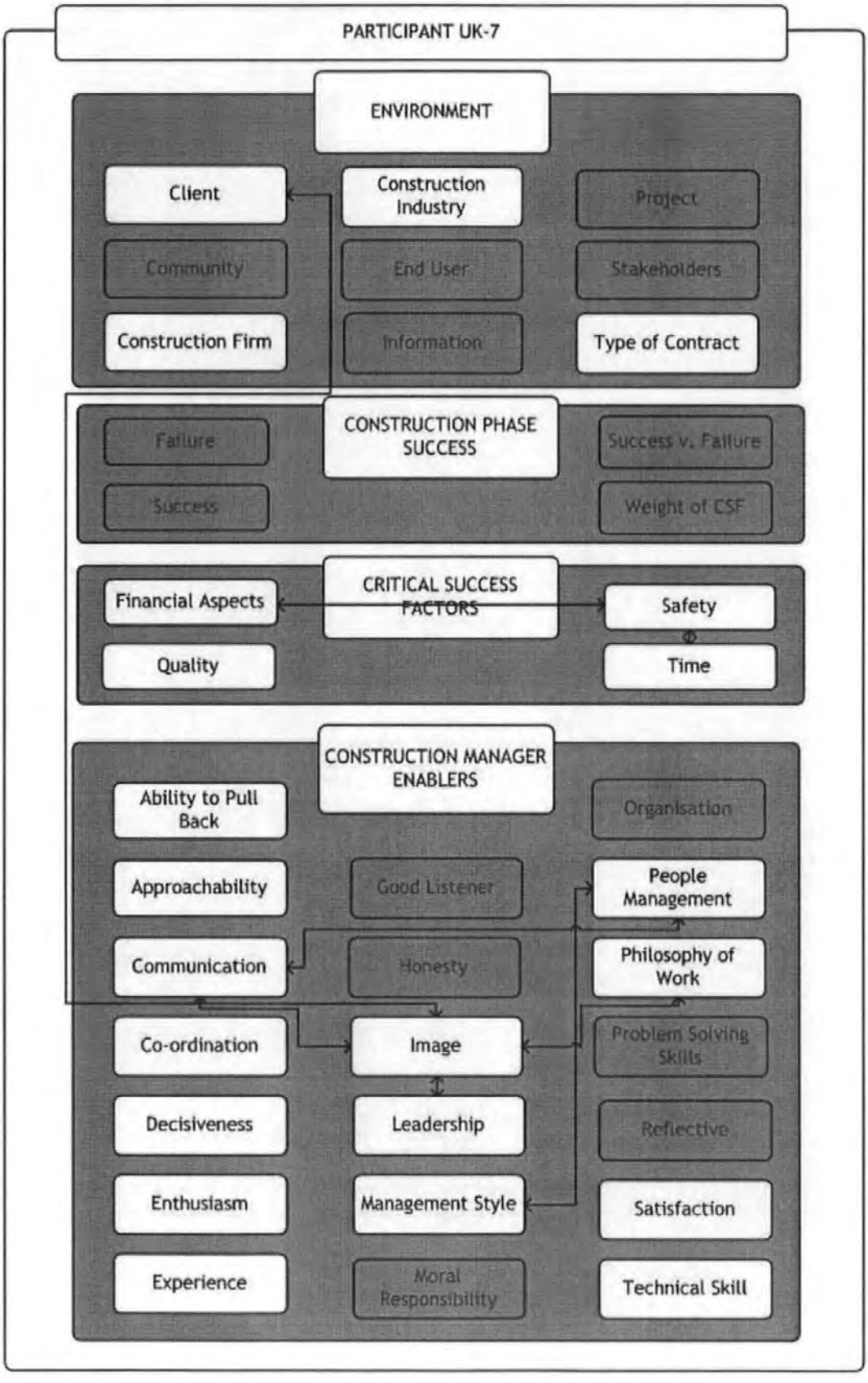

Figure 11: Systems Conceptual Framework for UK-7

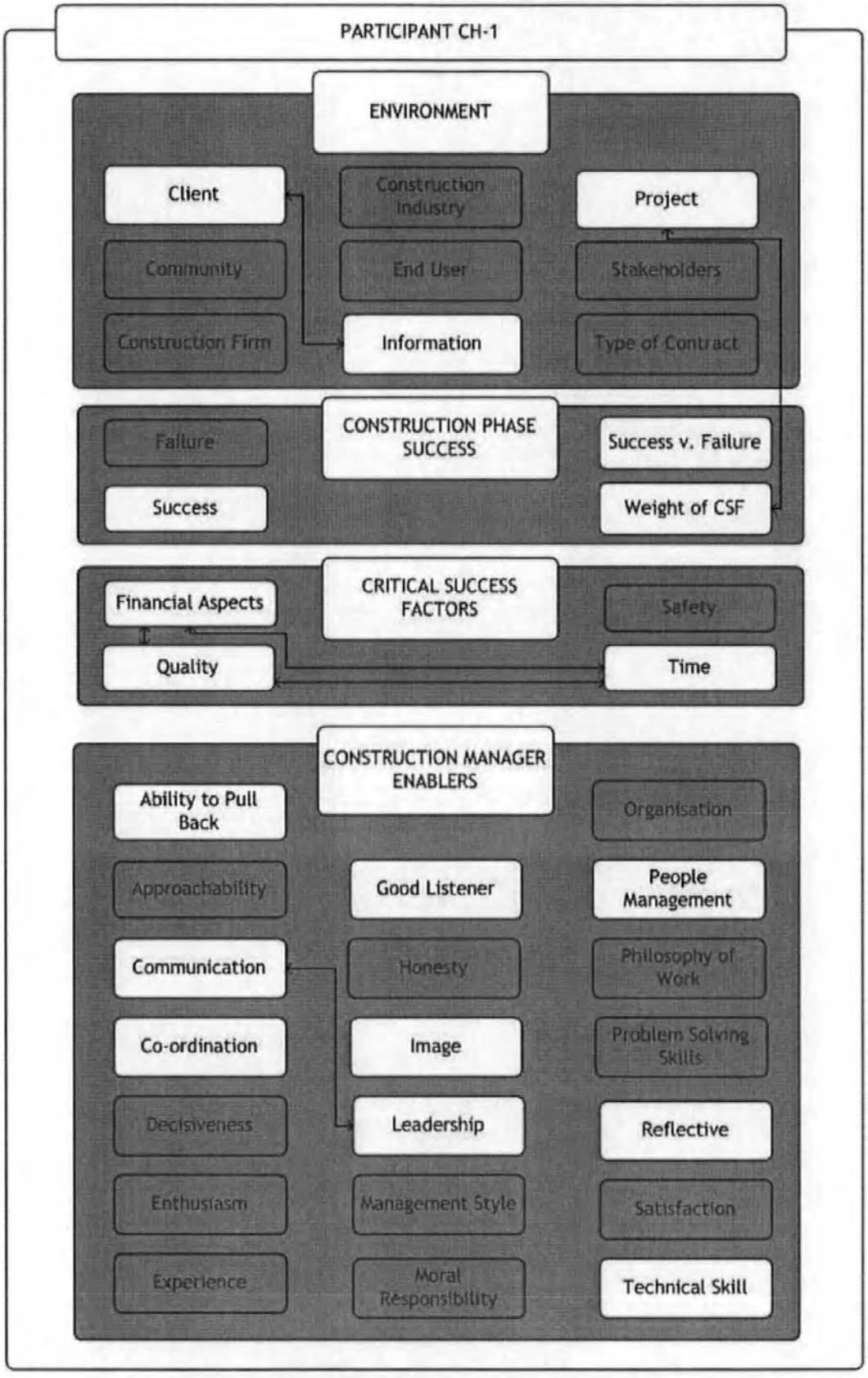

Figure 12: Systems Conceptual Framework for CH-1

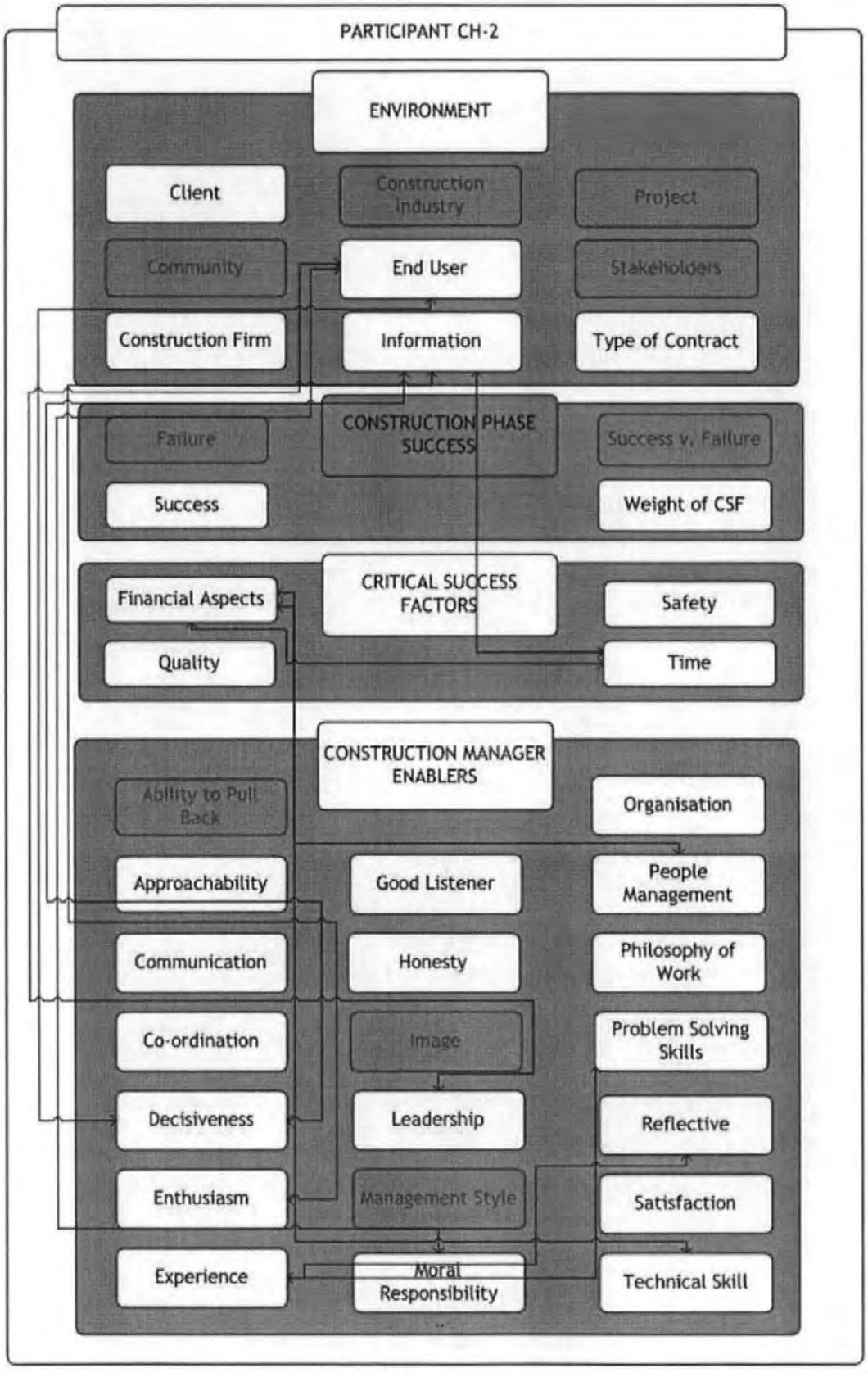

Figure 13: Systems Conceptual Framework for CH-2

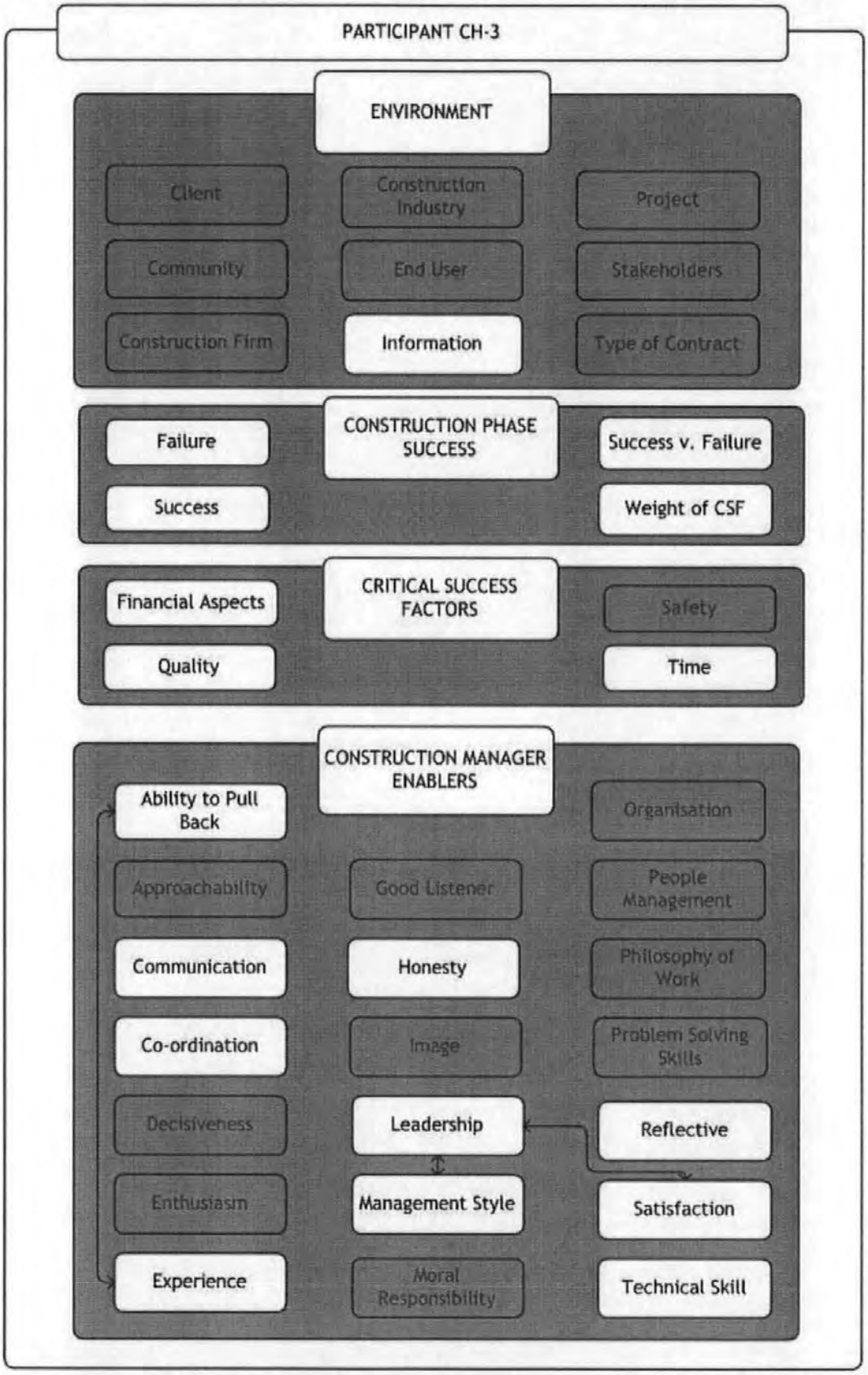

Figure 14: Systems Conceptual Framework for CH-3

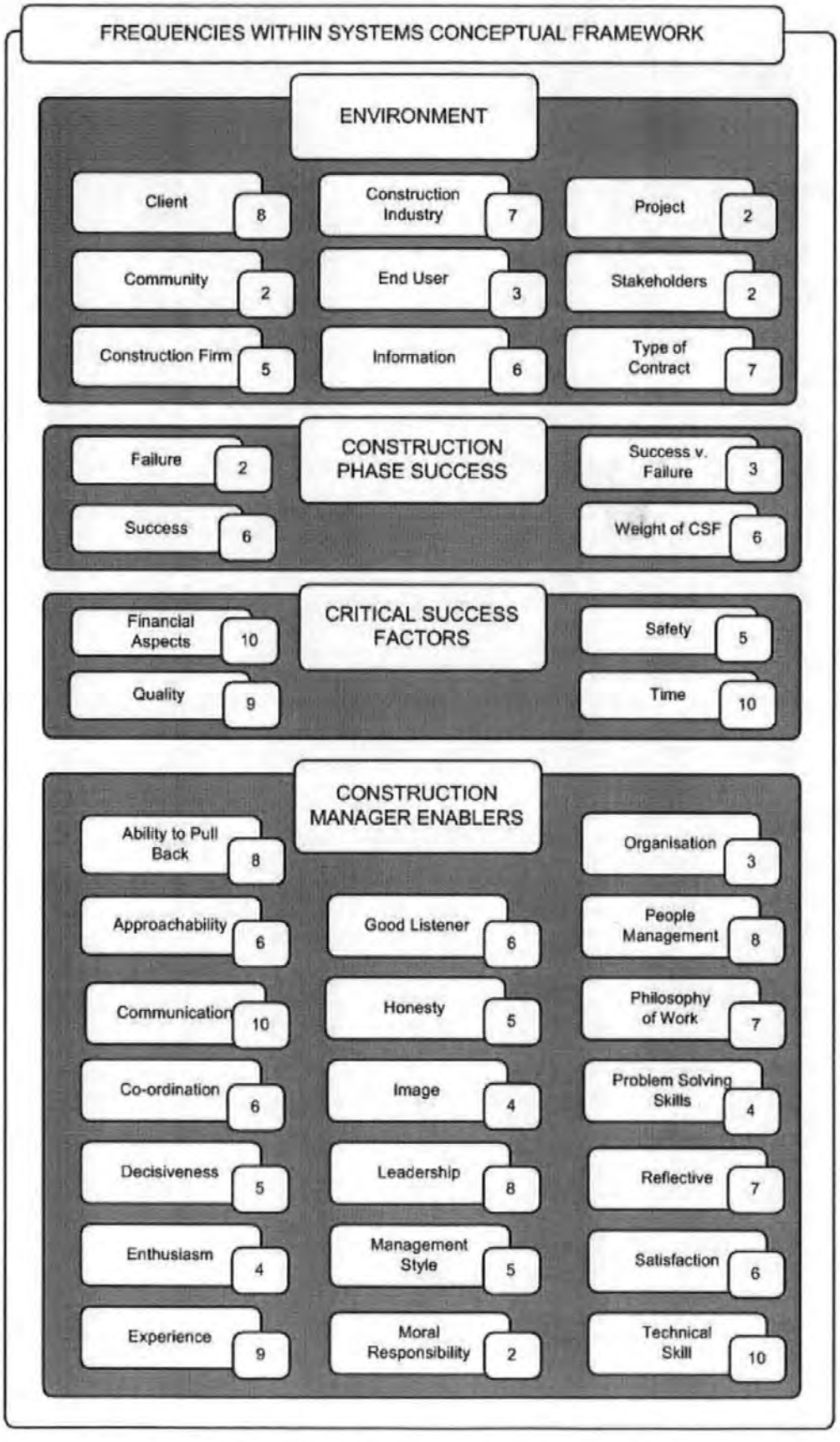

Figure 15: Populated Systems Conceptual Framework with Frequencies

5.2.2. Coding results for each Category within the Environment Conceptual Tag

Tables 5 to 13 present the results of the coding process for all categories within the Environment Conceptual Tag.

UK-1	The client's needs are what determine the success target for the construction phase of a project (Appendix E.1, L11). The client's needs are met through the delivery of a combination of the success factors (Appendix E.1, L19). Each employer will determine which parameter will become a priority (Appendix E.1, L45).
UK-2	
UK-3	Having all the relevant information about the client's brief (Appendix E.3, L92, L104). The construction manager benefits from being clear in the aspirations of the client (Appendix E.3, L105). Construction projects can be driven by different things, and the construction manager needs to know (Appendix E.3, L107 – L109) Client will determine what will happen on site, sometimes despite the advice of the construction manager (Appendix E.3, L217) An enlightened client will have time for the construction manager (Appendix E.3, L285)
UK-4	A committed client is one that wants to be involved in the project (Appendix E.4, L7), and not just an onlooker (Appendix E.4, L 17). The best clients are the ones who are proactive, who engage in the decision-making process (Appendix E.4, L14-15). This aspect is helpful, but not critical to success. If the information provided is good and correct (Appendix E.4, L22-23) Inexperienced clients will have a project manager to guard the client's interests during the construction process. This project manager has to have the relevant experience (Appendix E.4, L28-31). Client satisfaction is achieved when the client would be happy to work with the construction manager again (Appendix E.4, L190, L334). The relationship with the client is a very important factor (Appendix E.4, L412-413)
UK-5	If the relationship with the client has problems, things can go wrong. It has to be developed and kept on a day-to-day basis (Appendix E.5, L196-198) Being politically correct (Appendix E.5, L201)
UK-6	Client imposes their restrictions to the project (Appendix E.6, L23-25) The client may have preferred ways of working (e.g., Government Department) Client Satisfaction is difficult to define (Appendix E.6, L179-180)
UK-7	Client satisfaction is part of the aims of the construction manager (Appendix E.7, L10-11) A client that is involved in the decision making will react better towards the decisions made by the construction manager (Appendix E.7, L94-95)
CH-1	The client should be involved at all stages of the construction phase (Appendix E.8, L7-8)
CH-2	Satisfying the client involves delivering to budget within the specified time frame (Appendix E.9, L3-17)
CH-3	

Table 5: Client Category

UK-1	
UK-2	
UK-3	
UK-4	After the project neighbours don't think that the works have severely disrupted their lives or compromised their quality of life (Appendix E.4, L189, L198-206). Communication with neighbours: Maintain a constant flow of information with the neighbours (Appendix E.4, L203)
UK-5	Neighbours can make things difficult for the construction manager, and disrupting the works on site. (Appendix E.5, L327-331)
UK-6	
UK-7	
CH-1	
CH-2	
CH-3	

Table 6: Community Category

UK-1	The regional base's targets will determine the relative importance of the project (Appendix E.1, L299-304)
UK-2	
UK-3	
UK-4	The support from the main office is of critical importance to the success of the project (Appendix E.4, L504, L514), although it is not always needed (Appendix E.4, L517-518). They can contribute with experience to resolve problems (Appendix E.4, L521). The construction manager has to demand from the senior support to have enough capable people to undertake the project (appendix (Appendix E.4, L245)
UK-5	
UK-6	Construction manager UK-6 has a senior manager of the company who overlooks several projects, UK-6 looks up to him because he approaches problems calmly and makes the right decisions (Appendix E.6, L270-294).
UK-7	The senior management can give confidence to the construction manager, in this case, in a big company, the construction manager is confident that if he doesn't have the expertise there will be somebody in the company who will be able to provide support (Appendix E.7, L160-161)
CH-1	
CH-2	Is relevant to success when there are problems, the ideal is when the senior manager does not adopt a blame culture, and engages with the construction manager in solving the problem (Appendix E.9, L225-233)
CH-3	

Table 7: Construction Firm Category

UK-1	The size of the local construction industry, the regional level, determines the relevance of the project to the construction firm (Appendix E.1, L312, L314-315).
UK-2	Participant UK-2 describes work in the Construction Industry as intense, demanding, argumentative, even aggressive at times (Appendix E.2, L60-62), which can be really tough on the construction manager (Appendix E.2, L334) Another characteristic of the Construction Industry is that it constantly presents the construction manager with different challenges (Appendix E.2, L314). The size of the Construction Industry in the region is related to construction manager's image (Appendix E.2, L219-220). In 'small' construction markets, like the South West, construction managers should, according to Participant UK-2, look after their reputation (Appendix E.2, L219)
UK-3	The construction Industry has got a bad image from a safety point of view (Appendix E.3, 198)
UK-4	The Construction Industry is a problem-solving industry (Appendix E.4, L119) The Construction Industry is a fascinating industry, there is variety of projects and variety of people (Appendix E.4, L229-231)
UK-5	The size of the local Construction Industry will determine what the priorities, in terms of success factors, what is more relevant (Appendix E.5, L12). In this construction manager's regional base, client satisfaction is more important than for other companies (Appendix E.5, L255). The size of the local Construction Industry may turn Client Satisfaction into a critical success factor (Appendix E.5, L259)
UK-6	The Size of the local industry, at a regional level, will determine how important it is to satisfy the client (Appendix E.6, L184-185). The size of the local Industry varies depending on the kind of project being developed. Some types of project will have more demand than others (Appendix E.6, L188).
UK-7	It is a tough business; it can be a dangerous business. There is also lots of risk, of accidents, losing money, and losing the client (Appendix E.7, L358-360)
CH-1	
CH-2	
CH-3	

Table 8: Construction Industry Category

UK-1	
UK-2	The end user uses the building on a day-to-day basis (Appendix E.2, L21), and it is this daily use which gives meaning to the construction phase (Appendix E.2, L23). If the end user is pleased with the building, then the goal has been met (Appendix E.2, L28 – L29).
UK-3	Will have an input in determining what is driving the project. By meeting with the end user, the construction manager will have a better idea of what are the relevant aspects that drive the project (Appendix E.3, L109).
UK-4	
UK-5	
UK-6	
UK-7	
CH-1	
CH-2	The end user is more demanding today, due to the changes in the law (Appendix E.9, L297) Participant CH-2 always keeps in mind that somebody will be living in that building (Appendix E.9, L518-519)
CH-3	

Table 9: End User Category

UK-1	
UK-2	
UK-3	
UK-4	Clear information, concise client brief, good accurate information from the consultants (Appendix E.4, L4). This information comes on the form of drawings, documents, including the client's brief (Appendix E.4, L34-36). It should be delivered in a timely manner to provide a scenario in which the project can be successful (Appendix E.4, L398-400, L421). According to Participant UK-4, it is of critical importance to the success of the project (Appendix E.4, L34). The construction manager has to apply his Technical Skill/Knowledge, On-site Experience and ability to anticipate problems to examine the information as soon as it is made available to him (Appendix E.4, L246-248, L390-391). The quality of the information provided by the client for the contractor to work with is key to the success of the project (Appendix E.4, L381). If the information provided is not complete or accurate enough, it will negatively impact the project in budget, programme, and the environment on site (including subcontractors) (Appendix E.4, L383-387).
UK-5	If the information provided by the main office, for example the estimation of costs, is wrong, there is little the construction manager can do deliver a successful project (Appendix E.5, L217-219)
UK-6	When the design fails to provide enough information for the construction phase, it becomes more difficult to finish within budget and on time (Appendix E.6, L41-43). The design has to be 'workable', that it enables the construction manager to build it as it is presented to him/her (Appendix E.6, L67-69)
UK-7	
CH-1	It is a key element of achieving success, the different elements of the design make up the project have to be properly co-ordinated, specification and quality standards clearly determined at the outset (Appendix E.8, L8-13, 49-50) The relation between the contractor and the client has to be clearly framed by the documentation (Appendix E.8, L13-16) Technical and administrative aspects have to be defined (Appendix E.8, L18) All projects have changes to the design during the construction phase (Appendix E.8, L148-149, L151) Having documents that clearly define how changes in the design will be managed, and how they will impact the targets of cost, quality and time (Appendix E.8, L151-153, 170-172)
CH-2	The information that defines the project will define the possibility of success. If the construction manager is working with ambiguous information from the designers, it is unlikely that the project will succeed (Appendix E.9, L36-38)
CH-3	Inaccurate information in the design will create a scenario in which failure is more likely (Appendix E.10, L104-106)

Table 10: Information Category

UK-1	
UK-2	
UK-3	
UK-4	The particular aspects of the project determine what is seen as success (Appendix, I.4 L297-310, L315)
UK-5	The size of the project will determine what kind of skill and involvement is needed from the construction manager (Appendix E.5, L52)
UK-6	
UK-7	
CH-1	The specific characteristics of the project determine what is considered as a successful outcome (Appendix E.8, L364-365)
CH-2	
CH-3	

Table 11: Project Category

UK-1	
UK-2	
UK-3	
UK-4	
UK-5	The construction manager is aware that the success criteria are different for different audiences, which allows him/her to deliver to those expectations (Appendix E.5, L247-248).
UK-6	The construction manager has to deliver different things to different people (Appendix E.6, L105)
UK-7	
CH-1	
CH-2	
CH-3	

Table 12: Stakeholder Category

UK-1	
UK-2	In D&B (Design and Build) the input of the construction manager in the design phases will allow for the On-Site Experience to be taken into account, and make the construction process run smoother (Appendix E.2, L70).
UK-3	According to Participant UK-3, D&B are chosen more frequently than other contract modalities (Appendix E.3, L73). Design and Build allow the construction manager to have an early involvement and input in the design, and make it workable (Appendix E.3, L79). The earlier the construction manager gets involved, the better (Appendix E.3, L69). The 'old ways' in which the design was given to the contractor, in order for them to may it work. This approach fosters more confrontation (Appendix E.3, L78). The type of contract will determine what information is available to the construction manager at a given time, which will impact on the decisions he/she makes (Appendix E.3, L226)
UK-4	Partnership is the way forward; the 'old ways' are not the best option (Appendix E.4, L10). The modality of contract will determine which and when subcontractors can start involving in the project (Appendix E.4, L254). Developing long term work relationships and clients, sharing interest in, and goals of, the project (Appendix E.4, L412-415). The type of contract will determine how much information is made available to the construction manager at a given time (Appendix E.4, L435-442).
UK-5	The type of contract has an impact on what the construction manager can get out of the project (i.e., profit) (Appendix E.5, L25). When working in partnerships, the construction manager knows how they work and then he/she can focus on what he knows might be not one of the other's strengths (Appendix E.5, L116-118).
UK-6	A contract which allows for early involvement in the design is important. For example, Early Contractor Involvement (ECI) (Appendix E.6, L58-59). There are more opportunities for that early involvement to happen now, compared to the 'old days' (Appendix E.6, L60-61)
UK-7	Early involvement allows the construction manager to know the project at the beginning of the job (Appendix E.7, L109-110).
CH-1	
CH-2	Contracts' clauses that require from the construction manager to co-ordinate projects don't allow the construction manager to dedicate to his/her job (Appendix E.9, L63-64)
CH-3	

Table 13: Type of Contract Category

5.2.3. Coding results for each Category within the Construction Phase Success Conceptual Tag

Tables 14 to 17 present the results of the coding process for all categories within the Construction Phase Success Conceptual Tag.

UK-1	
UK-2	
UK-3	
UK-4	A project that is a failure is one in which none or most of the goals have not been met (Appendix E.4, L310-311)
UK-5	
UK-6	
UK-7	
CH-1	
CH-2	
CH-3	Failure happens when no targets are met (Appendix E.10, L100) When a project fails there are several aspects that influence that outcome, one of them is inaccurate information (Appendix E.10, L104-107) Failure happens when the most important target is not met (Appendix E.10, L128-129) When there is failure, nobody wins (Appendix E.10, L134-135)

Table 14: Failure Category

UK-1	Normally one or two out of three factors are met (Appendix E.1, L164) Success is a combination of achievement in the targets of Financial Aspects, Quality and Time (Appendix E.1, L19) The demands of each contract are unique in every site (Appendix E.1, L78)
UK-2	
UK-3	
UK-4	Success is an overall concept (Appendix E.4, L171-122). A very challenging project can be considered successful by the construction manager just by finishing it (Appendix E.4, L481-483)
UK-5	Success is context dependent (Appendix E.5, L288-297) The difference between a successful and a non-successful project, only a part happens on site (Appendix E.5, L216-217)
UK-6	
UK-7	
CH-1	Is an overall concept, the targets are met by integrating the work. All three targets (Financial Aspects, Quality and Time) have to be met for the project to achieve success. He estimates that 60-70% of projects in Chile do not meet at least one of those three targets (Appendix E.8, L328, L337-342)
CH-2	It is relative to the project. Some objectives might not be met and the construction manager will still consider it as a success (Appendix E.9, L)
CH-3	Very few projects deliver successfully, most of them are mediocre (Appendix E.10, L97)

Table 15: Success Category

UK-1	
UK-2	
UK-3	
UK-4	
UK-5	Projects are not a complete success or a complete failure, there are stages in between (Appendix E.5, L267). There are successful and non-successful aspects in all projects (Appendix E.5, L259)
UK-6	
UK-7	
CH-1	What is success and what is failure varies from project to project (Appendix E.8, L364-365)There is a middle ground between success and failure, and most projects' (80%) outcomes are in this middle ground. (Appendix E.8, L372) There is not a clear line between success and failure, project outcomes move from being closer to success to being closer to failure (Appendix E.8, L366-376)
CH-2	
CH-3	Most projects are in between success and failure; they are mediocre because no one is satisfied (Appendix E.10, L100-101)

Table 16: Success v. Failure Category

UK-1	The priorities are set, by the client, prior to the construction phase, during the concept development of the project (Appendix E.1, L34-36). It is unusual for them three [cost, quality and time] to be weighed in the same way in a particular project (Appendix E.1, L60, L164-165).
UK-2	
UK-3	The construction manager requires to know what is driving the construction project (e.g., budget) (Appendix E.3, L100-103)
UK-4	
UK-5	
UK-6	Different clients prioritise different targets of the project (Appendix E.6, L171-175)
UK-7	
CH-1	Critical Success are put in a hierarchy, according to what is most relevant for the project (Appendix E.8, L348-349)
CH-2	Will be determined by the priorities of the client
CH-3	There is always one factor that is the most important, determined by the client.

Table 17: Weight of Critical Success Factors Category

5.2.4. Coding results for each Category within the Critical Success Factors Conceptual Tag

Tables 18 to 21 present the results of the coding process for all categories within the Critical Success Factors Conceptual Tag.

UK-1	Deliver the project whilst making a profit (Appendix E.1, L13) Meeting the budget (Appendix E.1, L60).
UK-2	A successful project is successful financially (Appendix E.2, L9)
UK-3	Making a profit (Appendix E.3, L6), back in the early 90s it was turnover, so projects were delivered to budget, and comes in the second order of importance (Appendix E.3, L13).
UK-4	Deliver on budget (Appendix E.4, L192-193) and/or create profit
UK-5	Making a profit is the most important factor (Appendix E.5, L4)
UK-6	Finish on budget (Appendix E.6, L17, L27) If the project is not defined at the outset, the changes that are made during the construction phase have a negative impact on the budget (Appendix E.6, L118-119)
UK-7	The construction manager keeps a close check on the costs (Appendix E.7, L11)
CH-1	A project that is within the budget initially estimated will be successful (Appendix E.8, L64) The project has to be within the range of costs expected (Appendix E.8, L68-69)
CH-2	It is measured in two ways: not to exceed the initial budget, and to generate more profit (Appendix E.9, L4-5)
CH-3	The construction manager has to be able to create the expected profit (Appendix E.10, L7-9)

Table 18: Financial Aspects Category

UK-1	Deliver a project which meets the employer's needs; the quality requirements of the overall product (Appendix E.1, L11).
UK-2	Quality is defined by Participant UK-2 as an overall result, which he can be proud of (Appendix E.2, L9-10), relating it to personal standards.
UK-3	Delivering the product to specification, that the construction manager is engaged to deliver (Appendix E.3, L6). Along with Time is in the third place of importance (Appendix E.3, L14)
UK-4	For Participant UK-4, more than an externally set standard, the quality is acceptable if it would be acceptable for him at his home (Appendix E.4, L220). Most clients are after a good quality standard (Appendix E.4, L239) Delivering to the right quality is more important than maximising profit (Appendix E.4, L257-259)
UK-5	It is an important factor, and it involves everyone working on site (Appendix E.5, L32)
UK-6	
UK-7	The construction manager has to focus the site on quality, in order to give the client what they want (Appendix E.7, L20-21)
CH-1	In terms of quality, the construction manager has to comply with the design, if he/she does, then the project has been successful Regarding quality, it's seen as technical success (Appendix E.8, L61-62, L65) Having quality control systems facilitates success, as it makes it easier to get the information provided and transfer it to a quality control plan on site (Appendix E.8, L51-52)
CH-2	It's an overall concept, and it is measured by personal standards. 'I am the end user' (Appendix E.9, L294).
CH-3	It is imposed by legal aspects, so the building has to respond accordingly to its use for 3 or 5 years (Appendix E.10, L16-17) In terms of technical aspects, the project will be successful is there is innovation during the construction process which can be applied later, in future projects (Appendix E.10, L18-19)

Table 19: Quality Category

UK-1	
UK-2	
UK-3	A project with no accidents, or as near as zero accidents (Appendix E.3, L5). This is the most important measure of success to the construction manager (Appendix E.3, L13). In a safe project, the other three criteria, Time and Quality follow by default (Appendix E.3, L15). This suggests that by achieving a safe site it is easier to achieve a successful project
UK-4	Health and Safety (Appendix E.4, L192-193) For Participant UK-4, the safety target is to deliver the project without any injuries or incidents (Appendix E.4, L293)
UK-5	Important to the success of a project (Appendix E.5, L6-7). If there is a serious safety incident, a project should not be considered a success (Appendix E.5, L278-280)
UK-6	
UK-7	Health and Safety is at the top of the agenda (Appendix E.7, L17) Health and Safety has to be treated with severity, if the construction manager doesn't treat that way and there is an accident, he/she looses all the trust that people on-site give him/her (Appendix E.7, L17-19)
CH-1	
CH-2	A successful project has no accidents (Appendix E.9, L458-459)
CH-3	

Table 20: Safety Category

UK-1	On time delivery (Appendix E.1, L13) ; the time frame for the project is determined by the demands of the client's own planning, for its own business (Appendix E.1, L13-L14)
UK-2	Start date and finish date, if those targets are met, the project is successful (Appendix E.2, L9)
UK-3	Delivering to time (Appendix E.3, L6); along with Quality is in the third place of importance (Appendix E.3, L14)
UK-4	Deliver on time (Appendix E.4, L192-193)
UK-5	Completion on time (Appendix E.5, L34)
UK-6	Finish on time. To be able to finish on time, the programme has to be accurate from the beginning of the construction phase (Appendix E.6, L16, L27)
UK-7	To finish the project as early as possible (Appendix E.7, L10)
CH-1	To deliver on time (Appendix E.8, L63-64)
CH-2	Delivery on time in order to comply with the commercial interest of the client (Appendix E.9, L4, L9-10) Delivery on the least possible time, to reduce costs and create more profit (Appendix E.9, L15-16)
CH-3	Comply with the agreed delivery date (Appendix E.10, L106-107)

Table 21: Time Category

5.2.5. Coding results for each Category within the Construction Manager Enablers Conceptual Tag

Tables 22 to 43 present the results of the coding process for all categories within the Construction Manager Enablers Conceptual Tag.

UK-1	Be able to look at the project as a big picture, preventing from getting distracted in the details (Appendix E.1, L115-117). Take the time to decide and set a path of action (Appendix E.1, L184). To prioritise, is the ability to be able to choose what to dedicate more time than something else, not to get lost in the detail.
UK-2	
UK-3	Problems appear when the construction manager has not been able to think of what they are doing (Appendix E.3, L23). Spending time analysing the design allows the construction manager to be able to think about how it will put it practice during the construction process (Appendix E.2, L.67) At early stages, it allows the construction manager to check that he/she has understood the project (Appendix E.3, L284)
UK-4	To anticipate problems: Having the ability to see a problem before it becomes a problem. Is a key part of planning and programming (Appendix E.4, L122-123).
UK-5	Being able to distinguish the big picture from the detail; preventing him to get caught in the detail (Appendix E.5, L100). The construction manager uses his/her experience to find ways in which he/she can maximise profit (Appendix E.5, L157-161 and L164-165).
UK-6	Take time to calmly analyse the problem (Appendix E.6, L273, L322-323)
UK-7	Knows when to pay attention to the details (Appendix E.7, L43-55) Assess the situation in order to make the decision (Appendix E.7, L200-201)
CH-1	Take the time to decide on the course of action will facilitate success (Appendix E.8, L37-38)
CH-2	
CH-3	Takes the time to think about the future works, and how to better use resources (Appendix E.10, L41-45)

Table 22: Ability to Pull Back Category

UK-1	
UK-2	If the construction manager is approachable, he is more likely to know of problems or issues as and when they arise (Appendix E.2, L283-284) Not using a 'blame culture' (Appendix E.2, L281)
UK-3	People that have a concern, raise it, and the construction manager will take measures (Appendix E.3, L257)
UK-4	People being able to come and speak to the manager when they think something is not going to be done in an appropriate way (Appendix E.4, L129) Use an open door policy (Appendix E.4, L146-147)
UK-5	
UK-6	Having an attitude that encourages people to approach them when problems arise, without fear of the construction manager losing his/her temper (Appendix E.6, L378-390)
UK-7	Having an open door policy allows the construction manager to know what is going on on-site (Appendix E.7, L96-98) Being unapproachable is not acceptable today (Appendix E.7, L275-276). The construction manager has got to be able to set time aside for people that need to discuss issues (Appendix E.7, L345-347)
CH-1	
CH-2	The construction manager has to be open to take all opinions into account (Appendix E.9, L74-75) Receive the feedback necessary to make changes or re-think certain stages or aspects of the project (Appendix E.9, L80-81)
CH-3	

Table 23: Approachability

UK-1	Be able to communicate well at different levels (Appendix E.1, L116). Written communication, meeting control and agendas, drawing and specifications (Appendix E.1, L284)
UK-2	Exchanging ideas with people who have different levels of experience (Appendix E.2, L156-157)
UK-3	Communication, being able to transmit the message about the standards of delivery (Appendix E.3, L243 – L245)
UK-4	Communicating to team members in a timely fashion, for the construction manager to be involved in the problem solving (Appendix E.4, L150-151) With neighbours, inform them of the jobs that may disturb them and when they will take place (Appendix E.4, L202-203)
UK-5	Communication skills allow the construction manager to clearly express what to an audience composed of people who have different levels of involvement with the project (Appendix E.5, L70-71)
UK-6	It is relevant to enable the understanding of the client's priorities (Appendix E.6, L203) To the team (daily) and the workforce about work programme (Appendix E.6, L253-255) The construction manager has to be a skilled communicator who talks at different levels, with senior management, project manager, community, team, etc (Appendix E.6, L292-293, L415-416) Communication allows the construction manager to instruct the team on their goals (Appendix E.6, L359)
UK-7	His best way of communication is verbally, face to face, but the construction manager has to communicate well in all channels. Having a fluid communication with the team develops trust (Appendix E.7, L85-89) Good communications make the site run smoother (Appendix E.7, L87-88) Communication also involves regular meetings and updating with the site staff (Appendix E.7, L95-96) Fluid communication enables the construction manager to know what is going on on-site (Appendix E.7, L215-216)
CH-1	The construction manager creates channels of fluent communication between the contractor and the client (or the representative of the client, project manager) (Appendix E.8, L26-27) The communication has to be formal so that there is a record of all communication, which is established in the way the contract has established (Appendix E.8, L31-34) Good channels of communication allow the construction manager to have access to the information quickly and easily, speeding the process of decision making (Appendix E.8, L117-118) The construction manager has to be able to manage different channels of communication at different levels (Appendix E.8, L216-217) Is able to transfer ideas in a synthetic, precise and clear manner (Appendix E.8, L259-260)
CH-2	There is no use in having a construction manager that knows the project well, if he/she is not able to make it known to others (Appendix E.9, L76-77) Having good communication with the team members is extremely important, as the construction manager is not on the ground all the time, and the rest of the people he/she works with will make sure things have been done correctly (Appendix E.9, L207-211)
CH-3	The construction manager has to be a person who can easily understand other people and make himself/herself easily understood (Appendix E.10, L48-49) Able to communicate with different speakers Appendix E.10, L49-50)

Table 24: Communication Category

UK-1	The construction manager has to be a skilled co-ordinator (Appendix E.1, L134)
UK-2	Subcontractor and their work (Appendix E.2, L184)
UK-3	
UK-4	
UK-5	
UK-6	
UK-7	The construction manager has to manage all aspects of site, that things are being done at the right time, in the right place (Appendix E.7, L156-157)
CH-1	The management of the construction project require co-ordination of the different elements of the design and all other information (Appendix E.8, L7-8)
CH-2	Designers, suppliers, work (Appendix E.9, L39, L64, L170)
CH-3	Co-ordinating projects to anticipate events (Appendix E.10, L63-65).

Table 25: Co-ordination Category

UK-1	Willing to take risks, as decisions have to be made with not all the information, but only the information available (Appendix E.1, L179) Ability to make a decision and commit to it (Appendix E.1, L189) Make a decision at the right time, in the interest of the client and his company (Appendix E.1, L198-213)
UK-2	
UK-3	The construction manager makes all decisions on how the site should be run (Appendix E.3, L41-42)
UK-4	
UK-5	
UK-6	Makes the right (tough) decisions (Appendix E.6, L275-276) Making decisions calmly (Appendix E.6, L322-326) Being confident (not arrogant) in his own decisions makes the client be confident in him/her (Appendix E.6, L423-425)
UK-7	Change direction quickly when unexpected events happen (Appendix E.7, L182-184)
CH-1	
CH-2	The construction manager should make quick and executive decisions (Appendix E.9, L60)
CH-3	

Table 26: Decisiveness Category

UK-1	
UK-2	Enthusiastic about the Industry and the job they do (Appendix E.2, L249). Construction managers are passionate about what they do (Appendix E.2, L325). Enthusiasm and passion are linked with commitment to the task in front (Appendix E.2, L344, L349). Can carry the construction manager forwards during difficult times (Appendix E.2, 335-336
UK-3	
UK-4	Enthusiasm not only for the project manager, but the whole site team (Appendix E.4, L40-43). Wanting work to be fun, wanting the project to perform well (Appendix E.4, L58-59, L115, L116)
UK-5	
UK-6	
UK-7	The construction manager has to like the challenges and the change in construction projects (Appendix E.7, L224-226, L229-237)
CH-1	
CH-2	If the design of the project is not clear, the construction manager's enthusiasm wears out (Appendix E.9, L45-47)
CH-3	

Table 27: Enthusiasm Category

UK-1	Helps the construction manager to make decisions on the ground (Appendix E.1, L181); Professional knowledge (Appendix E.1, L178)
UK-2	Depending on the kind of contract, it can be inputted into the design of the project, previous to the start of the construction phase (Appendix E.2, L71).
UK-3	His knowledge in construction, contributed to the development of the design, in order for it to work on site (Appendix E.3, L63) Allows to choose the right construction system for the project (Appendix E.3, L117) The track record of a construction manager is a criteria to determine his/her ability to take a project to successful completion (Appendix E.3, L187)
UK-4	Experience cannot be 'borrowed' (Appendix E.4, L107). Experience in a variety of jobs (Appendix E.4, L111). Previous experience in the same kind of project (Appendix E.4, L116 and L137)
UK-5	The on-site experience allows the construction manager to appreciate other ways of doing things, and apply that experience to the project, in order to find other (cheaper) ways of doing things (Appendix E.5, L155-156).
UK-6	Experience is used in order to properly analyse the information that is part of the project, for this, background in similar projects is required (Appendix E.6, L107-116, L119) Experience generates respect from the team (Appendix E.6, L311-312)
UK-7	Allows construction manager to know the project well (Appendix E.7, L108-114). With experience from past project the construction manager can anticipate problems (Appendix E.7, L141)
CH-1	
CH-2	Experience in similar projects enables the construction manager to succeed with his project. Problems are repetitive, certain problems are always present in one type of construction project (Appendix E.9, L101-104) Is built in time, through trial-and-error (Appendix E.9, L369-373)
CH-3	In the same kind of project, or with similar techniques (Appendix E.10, L57)

Table 28: Experience Category

UK-1	This allows the construction manager to able to identify issues that he might have overlooked (Appendix E.1, L225-226) Listen and take advice from his team and the workforce on site (Appendix E.1, L128-129)
UK-2	Understand different people's opinions and concerns, and help them to overcome problems (Appendix E.2, L258, L417-418).
UK-3	Listening to people (Appendix E.3, L161, L258).
UK-4	
UK-5	
UK-6	Being able to listen to what the client is saying (Appendix E.6, L203-205, L420-421). People can approach the construction manager to discuss issues (Appendix E.6, L391-392)
UK-7	
CH-1	A good construction manager has to be able to get all the important information from all people he/she works with (Appendix E.8, L230-231)
CH-2	It is important in developing good team relations (Appendix E.9, L95-96)
CH-3	

Table 29: Good Listener Category

UK-1	With himself and others (Appendix E.1, L218). Being able to see in the project what is actually happening, and not what the construction manager wants to see (Appendix E.1, L226)
UK-2	
UK-3	To accept in front of others that they have made a mistake (Appendix E.3, L304)
UK-4	
UK-5	
UK-6	The client wants to see that the construction manager is honest, that takes the job seriously (Appendix E.6, L439-440, L443-444) The team also requires the construction manager to be honest (Appendix E.6, L443)
UK-7	
CH-1	
CH-2	It is an element of communication (Appendix E.9, L500-501)
CH-3	The construction manager has to be honest (Appendix E.10, L92-93)

Table 30: Honesty Category

UK-1	
UK-2	The size of the industry in the South West is small (Appendix E.2, L219), hence, construction managers have to be aware of the image they project.
UK-3	
UK-4	
UK-5	
UK-6	The image the construction manager projects (even his/her attire) shows confidence (Appendix E.6, L430-432, L435-436)
UK-7	The construction manager believes that his appearance will communicate visually to the rest of the people on site that he approaches the job professionally (Appendix E.7, L8-9) The client has to see the construction manager as a strong leader, otherwise the client may take advantage (Appendix E.7, L326-330)
CH-1	Appropriate behaviour and good manners speak well of the construction manager (Appendix E.8, L256-257)
CH-2	
CH-3	

Table 31: Image Category

UK-1	Encourage the team to take decisions forward; related to giving direction to the project (Appendix E.1, L255)
UK-2	
UK-3	Be a leader to the team on site and subcontractors (Appendix E.3, L166). Set fair goals (Appendix E.3, L180) All his decisions determine how the site is run, and what happens in it (Appendix E.3, L41). The construction manager feels accountable for all aspects of the project (Appendix E.3, L142), and because of this, the ability to relay and delegate are important (AppendixI.3, L143, L150) Setting clear goals, along with having a tidy and organised site will allow success to occur (Appendix E.3, L16) Setting achievable goals (Appendix E.3, L179)
UK-4	The construction manager involves the team in setting clear goals at the beginning of the project (Appendix E.4, L346-L355) Supervision: Remind the different members of the team, controlling (Appendix E.4, L153-154) The construction manager is the responsible for delivering the targets of the project (Appendix E.4, L73) Some details, not directly related to the job, can help motivate the team (Appendix E.4, L82-83) When the project is performing as expected, the spirit of the team is high (Appendix E.4, L84-85). When there are problems with achieving milestones, the construction manager has to focus on small milestones, and concentrate in achieving one milestone at a time (Appendix E.4, L94); and encourage the team (Appendix E.4, L95) The construction manager should promote and foster an environment of collaboration (Appendix E.4, L131) Teams have to be set clear targets (Appendix E.4, L152) The construction manager understands that the most important targets of the different members of his team are different from one another (Appendix E.4, L359-363, L375-376)
UK-5	
UK-6	With experience and communication, the construction manager gains the respect of his/her team The construction manager leads by example, and that way gains respect from his/her team (Appendix E.6, L330-333) Setting clear goals for team members (Appendix E.6, L361-362) A good leader is nothing without their team (Appendix E.6, L401-402, L407-408) A good leader has to be confident in him and confident that the project goals can be achieved on time (Appendix E.6, L453-454) His/her confidence brings confidence to the team (Appendix E.6, L456-457) A fair leader, who asks from their team what they can deliver (Appendix E.6, L467-468) The construction manager trusts that his/her team can do the tasks that he/she asks them to do, but also trusts that they will come and tell him/her when there is a problem (Appendix E.6, L472-478) A good leader delegates tasks, that makes trust very important (Appendix E.6, L481-483, 533-534) The leader has to judge what are the strengths of each team member (Appendix E.6, L498-503) The construction manager, as the leader of the team on site, expects initiative from the other team member to do their job (Appendix E.6, L519-520) Supervising the team, monitoring that the job has been done (Appendix E.6, L557)

Table 32: Leadership Category - Part 1

UK-7	The construction manager has to have a clear idea of how he/she wants things to be done; and the team needs to be monitored (Appendix E.7, L112-123) If there is lack of consistency in the leader, he/she will very quickly lose the trust of his team (Appendix E.7, L121-122) The team leader makes the team change direction quickly when there are changes in the project (Appendix E.7, L190, L206) Leadership is also about being able to keep the team working together in one direction (Appendix E.7, L300-301)
CH-1	The construction manager leads the team as a whole(Appendix E.8, L216) The construction manager has to be a good team builder, who set clear goals for each member of the team, and monitor the progress of those goals (Appendix E.8, L217-221) A good leader engages and motivates his/her team, so they follow him (Appendix E.8, L225-226, 229)
CH-2	The construction manager takes ownership of the project (Appendix E.9, L70) The construction manager manages the different strengths of each member of the team and makes them work together towards meeting the project goals (Appendix E.9, L170-173) When managing the team, the construction manager has to create an environment in which the personal interests are left aside (Appendix E.9, L246-249)
CH-3	To ensure a successful outcome, the construction manager has to lead a solid team. When the construction manager is able to generate commitment from the people he/she works with, he achieves a synergy that moves the project forward (Appendix E.10, L177-180) To achieve commitment the construction manager has to be a fair leader, somewhere between a father and a friend (Appendix E.10, L197-203). Father: just, not soft. Friend: remember what they have done for you. Identify the strengths of each member of the team and ask them to do tasks that they are good at (Appendix E.10, L1204-206) The 'leader is like the clay in a well graded soil', the team is the compact soil (Appendix E.10, L207-209) Lead by example (Appendix E.10, L215)

Table 33: Leadership Category - Part 2

UK-1	
UK-2	
UK-3	
UK-4	Participant UK-4 does not believe in using a bossy approach to the team (Appendix E.4, L150).
UK-5	Completely different approaches to the job can deliver the same goals (Appendix E.5, L72-74)
UK-6	When there is a problem, it is addressed in a calmed way, not shouting (Appendix E.6, L280-281) Addressing problems by 'ranting and raving' is not a sign of confidence in himself/herself (Appendix E.6, L428-429)
UK-7	Has evolved over the last 20 years, construction managers have to be politically correct and care about people (Appendix E.7, L343-345).
CH-1	
CH-2	
CH-3	The good leader does not shout and rant (Appendix E.10, L211-212)

Table 34: Management Style Category

UK-1	
UK-2	
UK-3	There is a responsibility, beyond the binding contract, to provide the project with the best of the construction manager's ability in order to deliver the possible product for the client (Appendix E.3, L82)
UK-4	
UK-5	
UK-6	
UK-7	
CH-1	
CH-2	The construction manager has the responsibility to deliver something decent (Appendix E.9, L518-523) There is a commitment to deliver the best (Appendix E.9, L523-524)
CH-3	

Table 35: Moral Responsibility Category

UK-1	
UK-2	
UK-3	When the site looks organised and ordered, it shows that the construction manager has an ordered mind (Appendix E.3, L21). Doing things efficiently allows to do them in less time, and hence make money (Appendix E.3; L29) The site is a reflection of the job the construction manager is doing (Appendix E.3, L185)
UK-4	
UK-5	Having an organised mind, having organisation skills is important to deliver success (Appendix E.5, L99). The construction manager has to deal with a vast amount of information, and being organised is a quality construction managers need (Appendix E.5, L125). The construction manager has to be organised enough to manage that vast amount of information, and pass the right information to the people who require it in a timely fashion (Appendix E.5, L126-130, L133-137). If the approach isn't organised, the construction manager won't make it happen. In order for the construction manager to be organised, he/she has to use the experience and technical knowledge he/she has acquired (Appendix E.5, L139-142)
UK-6	
UK-7	
CH-1	
CH-2	Construction managers deal with great amount of information at the same time, and they need to be able to access it quickly in order to make decisions (Appendix E.9, L112-113)
CH-3	

Table 36: Organisation Category

UK-1	
UK-2	Man management' (Appendix E.2, L263) is considered a key aspect of the job of the construction manager. This characteristic also includes the ability to understand people (Appendix E.2, L250, L377-338) and their differences (Appendix E.2, L79), and promotes an atmosphere in which people are respected for what they do, whatever that may be (Appendix E.2 L387, L392). It includes being fair when there are disputes between staff members or a staff member and a contractor (Appendix E.2 L256). It entails good management of subcontractors and other stakeholders during the construction phase, involving them and engaging them in the decision making process (Appendix E.2, L184). Involves a responsibility to provide an appropriate workplace for people on site (Appendix E.2, L195). This also helps to show that the job undertaken on site is serious (Appendix E.2, L52-54). In a successful workplace, everyone is involved (Appendix E.2, 403) Diffusing confrontational situations (Appendix E.2, L416-417)
UK-3	The construction manager provides a clean and safe area for the people to work on (Appendix E.3, L22), have things ready for the work to start (Appendix E.3, L24). Prevent confrontation (Appendix E.3, L81, L231), Participant UK-3 identifies modalities of work which create less confrontation (Appendix E.3, L80). Being able to create good working relationships is a skill that may become more or less important, depending on the amount of confrontation developing in a given project (Appendix E.3, L239) Construction managers are responsible for all events and progress on site; delegating is how they achieve this (Appendix E.3, L151) Providing people with what they need to deliver the job (Appendix E.3, L155) and with good facilities (Appendix E.3, L203) Engage people so that they commit with the construction manager's standard of delivery (Appendix E.3, L240) Respect for others, accept and understand people's preferred way to work (Appendix E.3, L136) - Provide workforce with good facilities (Appendix E.3, L203, L253 – L254)
UK-4	A good construction manager is good at managing people (Appendix E.4, L123), because that is one of their primary aspects of the job (Appendix E.4, L140-141) He/she is good at getting the best out of the people the work with (Appendix E.4, L125) Create a harmonious environment for people to work in (i.e., 'happy site') (Appendix E.4, L125). Having a happy site is invaluable (Appendix E.4, L126-127). The construction manager has to request, from the senior management, to have enough capable people working with him/her on the project (Appendix E.4, L245) The career development of the members of the team is also an element which the construction manager uses to measure whether he has been successful (Appendix E.4, L329) It is the construction manager's responsibility to work the team (Appendix E.4, L71-72, L75), be a team builder (Appendix E.4, L133). A well-bonded and enthusiastic team is key to the success of a project (Appendix E.4, L40-41, L51). Construction projects have a diverse range of people working in them, some people will be more difficult to work with than others (Appendix E.4, L62), it is part of the construction manager's role to make that diverse group of people work as a team (Appendix E.4, L62-63)
UK-5	It is an important skill, however it is difficult to define what is part of it and what is it (Appendix E.5, L76-77) Communication and being able to motivate people are part of it (Appendix E.5, L70, L78) The client's expectations need to be managed, and deliver to those expectations (Appendix E.5, L226-227) Respect for others' preferences and ways is an important aspect of managing people (Appendix E.5, L70) Team Co-ordination:(Appendix E.5, L183)

Table 37: People Management Category - Part 1

UK-6	The construction manager has to be able to develop a good working relationship with its client, if he/she intends to keep that client (Appendix E.6, L171-172) Managing the team, having a team that can be trusted (Appendix E.6, L175-176) Engaging the team in order to deliver to the client (Appendix E.6, L177-178) Engaging the team is important so that the work is done to the construction managers standards (Appendix E.6, L304) The construction manager has to earn the respect of the team so that they follow him/her (Appendix E.6, L285-286, L288-289) The construction manager takes the opinions of other people into account (Appendix E.6, L340-342, 345)
UK-7	Develop good working relationships with the client and the team (Appendix E.7, L9-11) Has become more relevant as the management has evolved (Appendix E.7, L264-267) The construction manager has to be a good judge of character and realise that he/she has to approach different people in different ways (Appendix E.7, L364-365)
CH-1	The construction manager has to be skilful at treating different people (Appendix E.8, L255-256)
CH-2	It is fundamental to develop working relationships with team members and workforce (Appendix E.9, L95-96) Managing the suppliers, creating good working relationships to get better quotes for supplies (Appendix E.9, L101-104) Creating a link with people the construction manager works with, showing a legitimate interest for the welfare of people he/she works with, is returned with commitment to the job, 'and that is something that they cannot teach you in university' (Appendix E.9, L546-541)
CH-3	

Table 38: People Management Category - Part 2

UK-1	
UK-2	Transmit it to the staff, subcontractors and workforce (Appendix E.2, L178-179, L397 – L402)
UK-3	Sending the perception that the site is safe and tidy, and organised, everything else follows (Appendix E.3; L15), most of the time (Appendix E.3, L17) Decent tidy premises sends the message that things are cared for, this keeps them in good state (Appendix E.3, L204) Set a tone that they play by the rules (Appendix E.3, L249)
UK-4	Promoting enthusiasm can be a difficult task when members of the team are negative (Appendix E.4, L60-61), is an ongoing task of the construction manager to motivate (Appendix E.4, L56) foster enthusiasm (Appendix E.4, L54-55). The personal quality standards are transpired to the standards of the project (Appendix E.4, L222). Safety is an important delivery target for the construction manager, as safety is paramount for him, it becomes a goal of the project (Appendix E.4, L293).
UK-5	Building Team Spirit (Appendix E.5, L81-82)
UK-6	The construction manager 'earns' the trust of his/her team, so that they will work to the construction manager standards (Appendix E.6, L301-302) The construction manager imposes his/her standards for the work to be done (Appendix E.6, L482-483)
UK-7	Health and Safety is an important part of the philosophy the construction manager works with, it will 'filter down' to the team and the workforce (Appendix E.7, L37-39) The construction manager has a big influence on how things are being done on site (Appendix E.7, L8-9). He/she sets the standards for things to be done (Appendix E.7, L106-107)
CH-1	
CH-2	The construction manager imposes a set of values according to which his/her team work (Appendix E.9, L290-293) The construction manager has be able to transfer a way of working to his/her people (Appendix E.9, L499-500) If the construction manager is able to create an environment of cooperation and support, he/she gets more out of the people he/she works with (Appendix E.9, L546, L552
CH-3	

Table 39: Philosophy of Work Category

UK-1	The construction manager has to solve problems and make decisions without the full information available. For this, he/she uses his/her decisiveness, experience and technical skills. (Appendix E.1, L176-182)
UK-2	Analysing a problem to find the solution (Appendix E.2, L279). Enjoying the challenge of solving new problems (Appendix E.2, L331).
UK-3	
UK-4	Are necessary in a construction manager (Appendix E.4, L86-96) The Construction Industry is a problem-solving industry (Appendix E.4, L119)
UK-5	
UK-6	
UK-7	
CH-1	
CH-2	The construction manager is able to foresee problems before they arise and can take action to remediate a potential problem (Appendix E.9, L176-177)
CH-3	

Table 40: Problem Solving Skills Category

UK-1	Understanding that 'there is always room for improvements' (Appendix E.1, L168) denotes the ability to critically assess the work that has been done, in order to improve own performance during the next project. Understanding that there will be aspects which, on reflection, could have been done better (Appendix E.1, L168), and that total success will never be achieved (Appendix E.1, L169).
UK-2	Critically looking at the project, what is being done, for finding ways in which to do things better (Appendix E.2, L89-90, L237-238).
UK-3	
UK-4	Assess the job done and not repeating mistakes (Appendix E.4, L160) Improve aspects of their own professional development (CPD) (Appendix E.4, L112)
UK-5	Reflect on the project and find better ways to do things (Appendix E.4, L154-158)
UK-6	Learn from other's experience, and the client's experience (Appendix E.6, L207-209)
UK-7	
CH-1	The construction manager looks at ways in which the project can be improved, to deliver earlier or to reduce costs (Appendix E.8, L156-158)
CH-2	The construction manager tries to prevent problems that have happened in the past (Appendix E.9, L153-154)
CH-3	The construction manager has to be reflective, thinking about the construction works and how to better use resources, apply new technologies (Appendix E.10, L59-69).

Table 41: Reflective Category

UK-1	
UK-2	Feeling proud of the product delivered(Appendix E.2, L228) The overall product is an element which he utilises to determine success as a construction manager (Appendix E.2, L10, L44-45, L107-108). Being able to make improvements, contribute to the project is a source of satisfaction (Appendix E.2, L73). Contributing to others' and own (Appendix E.2, L315-316) professional development is a source of satisfaction (Appendix E.2, L144 and L163) His job provides him not only with satisfaction at professional level, but also at a personal level, he finds his work rewarding (Appendix E.2, L275).
UK-3	
UK-4	To enjoy the work being done is an important aspect of achieving success (Appendix E.4, L59) Is a rewarding job (Appendix E.4, L139) Satisfaction is what the construction manager feels at the end of the project (Appendix E.4, L232). Satisfaction is an important aspect, which the construction managers shares with his team (Appendix E.4, L234) This construction manager takes pride in jobs which may have not met all the targets, but they look and function well.
UK-5	The construction manager takes pride in delivering a product to a good quality standard (Appendix E.5, L34).
UK-6	
UK-7	The construction manager takes reward from doing something tangible, and overcoming the challenges of the dynamics of the site (Appendix E.7, L233, L243-252)
CH-1	
CH-2	It is an important aspect, what the project manager takes for him/herself (Appendix E.9, L25-26, L474-475)
CH-3	Satisfaction also comes from creating solid teams (Appendix E.10, L177-180)

Table 42: Satisfaction Category

UK-1	Basic understanding of subcontractors (Appendix E.1, L269) The 'Jack of all Trades' (Appendix E.1, L121). Knowing about estimating, quantity surveying, planning, engineering, trades, The ability to make a decision (Appendix E.1, L182); acquired with On-site Experience. Project managers come from different backgrounds, each one will bring their own strengths to the project (Appendix E.1, L321-322, L342)
UK-2	Planning (Appendix E.2, L177-178), Co-ordination of projects (Appendix E.2, L178-179)
UK-3	Clear planning and logistics before tendering (Appendix E.3, L93) Good knowledge provides a background that enable the construction manager to control and monitor works that he/she may have never been confronted with (Appendix E.3, L265, L273)
UK-4	Understanding of construction processes (Appendix E.4, L115) is needed (Appendix E.4, L140) Planner, Programmer(Appendix E.4, L155-159) The more complex the project, the more important to do the in-depth planning (Appendix E.4, L251-252) Participant UK-4 hosts fortnightly meetings with subcontractors in which they look at a four week programme. One week back and three weeks forward (Appendix E.4, L269-270), allowing for mistakes made not to be repeated in the future.
UK-5	It is necessary; in order to be in control of subcontractors and what is going on on-site (Appendix E.5, L61-66).
UK-6	Programming requires Experience to examine the information provided. Programming to the very detail, almost on a daily basis, for the forthcoming works (Appendix E.6, L256-262)
UK-7	Having a good plan of how the project will be built, and review it regularly is relevant to success (Appendix E.7, L8-9) The construction manager is a 'Jack of all Trades' since he/she must know about it all (Appendix E.7, L136-145) Technical expertise is built up as the person goes up through the engineering ranks (Appendix E.7, L150)
CH-1	For programming the works, the construction manager has to invest time in order to study the project and programme it properly. Not dedicating that time to study the project in detail in order to generate the programme will impact on the cost of the project and the delivery date (Appendix E.8, L35-40) The construction manager should be ideally who programmes the works, has to know about cost control and monitoring, and how quality assurance works (Appendix E.8, L209-215)
CH-2	Programme the works very well, and know the programme almost by hard, to the very detail (Appendix E.9, L71-72) Manages all costs (Appendix E.9, L81) The technical knowledge has be updated constantly, as it allows opportunities to generate more profit (Appendix E.9, L86-88)
CH-3	The construction manager does not need to be a specialist in anything, has to know the basics of everything that his/her project involves (Appendix E.10, L82-84)

Table 43: Technical Skill Category

5.2.6. Relations between Categories

Each interview contributes to the Empirical Model (Chapter 6) with a set of relations. They are thereby presented here by participant, in accordance also with the epistemic and ontological stance (Subsection 3.1.5) of this thesis. Tables 44 to 53 present the 56 relations identified in this thesis.

Relation	Participant UK-1
Construction Industry - Construction Firm	The size of the local market will determine the importance a project has within the overall performance of the regional base (Appendix E.1, L312, L314-315)
Client - Weight of CSF	This relationship determines the relative importance between the other Construction success factors (Appendix E.1, L45-46), and it is determined by the client's needs, therefore, this relation establishes a link between the project and its environment.
Weight of CSF - Experience	The way the different success factors are prioritised will allow to selecting an appropriate construction manager, who will be able to drive the project according to what is the priority for the client (Appendix E.1, L81-83).
Decisiveness - Problem Solving Skills	Problem solving, when facing problems, requires Decisiveness, to stick with the decision made (Appendix E.1, L180-182).
Experience - Problem Solving Skills	Experience allows the construction manager solve decisions (Appendix E.1, L180-182).
Technical Skill - Problem Solving Skills	The technical skill allows the construction manager solve decisions (Appendix E.1, L180-182).

Table 44: Relations Identified by Participant UK-1

Relation	Participant UK-2
Construction Industry - Image	When the regional Industry is small, the construction manager has to be aware of the image he is projecting.
Experience - Type of Contract	The Experience of the construction manager will be relevant at the design stage, depending on the type of contract.
Enthusiasm - Construction Industry	The enthusiasm of the construction manager assists him/her in dealing with the difficulties of the Construction Industry (Appendix E.2, 335-336)
End User - Satisfaction	Satisfying the end users' expectations and needs is a source of personal satisfaction for this construction manager.
Quality - Satisfaction	For this construction manager, quality of the overall product is related to personal satisfaction (Appendix E.2, L8-9)

Table 45: Relations Identified by Participant UK-2

Relation	Participant UK-3
Leadership - People Management	The setting of clear goals at the beginning of the project will allow success to happen, these clear goals have to be achievable by the team (Appendix E.3, L12-14)
Communication -Philosophy of work	Being a good communicator at all levels enables the construction to impose a philosophy of work on site (Appendix E.3, L14-15, L242-246)
Moral Responsibility - Client	Beyond the contractual responsibility, the construction manager has the moral responsibility to deliver to the best of their ability (Appendix E.3, L77-78)
Construction Industry - Financial Aspects	Depending on the fluctuations of the construction market, the goal will be to create profit or to deliver to budget (Appendix E.3, L154)

Table 46: Relations Identified by Participant UK-3

Relation	Participant UK-4
Information - Client	The information provided to the construction manager by the client, is a determining factor in achieving success (Appendix E.4, L374-378)
Safety - Time	Safety allows the programme to run smoothly; safety and planning go hand in hand (Appendix E.4, L440)
Safety - Quality	A safe site is a tidy site; work cannot be done to a good standard in an untidy site (Appendix E.4, L452-454)
Ability to Pull Back - Technical Skill	The ability to pull back and look at the project from the outside allows the construction manager to plan the progress of the works and to anticipate problems
Communication - Community	Keeping good communication channels with the community and the neighbours is used to prevent problems and work disruptions (Appendix E.4, L200-203)
Construction Firm/Failure	Senior Support is only relevant when there are difficulties, but when it is needed, it becomes critical (Appendix E.4, L500-509)
Project/Success	Success is context-dependent. The specific elements of the context in which the project develops will determine what is conceived as successful by the construction manager (Appendix E.4, L297-310, L315)

Table 47: Relations Identified by Participant UK-4

Relation	Participant UK-5
Organisation - Experience	The experience of the construction manager allows him/her to properly organise and plan the works ahead (Appendix E.5, L139-142)
Organisation - Information	The construction manager has to be organised enough to manage that vast amount of information, and pass the right information to the people who require it in a timely fashion (Appendix E.5, L126-130, L133-137)
Project - Technical Skill	The different sizes of projects will require the construction manager to get involved with more or less detail, therefore to have an understanding of things at different levels (Appendix E.5, L 52-56).
Client - Construction Industry	Client satisfaction becomes a more relevant factor, depending on the size of the local industry (Appendix E.5, L12-14).
Client - Type of Contract	The Type of contract determines the relationship that can be established with the client. The closer the relationship, the better for the project (Appendix E.5, L11-16, L24-27)
Ability to Pull Back - Experience	The construction manager uses both in conjunction in order to find ways in which to find alternatives to generate more profit (Appendix E.5, L157-165)
Management Style - People Management	The construction manager uses an approach of respect for others, in particular with the team (Appendix E.5, L70)
Construction Firm -Weight of Critical Success Factors	The strategic objectives of the construction firm may change the priorities and the assessment of success for a project (Appendix E.5, L294-300)

Table 48: Relations Identified by Participant UK-5

Relation	Participant UK-6
Information - Financial Aspects	When the information provided to undertake construction works is not workable, the construction manager will find difficulties in finishing on time and on budget. (Appendix E.6, L39-44)
Information - Time	If the information provided is not examined properly, then difficulties of the building process will not be detected, the programme will be inaccurate, and the budget will be wrong (Appendix E.6, L77-80, L91-92)
Experience - Information	The experience on site allows examining the information provided by the client in order to determine whether it is feasible to build it. (Appendix E.6, L67-69)
Experience - Technical Skill	In order to be able to programme the works with sufficient detail, the construction manager requires to use his/her experience on-site in similar projects (Appendix E.6, L116-119)
Client - Type of contract	Some clients work in a specific manner, which can involve the type of contract (Appendix E.6, L137-138)
Client - Honesty	The client wants to see an honest construction manager, as it is a sign of taking the job seriously (Appendix E.6, L439-440, L443-444)
Type of contract - Financial Aspects	The modality of the contract may have a negative impact on the budget of the project even before the works start (Appendix E.6, L140-142, L149-150)
Client - Weight of Critical Success Factors	Relates the priorities of the clients with the weight of the different Critical Success Factors (Appendix E.6, L180-183)
Construction Industry - Client	If the regional size of the Industry is small, the construction firm may want to repeat business, and then client satisfaction becomes relevant (Appendix E.6, L179-185)
Problem Solving Skills - Ability to Pull Back	The construction manager uses his/her ability to Pull Back a in order to determine how to overcome problems (Appendix E.6, L273, 322-323)
Communication - Philosophy of work	With Communication and Leadership, the construction manager engages the team so that they work with him in achieving the project's goals.
Leadership - People Management	When the rest of the team feel that their opinions have been taken into account, they will respect and follow him (Appendix E.6, L341-343, 348)
Leadership - Approachability	The leader has to be able to be receptive, so that the team members can come and ask him/her for advice, or when they struggle with a task (Appendix E.6, L472-478)
Management Style - People Management	If the construction manager loses his/her temper when problems arise, the staff on site will perceive lack of confidence (Appendix E.6, L428-429)
Decisiveness -Client	The client gains trust in the construction manager when he sees him/her making decisions (Appendix E.6, L423-425)

Table 49: Relations Identified by Participant UK-6

Relation	Participant UK-7
People management - Communication	With the site team and the client enable a successful project (Appendix E.7, L5-6) Fluent communication with the client
Management Style - People Management	construction managers have to be politically correct and care about people (Appendix E.7, L343-345)
Safety - Financial Aspects	Safety impacts on the costs of the project (Appendix E.7, L15-18)
Safety - Time	If there is an accident on-site, the project's programme will be delayed (Appendix E.7, L15-18)
Image - Philosophy of Work	The construction acts and everybody else acts accordingly (Appendix E.7, L71-74)
Image - Client	The clients wants to see the construction manager as a strong leader in order to have confidence in him/her (Appendix E.7, L326-330)
Communication - Image	With the image that he/she projects, the construction manager communicates to the rest of the team and workforce about how they approach the work seriously (Appendix E.7, L72-75)
Leadership - Image	The client has to see that the construction manager is a strong leader (Appendix E.7, L326-330)

Table 50: Relations Identified by Participant UK-7

Relation	Participant CH-1
Information - client	The client has to provide information which is a clear reflection of what they want (Appendix E.8, L58-60)
Quality - time	Ensuring that the works are being done up to standard will prevent remedial works, and to keep the programme on track (Appendix E.8, L119-120)
Quality - financial aspects	Ensuring that the project is being built to standards set initially, will prevent remedial work and reduce costs (Appendix E.8, L125-127)
Time - financial aspects	A good programme makes good use of resources, reducing costs related to work and staff (Appendix E.8, L128-130)
Leadership - communication	The leader communicates the clear goals that have been set for the project (Appendix E.8, L245)
Project - Weight of Critical Success Factors	The priorities of the project determine the relative importance of financial aspects, quality and time (Appendix E.8, L359-360)

Table 51: Relations Identified by Participant CH-1

Relation	Participant CH-2
Time - Financial Aspects	The construction manager looks for ways in which he/she can reduce the duration of the project so that more profit can be generated (Appendix E.9, L15-16)
Information - Enthusiasm	Inaccurate or ambiguous information will affect the construction manager's enthusiasm (Appendix E.9, L45-47)
Information - Time	It is impossible to deliver on time, if the information provided is messy and disorganised (Appendix E.9, L58-59)
Technical Skill - Financial Aspects	Being aware of new technologies will allow the construction manager to identify opportunities to increase profit (Appendix E.9, L88-90)
People management - Financial Aspects	Creating good working relationships with suppliers to get better quotes for supplies (Appendix E.9, L101-104)
Reflective - Experience	The construction manager uses his experience to prevent repeating problems he/she has had in the past (Appendix E.9, L153-154)
Experience - Problem Solving Skills	The construction manager uses his/her relevant experience to anticipate problems that may occur and the future (Appendix E.9, L176-177)
Information - Decisiveness	The construction manager uses all information available to make the right decisions in order to ensure a successful outcome (Appendix E.9, L198-200)
Organisation - Information	Construction managers deal with great amount of information at the same time, and they need to be able to access it quickly in order to make decisions (Appendix E.9, L112-113)
End user - Leadership	Changes in the laws regarding the rights of end users have increased the pressure on the construction manager to deliver a better product, so the team has to work for that goal (Appendix E.9, L297, L300)
End User - Moral Responsibility	With the end user in mind, the construction manager delivers the best that he/she can (Appendix E.9, L518-519)

Table 52: Relations Identified by Participant CH-2

Relation	Participant CH-3
Ability to Pull back - Experience	Allows the construction manager to think about what will happen in the future, being able to foresee the complexities of the project (Appendix E.10, L56-66)
Leadership - Satisfaction	Participant CH-3 takes great satisfaction from creating teams that have worked very well (Appendix E.10, L177-180)
Leadership - Management Style	The good leader does not lose his/her temper (Appendix E.10, L211-212)

Table 53: Relations Identified by Participant CH-3

5.3. Triangulation of Interview Data with CIOB's Construction Manager of the Year Award Criteria

Considering the views from a relevant professional body in order to triangulate the data derived from the interviews, in particular the categories which construction managers considered relevant to the success of a construction project, are believed to be relevant to this research. These views would provide another empirical source of data.

The Chartered Institute of Building (CIOB) every year, for the last thirty years (Appendix E.11, L142), provide an award for the best construction managers in the UK's Construction Industry. The Construction Manager of the Year Award (CMYA) distinguishes itself from any other award, according to this chartered body, by rewarding the construction manager and not the construction project (CIOB, 2008). However, the prizes are awarded to construction managers based on their performance within one construction project. Construction managers enter the competition with a project which has been delivered within the last 12 months. This award is given to the construction manager based on their performance; hence it is relevant to this research.

Consequently, in order to gain an insight into which the aspects the CIOB consider relevant to assess the performance of a construction manager and the measurement tools or methods used for the different aspects, an interview with the CIOB was undertaken.

The researcher contacted the CIOB's Director of Professional and Technical Development, who agreed that two managers of the CIOB would undertake the interview. The Director of Professional and Technical Development is therefore acting as the 'gatekeeper' (Miller and Bell in Mauthner *et al*, 2002). Gatekeepers are the people who provide access to the relevant information or access to the people who can provide the information that the researcher is looking for. In some cases, gatekeepers may also provide approval for the data collected to be used for the research (Miller and Bell in Mauthner *et al*, 2002).

The interview with the CIOB took place on the 27th February 2007. Two managers from CIOB undertook this interview simultaneously. As part of their work at the CIOB these two managers were involved in the competition's interview panel and the process by which construction managers are assessed once they have been selected as candidates for the awards within each of the different award categories. The transcript of this first interview was sent to the CIOB in order to obtain a verification that the information there contained was a truthful reflection of the CIOB's views. The CIOB, represented by Director of Professional and Technical Development, did not agree with the opinions and accounts of events provided by the two managers during the interview.

The CIOB agreed to undertake a second interview, in order to replace the first interview. The person who undertook this second interview was a consultant, who is also one of the six Honorary Members of the CIOB. The participant of this interview is, in his words, "the consultant representing the Chartered Institute of Building and my role is to ensure that the judging process is carried out to standards set and accepted by the Chartered Institute, and to ensure that all people within the award competition get a fair and recognised judging process. [...] I organise the judges, appoint them, and ensure that they too comply with the requisite regulations set down with the award" (Appendix E.11, L7-12). The consultants' role includes calling for applications, review of the applications, forming the interview panels, programming visits to sites, and awarding the best construction managers in each category.

The second interview was undertaken on the 6th March 2008, in Englemere, where the CIOB Headquarters are located; the voice recording is 35:27 minutes long. Only the transcript from this second interview has been used in this research; the transcripts for this interview can be found in Appendix E.11.

During the interview, the consultant explained why construction managers are awarded the CMYA prize by means of a project, rather than assessing the construction managers' abilities by focusing on the person. Construction managers are awarded this prize based on a construction project; since the construction project is seen as a "vehicle" (Appendix E.11, L208) for demonstrating that the construction manager did an outstanding job: "You've got to have a project that can demonstrate the qualities that we expect of a construction manager, it is not in theory, it is practice" (Appendix E.11, L189-190).

This interview was unsuccessful in meeting its goals, as it did not provide data about the methods used to or the categories considered. The scoring system used by the CIOB in order to assess construction managers would not be disclosed: "I will not give you specifically today each of those because those have to stay within the domain of the Chartered Institute of Building, but you in what you're doing will probably identify at least eight or ten areas that a construction manager will be required to be proficient at" (Appendix E.11, L197-200). However, from the CMYA Entry Form provided and the interview undertaken with the consultant, some information has been derived, which can be used as CIOB's views for comparing the data with the data derived from the construction managers who have participated in this research.

The CMYA has different categories for construction managers to apply. These categories change every year according to the construction market's fluctuations (Appendix E.11, L245-251). In 2008, awards were made for each one of the following 10 categories of the contest, which have been defined according to the type of project and the size of the budget:

- New Build or Refurbishment below £10 million
- New Build or Refurbishment between £10 and £15 million
- New Build or Refurbishment between £15 and £25 million
- New Build or Refurbishment between £25 and £50 million
- New Build or Refurbishment between £50 and £100 million
- New Build or Refurbishment over £100 million
- Residential projects of under 4 stories
- Residential projects of 4 stories or more
- Restoration or Conservation
- PFI Contracts

In 2004 (CIOB) considered other award categories, that have not been considered in 2008. These categories included Sport and Leisure award category; also, the new projects award category was separated from refurbishment award category: Fit-Out and Refurbishment under £3 million, Fit-Out and Refurbishment between £3 and £15 million, and Fit-Out and Refurbishment over £15 million (CIOB, 2004). The following year, 2005, categories remained similar (CIOB, 2005). In the year, 2006, New Build and Refurbishment were merged together and classified according to budget; there was also a Residential type of project which was divided into two categories: fewer than 30 units and more than 30 units. In 2007 (CIOB) were similar to 2008, but the budget values used to differentiate between categories was different. These changes of award categories support the idea, identified by the construction managers who have participated in this research, that the construction market does have an impact on the construction project, and on its outcome. This confirms that the Construction Industry and Type of project categories derived from the interviews with construction managers are relevant to the success of the project.

The purpose of separating the awards by categories is to acknowledge that projects of different sizes and different types will require different skills from the construction manager (Appendix E.11, L218-230). This is aligned with what construction managers

have declared in their interviews which is that the project, particularly the type and the budget, is an element which defines the skills and knowledge required from the construction manager.

5.3.1. Comparison of Interview Data with CIOB's Construction Management Skills List

The judges look for outstanding managing skills in (CIOB, 2008):

- Pre-contract phase
- Design and Risk management
- Contract planning
- Financial control
- Health, Safety & Welfare
- Communication and team work
- Leadership
- Relationship with stakeholders
- Quality control
- Project closeout

The construction managers interviewed in this research have identified early involvement as a factor that facilitates success, which is supported by the consideration of the pre-contract phase as part of the set of skills the judges are looking for in the assessment stages leading to the appointing the CMYA winner.

The CIOB do not apply a holistic approach to the problem, skills are assessed separately. Therefore, this triangulation did not provide data for interconnectivity.

Contract Planning, Financial and Quality controls, are skills which construction managers have declared as necessary for delivering a successful construction phase of the project.

Health, Safety and Welfare is another category considered relevant by the CIOB in order to determine construction management excellence. Safety has been considered very relevant by construction managers, and in some cases it has been identified as a primary success factor. Welfare has been mentioned by construction

managers as a relevant aspect which involves, amongst other things, providing decent facilities for the workforce.

Communication, Team Work and Leadership have also been identified by construction managers as important aspects of delivering a successful project.

Stakeholders have been declared to be relevant to the success of a project, since construction managers have to deliver a building or engineering work which meets expectations of several parties. Amongst the stakeholders identified by construction managers are End User, Client and the Contractor.

In conclusion, although it was not possible to provide triangulation for methods or scoring systems, the aspects considered by the CIOB in order to assess CMYA candidates suggest that the categories below, as identified by construction managers in this research, are indeed relevant to the construction management and the success of the project:

- Construction Project, particularly size and type
- Early involvement / Type of contract
- Planning and Cost control and monitoring
- Communication
- Leadership and Team work
- Stakeholders

In order to gain access to information regarding the specific aspects that are considered during the assessment of construction managers by the CIOB, the researcher also attempted to contact CMYA winners of different categories in year 2005 and 2004. Emails and phone calls were made to the construction firms for which the winners of categories were working at the time they were awarded. Although this would have been an indirect way to access information regarding the scoring system, this would have provided more information to complement the data collected provided by the consultant. However, the search was fruitless and the researcher was unable to contact any of them.

5.4. Summary

This Chapter discusses and justifies the interview design, the results from the interview analysis undertaken by construction managers, and the interview with a CIOB representative.

As well as the above aspects, this chapter also has presented the justification for the interview design. A pilot interview was carried out, from which results showed that an unstructured approach was better suited to the aim of this research as it provides the flexibility to tailor the interview, both during the interview process and to focus on what the construction managers indentify as relevant to the problem.

The categories derived from all the interviews are presented in the format of the populated Systems Conceptual Framework. Results of the coding process for each category and relation have been presented.

Overall, the views of construction managers fit the Systems Conceptual Framework, and the need to adjust the framework by adding new conceptual tags was not identified. Construction managers identified nine categories within the Environment conceptual tag, four categories within the Construction Phase Success conceptual tag, four categories within the Critical Success Factors conceptual tag, and twenty Construction Manager Enablers categories, the fully populated Systems Conceptual Framework, as derived from the data, is shown in Figure 15 (Subsection 5.2.1).

Relations identified are presented by participant. Overall, this thesis has identified 56 relations between categories.

Finally, the relevant results from the interview undertaken by the CIOB consultant are presented. The general aspects of the criteria to identify the different categories for the awards, and the aspects judges take into consideration for their assessment of each of the construction manager's performance in competition. They were viewed in detail and compared with the relevant categories obtained from the analysis of the interviews undertaken in this research. Overall, from the CMYA's data collected as part of the interview with the CIOB's consultant and the data which available to the public, the results support the outputs from the interviews with construction managers. The CIOB's input has been used in this chapter for triangulation purposes only.

CHAPTER 6: DEVELOPMENT OF AN EMPIRICAL MODEL

This chapter presents the development of the Empirical Model derived from the categories and relations between them, obtained from the ten in-depth interviews undertaken by the construction managers participating in this research, shown in Chapter 5.

This chapter is divided into six sections. Sections 6.1 to 6.4 present the categories, separated according to their conceptual tags (Environment, Construction Phase Success, Critical Success Factors or Construction Manager Enablers). For each conceptual tag, a Pareto analysis was carried out. Hence, within each conceptual tag categories have been presented according to the frequency with which they were identified, starting with the higher values. The description of categories is displayed in separate subsections. Section 6.5 presents the overall interconnectivity between categories and the representation of the Empirical Model. Finally, Section 6.6 discusses the findings of the Empirical Model against the relevant literature.

The identification and integration of the different elements within each category is aimed at providing an overall description of the category, each one identified as relevant to construction project success. The Pareto analysis undertaken allows for the Empirical Model to show the relative relevance of each category within the generic and holistic view provided by the Empirical Model.

6.1. Environment Categories

The Environment is the conceptual tag which gathers all elements relevant to the success of the project which are outside the boundary of the construction project (Subsection 4.1.2). From the ten in-depth interviews undertaken by the participants of this research, nine categories have been identified for this conceptual tag. Table 54 displays these categories according to a Pareto analysis. This table shows that the frequency between each category varies notably, with the Client category having the highest frequency, 8, and the Community, Project and Stakeholders having the lowest frequency, 2.

PARTICIPANT/ CATEGORY	UK-1	UK-2	UK-3	UK-4	UK-5	UK-6	UK-7	CH-1	CH-2	CH-3	*f*
CLIENT	✓		✓	✓	✓	✓	✓	✓	✓		8
CONSTRUCTION INDUSTRY	✓	✓	✓	✓	✓	✓	✓				7
TYPE OF CONTRACT		✓	✓	✓	✓	✓	✓		✓		7
INFORMATION				✓	✓	✓		✓	✓	✓	6
CONSTRUCTION FIRM	✓			✓		✓	✓		✓		5
END USER		✓	✓						✓		3
COMMUNITY				✓	✓						2
PROJECT					✓			✓			2
STAKEHOLDERS					✓	✓					2

Table 54: Environment Categories Identified by Participant and Overall Frequency

Subsections 6.1.1 to 6.1.9 identify each category of the Environment conceptual tag which is relevant to achieving a successful outcome of the construction phase of the project.

6.1.1. Client

This category has been identified by construction managers UK-1, UK-3, UK-4, UK-5, UK-6, UK-7, CH-1 and CH-2 (f=8).

This category represents the client or employer, who can be represented by the project manager. The aim of the construction manager is to satisfy the client's needs. Client involvement and client satisfaction have been identified as relevant to the success of a construction project.

Achieving client satisfaction has been identified as a difficult target to meet. In order to satisfy the client, the construction manager requires a clear description of the expectations of the client and the maintenance of a good working relationship with the client throughout the construction phase. With clear expectations from the client, the construction manager can prioritise the relevant aspects of the project, in order to satisfy the client. Maintaining a good relationship with the client favours the success of the construction project, as it allows the construction manager to understand the working preferences of the client. The client's ability to clearly convey the expectations set for the project have been identified in relation to the client's experience; failing to convey their expectations may obstruct the success of the project, as it may lead to changes to the design during the construction phase.

Client Involvement, at all stages of the construction project, has been identified as beneficial to construction project success. A client involved in the project and in the decision making process helps the construction manager in achieving client satisfaction and reacts better to the decisions made by the construction manager.

6.1.2. Construction Industry

This category has been identified by participants UK-1, UK-2, UK-3, UK-4, UK-5, UK-6 and UK-7 (f=7).

There are two aspects of this category which relate to the construction project success, these are the nature of the industry and the fluctuations on the construction market.

The nature of the Industry is identified as a positive and as a negative aspect. On the positive side it is identified as challenging, changing, having a tangible product, which has an impact on the satisfaction construction managers derive from their job. On the negative side, it is identified as a hard industry to work on, involving confrontation and disputes.

The fluctuations of the construction market affects the critical success criteria, particularly related to costs. Depending on the whether the construction market is at a good point or not, the construction manager aims to either generate profit, or to deliver to budget (without losing money).

6.1.3. Type of Contract

This category has been identified by participants UK-2, UK-3, UK-4, UK-5, UK-6, UK-7 and CH-2 (f=7).

The Type of Contract is an aspect which determines the influence a construction manager has on the development of the project. Construction managers affirm that early involvement (previous to the construction phase) has a positive impact towards delivering successful projects. Since it allows the construction manager to familiarise with the project, and it also enables the construction manager to use their previous experience, and knowledge to study the project, ensuring that the right decisions (at the design stage) whist considering alternatives, are made. However, early involvement does not always provide positive results towards the outcome of the construction project. Experience in similar projects is relevant.

6.1.4. Information

This category has been identified by construction managers UK-4, UK-5, UK-6, CH-1, CH-2 and CH-3 (f=6).

This category includes all of the information which defines the construction project; it is identified as critical to project success by UK-4, UK-5, CH-1, CH-2 and CH-3.

This information is made available to the construction manager by the client, and it includes written documents (client brief), drawings, specifications, quality standards. It also involves documentation which is part of the complementary documents to the contract. The quality, consistency, and timeliness of this information have been considered critical to construction project success, as it allows the construction manager to develop a detailed work programme.

It has also been considered relevant for this information to be clear and specific regarding how to proceed when changes to the project occur, how the budget and programme can be amended, and which will be the formal channels of communication between the construction manager and the client. All of these aspects increase the possibility of success.

6.1.5. Construction Firm

This category has been identified by participants UK-1, UK-4, UK-6, UK-7 and CH-2 (f=5).

The Construction Firm's strategic plan and senior management are the aspects of the construction firm identified as influencing project success.

The Construction Firm's strategic plan can affect or change the construction project's success criteria. The construction firm may need to create a positive impact on the client in order to start a long-term relationship with that client. In this case, showing that projects can be delivered to a good standard, and in an effective manner, becomes more important than any of the classical success criteria.

Senior management is identified as necessary when problems arise; their influence is twofold. Firstly, senior management are meant to have more experience, and therefore being prepared to provide help to solve problems. Secondly, the support of the senior management is seen as relevant to overcoming problems; construction managers expect to have support from their managers during times of difficulty.

These two aspects of the Construction Firm category, strategic plan and senior management, affect the project in different ways. The senior management affects the construction manager directly, whilst the company's strategic plans affects the criteria to assess the outcome of the project.

6.1.6. End User

This category has been identified by participants UK-2, UK-3 and CH-2 (f=3).

The End User has been identified as relevant to the construction project in two ways: By giving a meaning to the construction phase and for obtaining information about the needs of the client, in terms of the ultimate goal of the project.

The giving meaning to the project is identified by UK-2 and CH-2. Despite not being directly related to the success of the project, it is related to the personal satisfaction of the construction manager.

When providing information, the construction manager can make use of the End User in order to gain a better understanding of what the real priorities of the construction project.

6.1.7. Community

This category has been identified by participants UK-4 and UK-5 (f=2).

This category involves the local residents, who live close enough to the building site to be affected by the operations on site. Construction works can be disruptive to neighbouring areas, and construction may be interrupted by claims from neighbours. This can cause delays or interference with the works on-site, which affects the success of the construction project.

Those interruptions will disrupt the production on site, and the construction managers prevent this from happening by developing a good relationship with their neighbourhood. By regularly providing information on the works on-site and are available to the neighbours, they minimise disturbance to the community.

6.1.8. Project

This category has been identified by participants UK-5 and CH-1 (f=2).

This category refers to a specific construction project. Within the Project category, two aspects are identified as relevant: the scale of the project, and the characteristics of project. Whilst the scale impacts upon the qualities that the construction managers should have in order to be prepared to manage the project and deliver a successful outcome, the characteristics of the project relates to the concept of success.

Variations in the size of construction projects will require the construction manager to utilise different skills and their level of involvement; for example, large projects have middle management, whereas in small projects the construction manager gets involved with the trades.

The characteristics of the project, particularly the restrictions imposed upon the project, determine priorities set within the critical success factors initially determined for that project.

6.1.9. Stakeholders

This category has been identified by participants UK-5 and UK-6 (f=2).

Stakeholders of a construction project accounts for all parties involved in the project. The Client and the End User are not considered in this category, as they have been identified independently.

Stakeholders are identified as being all other parts involved in a project; whose expectations also have to be considered by the construction manager. The construction manager has to be aware that the success criteria changes for different audiences.

This category has not been identified as related to other categories.

6.2. Construction Phase Success Categories

The Construction Phase Success identifies aspects related to construction project success besides the critical success factors. The data identified within the categories of this conceptual tag is intended to describe qualitative aspects of construction project success. In this sense, the categories within this conceptual tag are abstract, and describe aspects of both success and failure. These categories are identified as being different from, for example, categories from within the Environment conceptual tag, in which categories represent different tangible elements within the conceptual tag.

Therefore, these categories are expected to show few relations with other categories that are within the same, or the other three conceptual tags, of the Systems Conceptual Framework. At the same time, since this research intends to specifically identify aspects or dimensions of project success (and the data collection is purposely aligned with this aim), the categories directly related to success are expected to show a higher frequency than other categories of this conceptual tag.

Table 55 presents a summary of participants who identified each category; along with the overall frequency for each category. As expected, the Success category shows the highest frequency. The lowest frequency, on the other hand, was for failure.

PARTICIPANT/ CATEGORY	UK-1	UK-2	UK-3	UK-4	UK-5	UK-6	UK-7	CH-1	CH-2	CH-3	*f*
SUCCESS	✓			✓	✓			✓	✓	✓	6
WEIGHT OF CSF	✓		✓			✓		✓	✓	✓	6
SUCCESS V FAILURE					✓			✓		✓	3
FAILURE				✓						✓	2

Table 55: Construction Phase Success Categories by Participant and Frequencies

6.2.1. Success

This category has been identified by UK-1, UK-4, UK-5, CH-1, CH-2 and CH-3 (f=6).

Success is defined as an overall concept, which is achieved by meeting a combination, or integration, of the critical success factors initially set for the project. However, construction managers affirm that very few projects meet the target set in all areas defined as critical to the success of a particular project. Usually one or two factors, out of the three or four, are met. When all the goals are met, the project is considered to be a huge success.

Construction managers identify elements from the context of the project as relevant to the determination of project success; the definition of success and failure varies from project to project. The demands of each project are unique; the specific challenges of the project will determine how success is conceived for the project. Only part of the factors which determine the difference between a project that is successful, and a project that is not, are factors which are site-related.

6.2.2. Weight of Critical Success Factors

This category has been identified by UK-1, UK-3, UK-6, CH-1, CH-2 and CH-3 (f=6).

The Weight of Critical Success Factors category describes the relative importance that critical success factors have in a specific construction project. Not all of the criteria are equally relevant in a construction project, as critical success factors are prioritised according to the interests of the client or particular characteristics of the project.

6.2.3. Success v. Failure

This category has been identified by UK-5, CH-1 and CH3 (f=3).

This category gathers construction managers' views on how success and failure, as outcomes of the construction project, relate to each other. Construction managers who identify this category view success and failure distanced from each other, and that there are projects which are neither a success nor a failure.

6.2.4. Failure

This category was identified by UK-4 and CH-3 (f=2).

Failure is identified as the outcome in which all or most goals set for the project have not been met; failure is identified as a situation in which none of the parts involved in the construction project win. Overall, failure is seen as a negative outcome in all or most aspects.

6.3. Critical Success Factors Categories

In this research, Critical Success Factors are defined as the areas of activity in which favourable results are absolutely necessary for a manager to achieve the goals previously determined for the project. This section analyses and describes each category identified by the participants in relation to the success of a construction project. Overall, participants identified four critical success factors for the construction phase of the project. Table 56 presents a summary these categories. Since Critical Success Factors are widely referred to by the literature and regularly used in the Construction Industry in order to measure performance, the categories within this conceptual tag are expected to be an area in which there is agreement amongst participants.

The frequencies for each critical success factor vary between 5 and 10; the category identified the least by participants as a critical success factor is Safety; with only half of the participants. Two categories are identified by all of the participants, Financial Aspects and Time. This identification of these two aspects by all of the participants

shows that there is agreement between construction managers regarding the measurement of success in relation to budget and delivery date.

PARTICIPANT/ CATEGORY	UK-1	UK-2	UK-3	UK-4	UK-5	UK-6	UK-7	CH-1	CH-2	CH-3	*f*
FINANCIAL ASPECTS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10
TIME	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10
QUALITY	✓	✓	✓	✓	✓		✓	✓	✓	✓	9
SAFETY			✓	✓	✓		✓		✓		5

Table 56: Critical Success Factors Categories Identified by Participant and Overall Frequency

6.3.1. Financial Aspects

This category has been identified as a critical success factor by the ten construction managers participating in this research (f=10).

In relation to the costs of the project, this critical success factor is relevant, as it represents the construction project as a business. The Financial Aspects of the construction project has been described in two ways. On one hand, it is defined as delivering on-budget; on the other hand, it is defined as making a profit.

The Construction Industry impacts on what the expectations can be in terms of meeting this target. Participant UK-3 identifies that difference: '...back in the early 90s it was turnover, so you would deliver to a budget'. Then the goal of the construction firm with their project will change with fluctuations of the demand on the Construction Industry.

Participants identify the financial aspects of the project as very important, UK-7 stating that 'We're here to make money'.

6.3.2. Time

The Time category has been identified by the ten construction managers participating in this research (f=10).

Meeting the programme goals set for the project has been identified by all construction managers.

6.3.3. Quality

This Quality category is defined by the technical aspects of the project, defined in the design through drawings and specifications (f=9).

There are two levels at which this critical success factor is targeted. The first level at which construction managers manifest to meet this target is by meeting the specifications. The second level at which this factor is targeted relates to personal standards. For the participants who identified this level, the quality of the product once finished will have to meet subjective expectations which are not easily measured objectively.

Since this second level at which quality can be targeted involves other stakeholders, and is basically measured by the overall result, the success of the sole construction phase cannot be measured using this level, and therefore cannot be considered a critical success factor for the construction project.

6.3.4. Safety

This success factor is identified as a critical success factor by UK-3, UK-4, UK-5, UK-7, and CH-2 (f=5).

As a critical success factor, the target for Safety is defined to be having no accidents, or as near as zero accidents as possible. Construction managers who have identified this category consider it very important; safety has to be treated with seriousness and severity. The relevance of safety is twofold. On one hand, having a safe, tidy organised site helps the workforce to do their job efficiently, therefore facilitating delivery of the Quality, Time and Financial Aspects critical success factors.

On the other hand, by preventing accidents the construction manager is preventing disruption to the works on-site.

6.4. Construction Manager Enablers Categories

The Construction Manager Enablers conceptual tag gathers the categories for the construction manager's characteristics, competences, and skills which participants have identified as being relevant to the success of the project. The summary of categories identified by each construction manager is presented in Table 57.

From the complete set of Construction Manager Enablers categories identified in this study, the frequency of identification by participants tends to vary. The Communication and Technical Skill categories have the highest frequency, as they have been identified by all of the construction managers; whereas the Moral Responsibility shows the lowest frequency, being identified by only two of the participants in the study.

PARTICIPANT/ CATEGORY	UK-1	UK-2	UK-3	UK-4	UK-5	UK-6	UK-7	CH-1	CH-2	CH-3	*f*
COMMUNICATION	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10
TECHNICAL SKILL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10
EXPERIENCE	✓	✓	✓	✓	✓	✓	✓		✓	✓	9
ABILITY TO PULL BACK	✓		✓	✓	✓	✓	✓	✓		✓	8
LEADERSHIP	✓		✓	✓		✓	✓	✓	✓	✓	8
PEOPLE MANAGEMENT		✓	✓	✓	✓	✓	✓	✓	✓		8
PHILOSOPHY OF WORK		✓	✓	✓	✓	✓	✓		✓		7
REFLECTIVE		✓		✓	✓	✓		✓	✓	✓	7
APPROACHABILITY		✓	✓	✓		✓	✓		✓		6
CO-ORDINATION	✓	✓					✓	✓	✓	✓	6
GOOD LISTENER	✓	✓	✓			✓		✓	✓		6
SATISFACTION		✓		✓	✓		✓		✓	✓	6
DECISIVENESS	✓		✓			✓	✓		✓		5
HONESTY	✓		✓			✓			✓	✓	5
MANAGEMENT STYLE				✓	✓	✓	✓			✓	5
ENTHUSIASM		✓		✓			✓		✓		4
IMAGE		✓				✓	✓	✓			4
PROBLEM SOLVING SKILLS	✓	✓		✓					✓		4
ORGANISATION			✓		✓				✓		3
MORAL RESPONSIBILITY			✓						✓		2

Table 57: Construction Manager Enablers Categories Identified by Participant and Overall Frequency

6.4.1. Communication

This category has been identified by all construction managers participating in this research (f=10).

The construction manager requires being able to effectively communicate with different speakers in a synthetic, precise, timely and clear manner; construction managers must be able to communicate appropriately through different channels or means of communication, with people who have different levels of involvement (e.g., team, senior management, client, project manager, subcontractors). It allows the construction manager to access information quickly and efficiently.

Communication also helps the construction manager to clearly convey to the team the goals set for the project and for each one of the members, whilst helping promote an environment of fluent communication within the team.

6.4.2. Technical Skill

This category has been identified by all participants in this research (f=10).

Technical Skill is the category which includes the skills required to manage the project. Two main aspects of this category have been identified; firstly, construction managers are required to have a basic understanding of all the different specialties and trades involved in the project; secondly, planning and programming the works on-site (in detail), prior to the start of, and during the development of, the construction project. The technical skill of the construction manager is identified as being built over time.

6.4.3. Experience

This category has been identified by participants UK-1, UK-2, UK-3, UK-4, UK-5, UK-6, UK-7, CH-2 and CH-3 (f=9).

The Experience of the construction manager has been identified as relevant to the success of the construction project, as it is the technical or professional knowledge which a construction manager requires in order to programme, and monitor, the works on site. All of the construction managers interviewed identified the experience gained from working in similar projects as a necessary aspect for delivering project success.

The on-site experience of the construction manager allows to gain knowledge of the project in front, to make decisions, appropriately analyse the information that defines the project, to find more economic ways of executing the works, enables the identification of the most appropriate systems and technologies for the project, and to anticipate problems.

6.4.4. Ability to Pull Back

This category has been identified by participants UK-1, UK-3, UK-4, UK-5, UK-6, UK-7, CH-1 and CH-3 (f=8).

This category identifies the capacity of the construction manager to disengage from the details and have an overview of the construction project in its entirety. It prevents construction managers from getting caught up in the detail and allows them to distinguish when to pay attention to the details. It allows construction managers to confirm that they have been able to understand, analyse, prioritise the project; decide a path of action and how to put it into practice.

6.4.5. Leadership

This category has been identified by participants UK-1, UK-3, UK-4, UK-6, UK-7, CH-1, CH-2 and CH-3 (f=8).

Leadership is a category which involves leading the construction project as a whole, leading the team and the subcontractors. Within the leadership of the project, the construction manager provides direction to the project, in order to deliver the targets set for it at the outset; construction managers must have a clear idea of what they want to achieve overall with the project. The construction manager is accountable for everything that happens on-site, therefore, the ability to delegate tasks is necessary.

The leadership of the team involves being a team builder, engaging with the team, indentifying the weaknesses and strengths of team members, setting clear and achievable goals to each team members, keep the team working together towards those goals and supervising the overall progress of the team. Leading by example, showing fairness and consistency, enables the construction manager to provide confidence, trust and commitment to the rest of the team.

6.4.6. People Management

This category has been identified by participants UK-2, UK-3, UK-4, UK-5, UK-6, UK-7, CH-1 and CH-2 (f=8).

The People Management category is identified as one of the primary aspects of the job. The role of the construction manager involves the establishment of working relationships with different types of people; these include the client, subcontractors, on-site team, members of staff, and the workforce. The construction manager is required to promote an atmosphere of collaboration (within a diverse group of people) and good working relationships, preventing confrontation, providing an appropriate workplace to the workforce and showing interest in their welfare. Engaging and motivating people involved in the project, respecting others' opinions and preferred ways of working are also elements of the construction management. The construction manager has also to be a good judge of character, in order to identify how to better approach them.

6.4.7. Philosophy of Work

This category has been identified by participants UK-2, UK-3, UK-4, UK-5, UK-6, UK-7 and CH-2 (f=7).

The Philosophy of Work category indentifies a set of values or standards which construction managers use to run the site. This philosophy of work has to be communicated to all people on-site, and it is this way in which the construction manager can influence the way tasks are carried out on-site. This can involve a wide variety of aspects, such as safety, tidiness, team spirit, quality standards or creating an environment of cooperation.

6.4.8. Reflective

This category has been identified by UK-2, UK-4, UK-5, UK-6, CH-1, CH-2 and CH-3 (f=7).

This is the category which defines the characteristic of being able to reflect on the project, critically assess the progress done, what needs to be completed, and identify aspects in which improvements can be made; improvements can be done by utilising different construction systems or technologies which can provide a better or more

inexpensive alternative. The construction manager should reflect on the project and prevent the repetition of problems he/she has faced or seen in previous projects.

6.4.9. Approachability

This category has been identified by UK-2, UK-3, UK-4, UK-6, UK-7 and CH-2 (f=6).

The Approachability category identifies the characteristic of a construction manager being approachable. Being approachable is relevant to the construction manager since it allows the construction manager to have knowledge of what is happening on-site, as soon as problems arise, and therefore they become involved in all decision making processes. Construction managers benefit from having an attitude which encourages people to approach them when dealing with a problem, or to raise a concern. By being approachable, the construction manager can get feedback from his/her team and assess specific aspects of the project

6.4.10. Co-ordination

This category has been identified by UK-1, UK-2, UK-7, CH-1, CH-2 and CH-3 (f=6).

Co-ordination is the category which identifies construction manager's ability to manage all aspects of the project, including the elements of the design and information, organise production, resources and subcontractors on-site, amongst others.

6.4.11. Good Listener

This category has been identified by construction managers UK-1, UK-2, UK-3, UK-6, CH-1 and CH-2 (f=6).

Being a good listener enables the construction manager to make informed decisions about the works on site, to gain the relevant information from the people on-site and within their team, to identify the need of a team member for assistance to overcome a problem, but can also allow for advice to be gained from the team.

6.4.12. Satisfaction

This category has been identified by construction managers UK-2, UK-4, UK-5, UK-7, CH-1 and CH-2 (f=6).

The Satisfaction category refers to the personal satisfaction a construction manager gains from carrying out their job, and it is identified by construction managers who find their job rewarding, at a professional and personal level. Construction managers identify delivering product of a good standard, contributing to the development of their team and staff, and creating solid teams as sources of satisfaction.

6.4.13. Decisiveness

This category has been identified by participants UK-1, UK-3, UK-6, UK-7 and CH-2 (f=5).

A construction manager's decisiveness is the ability to make a decision, commit to it and to carry it forward. Construction managers have to make decisions which have different degrees of uncertainty. It allows the construction manager to change the direction of the project quickly when needed.

6.4.14. Honesty

This category has been identified by participants UK-1, UK-3, UK-6, CH-2 and CH-3 (f=5).

The Honesty category is identified within construction managers as being able to be honest with him/herself, to see the facts in the project and the real situation, instead of what they would like to see. Being honest with the team and the client is also necessary, as well as accepting that a decision he/she made was not the right one.

6.4.15. Management Style

This category has been identified by participants UK-4, UK-5, UK-6, UK-7 and CH-3 (f=5).

Construction managers identify 'management style' as their general approach to the job, with emphasis about how to deal with issues arising. Construction managers identify it to be preferable to use a calmed approach when dealing with problems; although two decades ago it might have been acceptable for a construction manager to lose his/her temper; nowadays, construction managers declare the loss of temper to be a sign showing a lack of confidence and bad leadership practice. Although different

approaches may deliver the same outcomes, participants declare to prefer a calmed manner when approaching problems.

6.4.16. Enthusiasm

This category has been identified by participants UK-2, UK-4, UK-7 and CH-2 (f=4).

When identified, the Enthusiasm category been identified as an important aspect of the construction managers job. The Construction Industry is described by some construction managers a tough environment to work in (Subsection 6.1.4, Construction Industry). The enthusiasm of the construction manager helps and enables him/her to overcome difficulties during difficult times.

6.4.17. Image

The Image category has been identified by participants UK-2, UK-6, UK-7 and CH-1 (f=4).

This category involves all aspects related to the image the construction manager projects. Generally, the construction manager should display an appropriate behaviour and good manners, as it conveys a message of professionalism and seriousness. In relation to the client, being able to project an image of being a strong leader gives a sense of trust to the client. It is also identified as being relevant when working with subcontractors, as their judgement of the construction manager allows them to decide whether they would work with him/her again or not.

6.4.18. Problem Solving Skills

This category has been identified by participants UK-1, UK-2, UK-4 and CH-2 (f=4).

Construction managers identify the need to solve problems constantly. The problem solving skills allow for the construction manager to analyse problems in order to find suitable solutions, and analyse the project to anticipate any problems that may arise.

6.4.19. Organisation

This category has been identified by construction managers UK-3, UK-5 and CH-2 (f=3).

By being organised, construction managers will manage an organised site, in which tasks will be completed efficiently, and enables management of a vast amount of information in a timely fashion.

6.4.20. Moral Responsibility

This category has been identified by participants UK-3 and CH-2 (f=2).

The Moral Responsibility has been identified in relation to the client and the end user. The moral responsibility of the construction manager towards the client is identified as delivering, beyond the binding contract, the best they can. Towards the end user is identified as delivering a product which has been developed to a high standard.

6.5. Development of the Empirical Model

This section presents the whole set of relations between categories that have been derived during the analysis, and how they generate an interrelated set of categories which allow the Empirical Model to be generated. This Empirical Model provides a generic and holistic view of the influence construction managers have on construction project success.

Subsection 6.5.1 presents the Interconnectivity, the set of 56 relations identified in this research, which allows the formulation of the Empirical Model. This is a key aspect of this research, as it represents the most important contribution to knowledge of this research. Subsection 6.5.2 presents a Pareto analysis for the categories within each conceptual tag within the Empirical Model. Subsection 6.5.3 presents the Empirical Model. Subsection 6.5.4 presents an analysis of the Empirical Model. Finally, Subsection 6.5.5 describes construction manager's view on project success derived from this research.

The Systems Conceptual Framework (Chapter 4) has been used as a structure for the Empirical Model, providing the basis within which categories and relations between them are mapped and explained.

6.5.1. Interconnectivity

The overall set of 56 relations between categories are the Interconnectivity of the Empirical Model. Whilst undertaking the interviews, construction managers described links between categories; these were identified during the coding process; the results have been and tabulated as shown in Subsection 5.2.6.

As discussed in the Literature Review, a holistic approach to the influence of construction managers on project success has not yet been presented. Interconnectivity of the Empirical Model is, therefore, the most relevant finding of this research. Table 58 presents a summary of the relations identified by participants of this study.

Interconnectivity is what brings categories and Systems Conceptual Framework together, making it the key factor to develop the Empirical Model. Without it, the set of categories would have less value as they wouldn't be showing how they impact on each other.

In Table 58, out of the 56 the relations, 7 which were identified twice by construction managers:

- Client - Information
- Client - Weight of Critical Success Factors
- Time - Information
- Time - Safety
- Financial Aspects - Time
- Communication - Philosophy of Work
- Leadership - People Management

The Client - Information and Client - Weight of Critical Success Factors relations emphasize the relevance of the client as stakeholder which expresses his/her interests through the Information and the relative relevance that some Critical Success Factors have over others for a particular project.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1	Client																																					
2	Community																																					
3	Construction Firm																																					
4	Construction Industry	UK6		UK1																																		
5	End User																																					
6	Information	UK4 CH1																																				
7	Project																																					
8	Stakeholder																																					
9	Type of Contract	UK6																																				
10	Failure			UK4																																		
11	Success							UK4																														
12	Success vs. Failure																																					
13	W of CSF	UK1 UK6						CH1																														
14	Financial Aspects				UK3		UK6			UK6																												
15	Quality														CH1																							
16	Safety														UK7	UK4																						
17	Time						UK6 CH2								CH1 CH2	 CH1	UK4 UK7																						
18	Ability to Pull Back																																					
19	Approachability																																					
20	Communication		UK4																																			
21	Co-ordination																																					
22	Decisiveness	UK6					CH2																															
23	Enthusiasm				UK2		CH2																															
24	Experience						UK6			UK2				UK1					CH3																			
25	Good Listener																																					
26	Honesty	UK6																																				
27	Image	UK7			UK2																UK7																
28	Leadership					CH2														UK6	CH1						UK7										
29	Managment Style																												CH3									
30	Moral Responsability	UK3				CH2																																
31	Organisation						CH2																															
32	People Management														CH2						UK7								UK3 UK6	UK6							
33	Philosophy of Work																				UK3 UK6							UK7									
34	Problem Solving Skills																		UK6				UK1		CH2												
35	Reflective														CH2																							
36	Satisfaction					UK2										UK2													CH3									
37	Technical Skill														CH2				UK4						UK6										UK1			

Table 58: Interconnectivity Table

The Time - Information relation reflects how the information provided by the client or the team of designers is a key aspect to the on-time delivery of the project.

The Time - Safety and Financial Aspects - Time relations reflection the interconnection that exists between the successful achievement of the goals set for each Critical Success Factors.

The Communication - Philosophy of Work and Leadership - People Management relations reflect how relevant to construction managers is the application of 'soft paradigms' ideas to their job, in order to deliver successful construction projects.

6.5.2. Pareto Analysis for Categories within the Empirical Model

In order to provide a better understanding of the relative importance of categories identified within the Empirical Model, categories have been organised according to their frequency (Pareto analysis). Therefore, the frequency for a category can take nine different values, from 2 to 10. These nine different values have been separated into three sets, in order to show the relative relevance of each category. The set with lowest frequencies (f) includes the f values of 2, 3 and 4. The middle set includes the f values of 5, 6 and 7. Finally, the highest frequency set includes the f values of 8, 9 and 10.

Tables 59 to 62 present the categories for each conceptual tag, arranged according to frequency, as per Pareto analysis presented in Sections 6.1 to 6.4.

FREQUENCY SET	FREQUENCY (f)	CATEGORY
HIGH	8	CLIENT
MIDDLE	7	CONSTRUCTION INDUSTRY TYPE OF CONTRACT
	6	INFORMATION
	5	CONSTRUCTION FIRM
LOW	3	END USER
	2	COMMUNITY PROJECT STAKEHOLDERS

Table 59: Frequency Sets for Environment Categories

FREQUENCY SET	FREQUENCY (*f*)	CATEGORY
MIDDLE	6	SUCCESS
	6	WEIGHT OF CSF
LOW	3	SUCCESS V FAILURE
	2	FAILURE

Table 60: Frequency Sets for Construction Phase Success Categories

FREQUENCY SET	FREQUENCY (*f*)	CATEGORY
HIGH	10	FINANCIAL ASPECTS TIME
	9	QUALITY
MIDDLE	5	SAFETY

Table 61: Frequency Sets for Critical Success Factors Categories

FREQUENCY SET	FREQUENCY (*f*)	CATEGORY
HIGH	10	COMMUNICATION TECHNICAL SKILL
	9	EXPERIENCE
	8	ABILITY TO PULL BACK LEADERSHIP PEOPLE MANAGEMENT
HIGH	7	PHILOSOPHY OF WORK REFLECTIVE
	6	APPROACHABILITY CO-ORDINATION GOOD LISTENER SATISFACTION
	5	DECISIVENESS HONESTY MANAGEMENT STYLE
LOW	4	ENTHUSIASM IMAGE PROBLEM SOLVING SKILLS
	3	ORGANISATION
	2	MORAL RESPONSIBILITY

Table 62: Frequency Sets for Construction Manager Enablers Categories

6.5.3. Representation of the Empirical Model

The Empirical Model gathers together elements of the Environment, Construction Phase Success, Critical Success Factors, and Construction Manager Enablers. This Empirical Model therefore integrates all the categories and relations identified; presenting them in a generic mode and with a holistic approach. The Empirical Model shows how construction managers influence the success of the construction project.

This subsection presents the Empirical Model (Figure 16), which is constructed building upon the Systems Conceptual Framework, and the analysis of the interviews' data; the Empirical Model is the main output of this research. The relative relevance of categories is represented in the Empirical Model with the use of different shades; a dark shade identifies a category which has been identified by the highest frequency set (f values 8, 9 and 10). The medium shade of colour identifies categories within the middle set of frequency values (f values 5, 6 and 7), and the lighter shade represents categories identified by the lowest frequency set of 2, 3 or 4 participants. This allows for the Empirical Model to represent the relevance of each category within the whole set of categories identified in this research, adding elements of the Pareto analysis to the categories and relations which form the Model.

The set of 56 relations identified, the interconnectivity of the Empirical Model, is represented by arrows between the relevant categories. As an alternative, the overall interconnectivity of the Empirical Model is presented in Table 58; this table also allows identifying which participant(s) have identified each relation

In order to develop the Empirical Model, a Systems Conceptual Framework was populated with data obtained from construction managers. These data feed into the Empirical Model as 37 categories and a set 56 relations. The latter set of relations represents the Interconnectivity of the Empirical Model, the most important contribution of knowledge of this thesis.

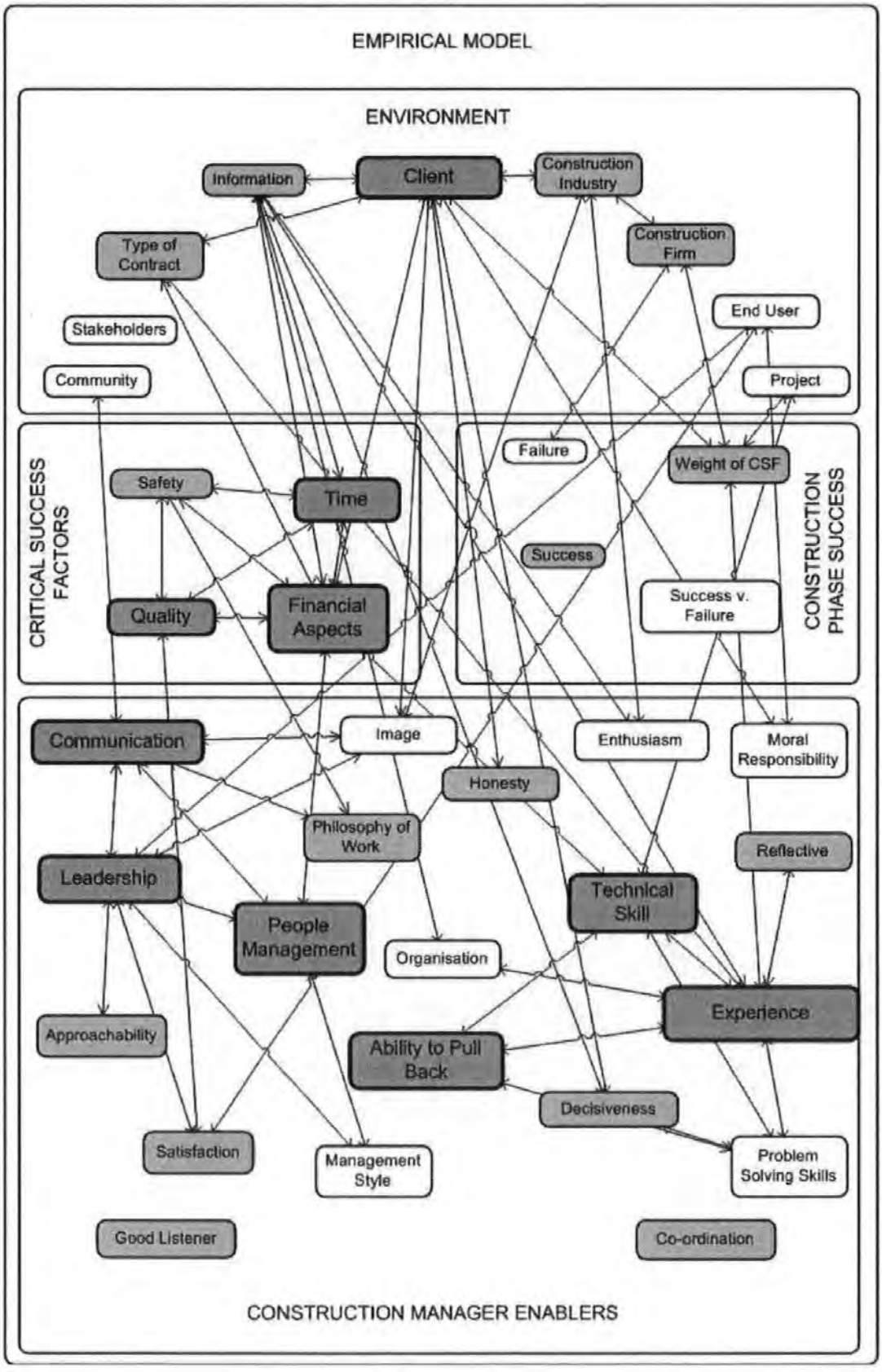

Figure 16: Empirical Model

The Empirical Model is a/the representation of the views of construction managers' regarding their role and how their skills, competencies and characteristics impact on the successful outcome of the project. After the Pareto analysis of the 20 enablers has been carried out, it provides a prioritised set of aspects with which construction managers can monitor their overall behaviour. For inexperienced construction managers, it allows to develop CPD plans in order to strengthen certain priority areas in which they may be weaker or underdeveloped.

By providing a holistic approach, the Empirical Model allows an overall overview of the influence that changes in one category may have on the rest of the whole system.

6.5.4. Analysis of the Empirical Model

This Subsection discusses the relevant aspects derived from the Empirical Model in relation to the Aim and Objectives of this research. This analysis covers the Construction Manager Enablers, the relevance of the Client and construction project success.

In order to meet the overall Aim of identifying how construction managers influence the success of the construction project, this research has used a grounded approach to identify, from the construction managers' point of view, which are the skills, characteristics and competences that are relevant to construction project success.

This research has identified twenty Construction Manager Enablers, which have been organised according to the frequency with which they were identified by participants. This allows the Empirical Model to show the relative importance of each enabler within the whole set.

The identified twenty Construction Manager Enablers, when prioritised according to the Pareto analysis: Communication, Technical Skill, Experience, Ability to Pull Back, Leadership, People Management, Philosophy of Work, Reflective, Approachability, Co-ordination, Good Listener, Satisfaction, Decisiveness, Honesty, Management Style, Enthusiasm, Image, Problem Solving Skills, Organisation, and Moral Responsibility. All these categories have been described in Section 6.4; the objective of this subsection is to examine some specific aspects of the most relevant categories.

The highest frequency set includes: Communication, Technical Skill, Experience, Ability to Pull Back, Leadership and People Management. Communication and Technical Skills were identified by all of the participants.

Within the Empirical Model it is possible to observe that six categories form two sets of three intra-linked categories. The first set includes Communication, Leadership and People Management (Figure 17), whilst the second set includes Ability to Pull Back, Experience and Technical Skill (Figure 18).

Figure 17 identifies elements of construction management that are related to leading the construction project and the team on-site, being able to negotiate and develop good working relationships, and the ability to communicate to different audiences. The categories identified in this first set all share the common factor of relating to the 'human side' of managing a construction project.

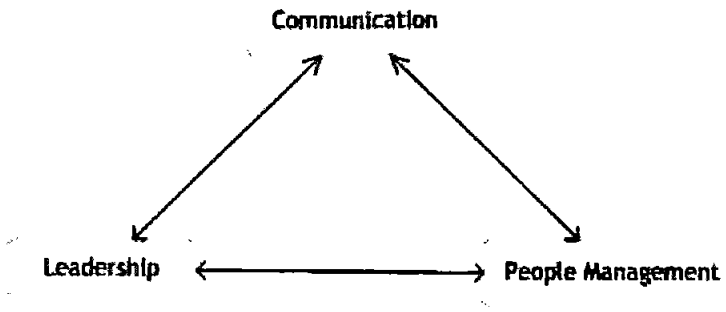

Figure 17: Communication, Leadership and People Management Relations

Figure 18 shows how these categories also share an element in common as they all contribute to running the project in relation to works on site, relating to a 'hard paradigm' view of the project.

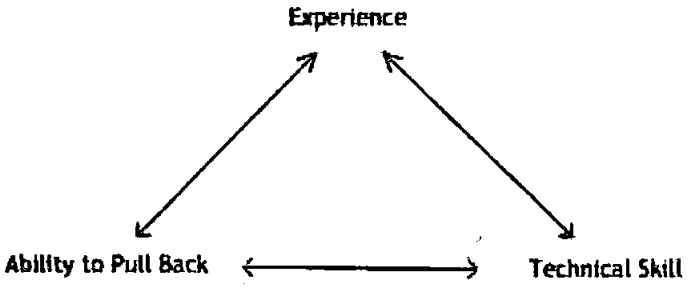

Figure 18: Ability to Pull Back, Experience and Technical Skill Relations

These relations show that, in order to deliver a successful project, construction managers consider it relevant to possess abilities which relate to the people they work with, but also the abilities that allow them to manage the progress on site.

Within the Environment, the Client category appears to be the most relevant element, since it is the only category of the Environment set which is identified with higher frequency, and at the same time, it shows more relations with other categories than any other category within the Empirical Model. The interpretation of the relevance of this category within the overall Empirical Model is twofold. The first is that for construction managers, the client is a key element within the development of the construction project and therefore, construction managers aim to deliver construction projects which generate client satisfaction; it also presents the Client as an influential element throughout the development of the construction phase.

In the Empirical Model, construction project success is defined by two conceptual tags: Critical Success Factors and Construction Phase Success. The set of Critical Success Factors obtained from the analysis includes four factors: Financial Aspects, Quality, Safety and Time.

The Construction Phase Success conceptual tag, on the other hand, aims to identify other aspects to the success of the project beyond the set of Critical Success Factors.

Overall, the Empirical Model shows that higher frequencies are consistently found within the set of Critical Success Factors, denoting more agreement amongst participants on the areas of activity by which construction project success should be measured than within the Construction Phase Success set of categories.

Within the Empirical Model there are 5 (out of the 37) categories which lack relations to other categories. This is the case of Stakeholders, Success, Success v Failure, Co-ordination and Good Listener. The two enablers (Co-ordination and Good Listener) do not have low frequencies, therefore it would have been expected for them to present relations with other categories.

6.5.5. Construction Managers' Views on Project Success

This research has adopted the construction managers' point of view in order to determine the relevant aspects of construction management which influence construction project success. Since the definition of project success determines firstly which targets are considered in the outcome assessment of the project, and secondly how those targets are then measured within the construction project itself, then it became necessary to gain a holistic view of the problem; which included construction project success, the construction manager and the environment. Within that holistic view, a definition of success derived from the construction managers' point of view is included.

This subsection proposes a definition for construction project success by utilising the Empirical Model and the description of the categories presented within the Critical Success Factors and Construction Phase Success conceptual tags.

Overall, this research has identified that construction managers have a dual concept of success. One concept is closely related to 'The Iron Triangle' of time, cost and quality, and includes objectively measurable targets. The other concept of success is related closely to personal values and standards. This has shown to be linked to professional satisfaction, and has been identified to include aspects like delivering End User satisfaction, delivering projects according to personal standards of quality, creating successful teams, promoting professional development of team members, amongst others.

Due to the context dependency of project success, the definition of construction project success has derived from the Empirical Model. The nature of this model is generic and holistic; therefore, the definition of construction project success developed in this section is the one which includes critical success factors and which can be measured objectively.

The Empirical Model illustrates four relevant aspects in relation to construction project success. First of all, categories were identified for both the Critical Success Factors and the Construction Phase Success. This confirms that the concept of construction project success does not only consider meeting the quantitative targets initially set for it, but there are also other qualitative aspects related to success.

The categories identified within the Critical Success Factors present, on average, higher frequencies than the categories within the Construction Phase Success conceptual tag. This shows a higher level of agreement amongst construction managers in relation to the determination of Critical Success Factors than to the other aspects of success. This can be expected, as the categories of the Construction Phase Success conceptual tag identify aspects of construction project success which are not directly related to the traditional critical success factors.

The Critical Success Factors identified in the Empirical Model are, in order of relevance according to frequency, Financial Aspects and Time, Quality, and Safety.

The Financial Aspects and Time targets were identified across all participants. Although the construction managers present some slight differences as to how to define each target, there is an overall agreement in relation to the inclusion of both Financial Aspects and Time within the set of critical success factors set for a construction project; it is also noted that these targets are objectively measurable.

Quality is a critical success factor that has been identified to be relevant in two different ways. The first is considering the information provided by the Client; clear identification of the target, how it will meet the specifications, and understanding other related information. The second is linked to a personal standard, in which the construction manager considers the importance to deliver what he/she considers to be an overall good quality standard within the product.

Safety presents the lowest frequency within the set of critical success factors, however it has been identified by half of the participants. As a critical success factor, it is defined as having zero accidents during the construction project. Participants who consider Safety as a critical success factor, identify strong correlations between Safety and all the other critical success factors. The consideration of Safety as a critical success factor appears to have a positive impact on meeting the other targets of the construction project.

The second aspect relevant to construction project success has been identified in Figure 19; this part of the Empirical Model denotes correlations between critical success factor, supporting the idea that construction project success is, in the view of construction managers, an overall target which is achieved simultaneously during project delivery. These reciprocal relations between critical success factors imply that improvements made towards meeting one of the targets will impact positively on the rest of them. This complete interrelation between the four critical success factors is extracted from the Empirical Model.

Thirdly, the Weight of Critical Success Factors category shows substantially more relations than any other category in the set of Construction Phase Success, and has the highest frequency within the set (f=6). As a result of the highest frequency and having more relations than any other category within its set, the Weight of Critical Success Factors shows to be the most relevant category.

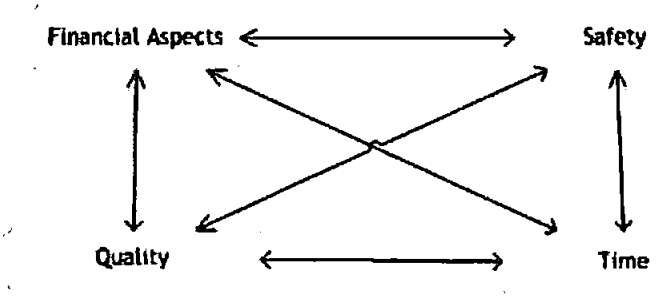

Figure 19: Interrelations between Critical Success Factors

In summary, the relevant aspects of construction project success are identified as follows:

- Financial Aspects and Time are critical success factors which are always considered. Quality and Safety are also success factors, but are not identified by all participants.
- There is a reciprocal relation between critical success factors.
- Success is an overall concept
- Critical success factors are prioritised
- Consequently, construction project success is seen by construction managers as the overall achievement of delivering a construction project which meets the

financial and time objectives that were initially set according to the priorities identified at the outset of the construction project.

6.6. Discussion

Overall, the Empirical Model has derived 37 categories; 20 of them are construction manager enablers, and they have been presented described in Section 6.4. When contrasted against the summary Tables 1, 2 and 3 in Subsection 2.2.1 (Chan *et al*, 2004a; Nguyen *et al*, 2004; Cooke-Davies, 2002; Chua *et al*, 1999; Belassi and Tukel, 1996), 12 enablers appear as being identified by this research; these are:

1. Ability to Pull Back
2. Approachability
3. Decisiveness
4. Enthusiasm
5. Good Listener
6. Honesty
7. Image
8. Management Style
9. Moral Responsibility
10. People Management
11. Philosophy of Work
12. Satisfaction

The identification of 37 categories and 56 relations confirms the complexity of construction projects and their interdependence with their environment (Brockman and Girmscheid, 2007; Naaronja and Uden, 2007; Bertelsen, 2003). The increasing complexity requires construction managers to develop a wider range of skills and competencies.

This research has determined that the six most important enablers in construction managers are: Communication, Technical Skill, Experience, Ability to Pull Back, Leadership and People Management. Of these six, the Ability to Pull Back from the project and look at it from a distance, in order to ascertain a fact or make a decision, had not been identified by the literature. People Management, on the other hand, had not been identified by earlier studies; it integrates all the skills required to work with

different people who have diverse needs and expectations. The 6 (out of the 20) enablers which showed the highest frequencies have formed two sets of three enablers, namely: Communication - Leadership - People Management (Figure 17) and Experience - Ability to Pull Back - Technical Skill (Figure 18). This shows that, in terms of the influence construction managers have on construction project success, the most relevant aspects are both 'hard' (related to the project and its technicalities) and 'soft' (related to working with people). In this sense, this research has shown that both approaches to project management presented by Pollack (2007) are relevant in the views of construction managers. The results are aligned with Pollack's study in that the use of a purely hard paradigm approach will not provide a reliable representation of the reality of the project; however the findings of this thesis show that a purely soft paradigm provides the same limitation. In fact, based on this research's results, it would be advisable to incorporate both views to gain a real understanding of the complexity of projects and the challenges this brings to the construction manager.

Experience is an enabler that had been identified as a relevant to construction managers prior to this research (Nguyen *et al*, 2004; Cooke-Davies, 2002). However, this research has identified that not only experience in the same type of projects is relevant, but also experience in different types of projects provide the construction manager with experience that allows him/her to provide more creative solutions to challenging problems. Buy confirming the relevance of experience, this research has also confirmed that construction projects require a manager that understands the specific challenges of the industry (Besner and Hobbs, 2008).

This research has utilised an inductive-deductive approach to determining the influence construction managers have on construction project success. This has been done applying a holistic and generic approach to identifying the construction manager enablers which are relevant to the successful outcome of a project. The Empirical Model incorporates the Environment conceptual tag to allow the representation of the context dependency of construction projects. This research has identified 9 categories within the Environment conceptual tag, confirming the context-dependant nature of construction projects. Out of the 9 Environmental categories, the End User and Information categories have been identified by this research.

Client is the category which shows more relations to other categories within the model. The implications of this are twofold. Firstly, it confirms the uniqueness and context dependency of construction projects (Young, 2003). Secondly, it illustrates the

Construction Industry's focus on the client and client satisfaction (Egan, 1998; Latham1994); through the relations it has with other categories, the client is an influential element to the success of the project and the performance of the construction manager.

Chua *et al* (1999) identified subcontractors and suppliers as relevant aspects to the success of the project, however not as an integrating part of the project. The construction manager's view adopted in this research provides a more integrated scope of the project; construction managers declared to consider everybody involved as an integrating part of the project and its dynamics. Construction managers have learned, probably encouraged by Latham (1994) and Egan (1998), that co-operation leads to better results.

Overall, it is the interconnectivity, the set of 56 relations between categories, which provides the structure for the Empirical Model. Without it, this research would have not been able to provide a holistic approach, preventing the understanding of the different ways in which construction managers can facilitate or create obstacles to the successful delivery of the project they are leading. This is why the interconnectivity is gathered the most important contribution to knowledge this research has achieved.

The success of a project has been identified as being strongly linked to an organisation's long term success (Shenhar *et al*, 2001). The Construction Firm category represents the long term interests of the construction firm, and their influence on the project goals. The prioritisation of Critical Success factors is determined, amongst others, by the Construction firm. Therefore the findings confirm Shenhar *et al*'s statement.

The results of this research show that construction managers find agreement in what failure is, defining it as a situation in which no-one wins. Success, on the other hand, can have dimensions related to personal satisfaction, professional satisfaction moral responsibility towards the end user, etc. But these results show, nevertheless, that there is an actual subjective dimension to construction project success and that the use of objective measurements only does not allow the understanding of the overall aspect of success. Overall, these results confirm Pinto and Mantel's (1990) main conclusion that critical success factors are not the same as critical failure factors, as they are not opposites.

In terms of critical success factors, the financial and programme factors were identified across all participants, this is aligned with the literature, as these two factors are always considered. Quality showed a high frequency according to Pareto analysis performed, however it was not considered a critical success factor all the times. This is due to some construction managers seeing quality as an imposition to abide by, rather than a goal. Safety showed the lowest frequency, as expected.

Always, and regardless of the number of critical success factors utilised or considered for a specific project, construction managers will prioritise one critical success factor (or two at the most) which will drive the other critical success factors. This prioritisation is done by relating the specific characteristics of the project and the client's needs or desire. Communication and being a Good Listener play a key role at that stage, as mastering them both allow the construction managers to transform project and need or desire into objectively measurable indicators.

Gao et al (2002) suggests that success is predictable if all key factors are considered. The Empirical Model refutes this statement, as it identifies certain enablers as key to achieving success under uncertainties or limited information. In this sense, the results are aligned with Judgev and Müller (2005), who argue that managers have to constantly redefine success objectively and subjectively throughout the development of the project.

Under a construction manager's point of view, subjective considerations impact on the perception of success, however there is not a high level of agreement regarding which specific aspects should be considered as suggested by Jugdev and Müller (2005) and Baccarini (1999). This misalignment between results and literature support the idea that project success is a concept for which there is no agreement (Nguyen *et al*, 2004; Prabhakar, 2005), due to the high context-dependency and uniqueness of projects (Young, 2003).

In terms of critical success factors, the Iron triangle (Chua et al, 1999) is the preferred measurement for project success, however the frequency for the Safety category is not low. This suggests that the set of classical critical success factors, when applied to the Construction Industry, need to be adapted to the reality of projects.

CHAPTER 7: CONCLUSIONS, LIMITATIONS, CONTRIBUTIONS AND FUTURE RESEARCH

This final chapter of this thesis is presented in four sections. The first section describes the conclusions of this research, presenting them according to the objectives initially set (Subsection 1.2.3). The second section introduces the limitations of this research; the third section outlines this research's contributions to knowledge. Finally, the last section proposes ideas for future research to be developed as spin-offs of this research.

7.1. Conclusion

This section presents the conclusions for this research against the objectives. This research has adopted the construction manager's point of view in order to develop an Empirical Model which explains the influence construction managers have in construction project success, and it is in that light that the following objectives have been accomplished:

- Objective 1: 'Identify the set of construction manager's enablers that are relevant to the success of a construction project'.
  Construction managers participating in this research have identified twenty categories, which gather skills, characteristics and competences, as being relevant for the delivery of a successful outcome in a construction project.
  Categories have been classified according to the frequency with which they have been identified by participants in this research. Within the set twenty categories, the categories that are most relevant to construction managers are: Communication and Technical Skill, which were identified by all participants in this study. These two categories are followed by Experience, Ability to Pull Back, Leadership and People Management. These categories have been described and discussed in Chapter 6, Development of an Empirical Model.
- Objective 2: 'Determine the overall influence construction management has on the successful outcome of a project, using an Empirical Model'. The overall influence of construction management on construction project success is incorporated onto the Empirical Model, which includes all relevant Construction Manager Enablers, and the relations with other elements of the Environment

and categories from the Critical Success Factors and the Construction Phase Success.

- Objective 3: 'Propose an Empirical Model which illustrates the relations and interactions between the construction manager's enablers and the successful outcome of the construction phase of a project.'

  This Empirical Model has adopted a holistic approach in order to identify all relevant aspects of the role of the construction manager within the context of the construction project. The Empirical Model has been developed starting from a Systems Conceptual Framework (Chapter 4), then by data obtained directly from construction managers through in-depth interviews utilising grounded analysis (Chapter 5). The categories and relations between those categories have been described and discussed in Chapter 6 (Development of an Empirical Model). The Empirical Model is presented in Subsection 6.5.2, Representation of the Empirical Model.

This research has adopted a qualitative approach to explore two aspects of construction project success. Firstly, the impact construction managers have on the successful outcome of the construction project; secondly, the construction managers' success criteria. In order to achieve this, 10 in-depth interviews were undertaken by construction managers, and an Empirical Model was developed.

The development of the Empirical Model explains the interactions between the different elements (or categories) as identified by the participants of this research. This Empirical Model has been developed in two stages.

Firstly, a Systems Conceptual Framework was developed by utilising recommendations from Creswell (1998), guidelines from Miles and Huberman (1994), and General Systems Theory (Bertalanffy, 1971). This Framework allows, during the analysis of the interviews, the identification and representation of all categories and relations within the project as well as with its environment, providing structure to the analysis. The Systems Conceptual Framework is, in itself, an output of this research, which can be used in the future for the purpose of analysing construction project success from the point of view of the construction manager or the contractor.

Secondly, data is derived by coding and an understanding of the views of each construction manager interviewed is acquired. Building upon the Systems Conceptual Framework initially developed, the categories populate this framework, and a holistic

view of the influence of construction managers on project success is obtained. This Empirical Model, based on the interconnectivity between categories, is the second and major output of this research.

In relation to the success of the construction project, the results of this research suggest that critical success factors are prioritised differently for each construction project, according to the client's interests; it is unusual for them to be equally important in the measurement of the outcome of the construction phase of the project. Depending on the client's expectations and the construction firm's strategy, the construction manager will prioritise one critical factor out of the three classic criteria: cost, quality and time, above the others. Thus, critical success factors are not equally important in every project. And there is (often) one factor that drives the project. The construction manager has to be able to identify which one it is, and lead the project towards that goal. At the same time, depending on which target is the one which has the priority for the project, some construction managers will be more suitable than others for taking the responsibility of the project.

The relations represented in the Empirical Model show the overall interconnectivity between construction managers' *enablers* and other relevant factors of the construction phase and the environment. The holistic view utilised in this research has identified the overall interconnectivity for the first time. This allows to identify key desirable traits in construction managers in order to achieve successful outcomes, as well as helping construction managers to focus on the relevant aspects which will actually impact on the successful delivery of a construction project.

Since the criteria utilised to determine the success of the project have different impacts on the outcome of the construction project, success and failure are, in the views of construction managers, not the only two possible outcomes of the construction project. Most construction projects' outcomes are neither a success nor a failure, in terms of the critical success criteria defined for that project. They are, from the construction managers' viewpoint, in between success and failure.

Although limitations have been identified, this research has important implications for construction management.

7.2. Limitations

The limitations of this research have been identified by the researcher as being related to three main areas, which are presented as follows.

Firstly, the Empirical Model developed and discussed in Chapter 6 is, in itself, a representation of the understanding this research has provided in relation to construction managers, and how they influence construction success. This research has acknowledged contribution from the researcher, and the participants, as an active part in the creation of knowledge (Subsection 3.1.5). The process of the whole research and the outcomes are a result of acknowledging their contributions. The Empirical Model identifies categories through the coding process; this is where the researcher identifies common traits which relate opinions raised between construction managers. The identification of categories is done by the researcher's individual thinking process. During the development of the Systems Conceptual Framework in Chapter 4, the Model which explains the influence construction managers have on the success of the project is a 'holon', hence, a representation of reality. Therefore, the development of the Systems Conceptual Framework and the Empirical Model is bound to the thought process of the researcher throughout this study.

Secondly, despite the Empirical Model being considered a generic model, and a rigorous scientific research model being applied, the findings of this research are subjected to the particular views of the construction managers who have participated in this study. Each participant undertook one in-depth interview, in this sense, the interviews may have been influenced by particular situations or problems the construction manager was facing at the time the interview took place. This is a limitation as much as it is an advantage; the views presented by the construction managers may mean that they would be more inclined to identifying and emphasising some specific issues (rather than providing a 'neutral' point of view) due to the fact that, at the time, these factors were relevant to the success of the construction project he was involved in. Finally, the Empirical Model provides a holistic view, which integrates the different categories and all relations identified by the participants. The scope of the project was defined broadly in order to identify as many categories as possible. As a consequence, the Empirical Model is, in itself, generic.

7.3. Contributions

This section outlines the four main contributions to knowledge developed by this research. The first contribution to knowledge is the development of an Empirical Model based on an inductive-deductive approach. This model allows for the identification of the overall influence that construction managers have on the success of the construction project, by showing the interconnectivity between categories identified into a holistic model.

The second contribution is the identification of the specific set of construction manager's skills, characteristics and competences which have influence upon the successful delivery of a construction project.

The third contribution is the construction managers' concept of success, which has been derived from the understanding provided by the Empirical Model. This contribution involves the identification and prioritisation of classical critical success factors.

The fourth contribution developed from this research is the Systems Conceptual Framework, this has been developed as a qualitative analysis tool for the analysis of in-depth interviews undertaken in this study.

7.3.1. Interconnectivity of the Empirical Model

The Empirical Model contributes to knowledge by providing a holistic approach in order to understand how construction managers influence the success of construction projects under their direction. This holistic approach is developed under a 'soft paradigm' which is more suitable to the reality of construction management than the hard paradigm (Pollack, 2007). The set of relations between categories represents the overall interconnectivity which allows the Empirical Model to be generated.

7.3.2. Identification of Construction Managers' Characteristics which Influence the Success of the Construction Project

This research has identified a set of twenty Construction Manager Enablers of construction project success. These have been identified during the analysis of the data obtained from the construction managers, by the use of a inductive/deductive

approach. The complete set of Construction Manager Enablers are: Ability to Pull Back, Approachability, Communication, Co-ordination, Decisiveness, Enthusiasm, Experience, Good Listener, Honesty, Image, Leadership, Management Style, Moral Responsibility, Organisation, People Management, Philosophy Work, Problem Solving Skills, Reflective, Satisfaction, and Technical Skill.

7.3.3. Construction Success under a construction managers' point of view

The views of the construction manager suggest that they work with two concepts of success. The first is an objective target; the second is a personal, therefore subjective, concept of success, which is defined by personal standards and values. It has also been identified that within the overall concept of success, not all critical success factors are equally relevant towards meeting the success of the project. Therefore the priorities of the client, the long term goals of the construction company, and the restrictions of the project itself, can all influence upon how those targets are prioritised within the construction project. This last aspect of the relative weight of critical success factors within the outcome of a project has not been identified by the literature.

Identifying the concept of success which construction managers have contribute to achieving an overall understanding of construction project success; which in turn helps to improve the overall performance of the Construction Industry.

7.3.4. Systems Conceptual Framework

The development of the Systems Conceptual Framework is a contribution to future research in two ways. Firstly, this framework can be used for further studies in construction success and the influence construction managers have on that success. It can also be used (by making the relevant adjustments) to see how different members of the management team impact on the success of the project. Secondly, in terms of methods, the steps followed for the development of an appropriate framework can be adopted in order to develop other frameworks for qualitative research; making use of General Systems Theory and Soft Systems for use in further research. The fields in which this method can be used for the development of System Conceptual Framework are beyond the Built Environment discipline. They can cover, for example, management related problems in other industries.

The use of the Systems Conceptual Framework can lead to companies studying the characteristics of their managers (and CPD) or training strategies in order to provide construction managers with the skills they require. Especially when identifying the skills related to managing people; these skills have been identified by construction managers to be skills which they learn in time, rather than within academia.

7.4. Future research

The researcher has identified, throughout the development of this research, six main research ideas which derive from the results of this research. These are described, presented and justified in this section.

Firstly, and following recommendations from Koskela (2000), on the basis of the understanding created through the development of the Empirical Model, new tools for analysing, designing and controlling should be built. Also, by incorporating the recommendations from Miles and Huberman (1994), the development of tools to analyse, design and control should consider a quantitative approach, which complements the findings of this research. Using a quantitative approach to develop these tools which have derived from the Empirical Model will deepen the understanding of the different aspects within construction project success, and also consider how construction managers have an influence upon that success.

Secondly, this research has identified two concepts of success found within the construction managers' view; one concept is related to personal views and of a qualitative nature, and the other concept can be measured objectively. Research is required in order to explore this dichotomy further. There are similarities between the view of success held by construction managers and Popper's Worlds 1, 2 and 3 (Popper, 1972b). This model of reality proposed by Popper identifies a gap between the individual's perception or personal views (located in World 2), and the objective knowledge (World 3), which is shared and universally accepted.

Thirdly, based upon practical examples of practice derived from the interviews with construction managers, a set of recommendations should be gathered in order to create a Best Practice Handbook for construction managers in Chile. This could provide useful ideas for Chilean construction managers in order to overcome obstacles, and to gain knowledge of elements which are common across all projects, and

construction sites. The creation of this Handbook would use the interview transcripts in this research during an initial phase, and would also draw upon the literature and data (primarily qualitative) in order to generate a thorough set of recommendations in practice. For this set of recommendations to be applicable, the cross-cultural issues will have to be identified, and analysed, and with suitable measures for overcoming the differences being proposed. The creation of this Handbook would be tailored to the Chilean reality, as it is where the author of this thesis possesses knowledge enough to adapt these recommendations to the Chilean Culture.

Fourthly, an aspect which has been left out the focus of this research is the client. Currently, the Construction Industry is directing its efforts, and working towards, creating client satisfaction. Participants in this study have identified client's expectations as a difficult aspect to understand, and therefore had difficulty transferring them into clear goals. In order to deliver client satisfaction, the Construction Industry needs to be able to identify exactly what the expectations of the client are. This would enable these expectations to be transferred into objectives; this process would create the objectives the construction managers can then work towards. Another different aspect related to the client, which some construction managers who have participated in this research expressed, is the view that clients who are involved in the project (in the decision making), allow the project to run smoother. Despite the involvement of the client not being essential for success, it is considered to be helpful towards identifying which targets, when met, will provide client satisfaction. Future research is required in order to determine how different levels of involvement from the client impact on the performance, and the outcome of construction projects. These two aspects, client satisfaction and client involvement, will increase the possibility of delivering success. These aspects also help the client to understand the impact they might have upon the outcome of their own project, and through that, improve the results of their overall business.

The fifth aspect identified in this research notes that a similar inductive-deductive approach could be repeated within other industries in order to determine which particular skills, characteristics and competences of construction managers are relevant to delivering successful construction projects. Due to the context-dependency of projects, application of the methodology from this research within other industries would not be straightforward. This research has adopted a methodology which is relevant to the advancements of the literature, and the particularities of the

Construction Industry. An appropriate methodology would have to be devised in order to adapt to the specific circumstances of another industry. However, it can be suggested at this stage that a inductive-deductive approach could be a viable method to follow.

Particular attention should be given to the Revised Grounded Theory Method proposed by Partington (2000), which is appropriate to utilise when studying organisations, and is better suited to provide useful results for both Academia and Industry (Gibbons *et al*, 1994).

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APPENDICES

Appendix A: Projects per Construction Manager

The following table presents the number of project in which each construction manager has participated. Participants in this study were requested to provide information on their background experience, however not all of them did. Construction managers who have not provided information on their experience are here supposed to have completed at least two projects, since that is the requirement for construction managers to participate in this study.

In total, construction managers participating in this study have, at least, been involved in 132 construction projects of different types.

Participant	Background/Experience Information	Number of projects per participants
UK-1	CV	30
UK-2	no	At least 2
UK-3	no	At least 2
UK-4	CV	32
UK-5	no	At least 2
UK-6	no	At least 2
UK-7	no	At least 2
CH-1	CV	15
CH-2	CV	21
CH-3	CV	24

Appendix B: Email to Sent to Researchers for Literature Review

From: Veronica Latorre
Sent: 30 November 2006 16:09
To: 'walid@athabascau.ca'
Subject: A new framework for determining critical success/failure factors in projects

Dear **Dr. Belassi**,

I am a PhD student at the University of Plymouth, in the UK.

My research project studies project success factors and project management. As part of my literature review I have studied your paper: "**A new framework for determining critical success/failure factors in projects**", published by **International Journal of Project management** in **1996**; and would be interested in discussing some ideas that you have raised in your interesting paper.

At this stage I am defining the different success factors that lead to project success. In the general literature in this area there is a wide range of terms, sometimes not well defined, used as success factors and I am concerned that this might lead into a semantic confusion, impacting on the research results.

To help me understand your paper more clearly I would like to ask you for some help. I can then gain maximum benefit from your contribution to research in our subject area. What I would require is the definition or explanation for each of the factors that you identified and considered in your study. I am also asking for these same definitions to all other authors having papers in this area. By doing this I am trying to achieve greater clarity and understanding of terms before making any linkage of ideas between papers.

I would be very grateful for your help and trust that you will be able to assist my research.

Best regards,

Veronica Latorre
PhD Student
School of engineering
Faculty of Technology
University of Plymouth
veronica.latorre@plymouth.ac.uk
mlatorrb@uc.cl

Appendix C: Letter to Construction Managers

9th March 2007

Dear Mr. [Surname],

I am a PhD student at the School of Engineering University of Plymouth and I am researching into ideas about Project Management and Project Success. Currently I am interviewing project managers in order to obtain their views in this area and would like to invite you to participate in this study.

My research, so far, has produced a 'state of the art' review of this topic which I would like to test by personal interviews with experienced Project Managers. The interview will last no more than one hour. Before the interview you will receive by mail/e-mail a brief description of the research for background information. The interview has open questions (i.e. there are no restraints for the answers, all of them are equally valid and will be taken into account) in which you will be expected to give your opinion about Project Management and Project Success.

If you decide to participate in this study some background information would be required. All information you provide will be sanitised and treated with all confidence, your personal information will not be disclosed at any time.

I will phone on the week starting the 19th March 2007 to see if you are able to participate in this study.

Your participation would be much appreciated

Kind Regards,

Veronica Latorre

Appendix D: Ethical Principles for Research Involving Human Participants

UNIVERSITY OF PLYMOUTH
ETHICAL PRINCIPLES
FOR RESEARCH
INVOLVING HUMAN PARTICIPANTS

1. Informed Consent

The researcher should, where possible, inform potential participants in advance of any features of the research that might reasonably be expected to influence their willingness to take part in the study.

1.1. Where the research topic is sensitive, the ethical protocol should include verbatim instructions for the informed consent procedure and consent should be obtained in writing.

1.2. Where children are concerned, informed consent may be obtained from parents or teachers acting in *loco parentis*, or from the children themselves if they are of sufficient understanding. However, where the topic of research is sensitive, written informed consent should be obtained from individual parents.

2. Openness and Honesty

So far as possible, researchers should be open and honest about the research, its purpose and application.

Some types of research appear to require deception in order to achieve their scientific purpose. Deception will be approved in experimental procedures only if the following conditions are met:

a. deception is completely unavoidable if the purpose of the research is to be achieved,

b. the research objective has strong scientific merit,

c. any potential harm arising from the proposed deception can be effectively neutralised or reversed by the proposed debriefing procedures (see section 5).

Failing to inform participants of the specific purpose of the study at the outset is not normally considered to be deception, provided that adequate informed consent and debriefing procedures are proposed.

Covert observation should be resorted to only where it is impossible to use other methods to obtain essential data. Ideally, where informed consent has not been obtained prior to the research it should be obtained *post hoc*.

3. Right to Withdraw

Where possible potential participants should be informed at the outset of the study that they have the right to withdraw at any time without penalty.

In the case of children, those acting in *loco parentis* or the children themselves if of sufficient understanding, shall be informed of the right to withdraw from participation in the study.

4. Protection from Harm

Researchers must endeavour to protect participants from physical and psychological harm at all times during the investigation.

Note that where stressful or hazardous procedures are concerned, obtaining informed consent whilst essential, does not absolve the researcher from responsibility for protecting the participant. In such cases, the ethical protocol must specify the means by which the participant will be protected, *e.g.* by the availability of qualified medical assistance.

Where physical or mental harm nevertheless does result from research procedure, investigators are obliged to take action to remedy the problems created.

5. Debriefing

Researchers should, where possible, provide an account of the purpose of the study as well as its procedures. If this is not possible at the outset, then ideally it should be provided on completion of the study.

6. Confidentiality

Except with the consent of the participant, researchers are required to ensure confidentiality of the participant's identity and data throughout the conduct and reporting of the research.

Ethical protocols may need to specify procedures for how this will be achieved. For example, transcriptions of the interviews may be encoded by the secretary so that no written record of the participant's name and data exist side by side. Where records are held on computer, the Data Protection Act also applies.

7. Ethical Principles of Professional Bodies

This set of principles is generic and not exhaustive of considerations which apply in all disciplines. Where relevant professional bodies have published their own guidelines and principles, these must be followed and the current principles interpreted and extended as necessary in this context.

Appendix E.1: Participant UK-1 Interview Transcript

VL: Thank you. Could you provide me with a contact number, for me to send you the scripts later and the results? It could be in a few months from now.
UK-1: Yes certainly *(provides a card)*. If you mark it for my attention (FAO) I will contact you with the regional address.

VL: If we wanted to determine whether a project has been successful or not, what are the things you think one shouldn't forget to look at?
UK-1: I believe that there are three basic parameters. The first parameter is that you need to deliver a project that meets the employer's needs, the quality requirements of the overall product. The second parameter is that in terms of business we want to do that successfully whilst making a profit; and the third is that we want to do that on time. And that is a direct link –normally- into the employer's financial planning and the future running demands. So it's a time-quality-cost target.

VL: Do you see the client's interests or delivering what the client needs only as a quality issue?
UK-1: No, no. It's a mix of all three. So in terms of employer's needs there will certainly be a desire in terms of quality of the product that they employers are all going to need that project delivered in a certain time frame to meet with the demands of its own planning. And it is also going to need to be delivered within the budgetary needs; also to meet this commercial planning of future demand.

VL: So for you are basically those three.
UK-1: Yes

VL: And they, of course, relate to each other.
UK-1: They do.

VL: If you had to define a measurement for each of these factors, or define the standard to which this standard has been met, or the goal, if you like. How would you define it? Would you say that it was a budget...
UK-1: I think the way it is when the project is defined is that when the project moves through a concept development, the parameters and the priorities are set in quite clear terms; so you will gain an insight into whether an employer is very focused on a particular delivery date, benefiting his specialist business that comes from having that product on line at a particular time. Now for example, in retail you will tend to find that projects are targeted just prior to the major annual holidays, so in fact if you are delivering some sort of shopping project, you need to be in the position where you can take the benefits of the Christmas shopping period, and thereby deliver it in October.
The project we are on at the moment is an educational project that's geared to deliver service to students during term time, so the target of that particular client would normally be to deliver the project at the end of the summer period, in August or September. So each individual employer will have timing parameters that may or may not become a priority, but that would be defined at the tender stage. It may be that the employers are making a decision to expand and that decision is at a particular point of their evolution of their business, and it may be that the sole factor that they want to

consider as the primary consideration is the control of cost and budgetary targeting on an individual project. Now obviously that relates to a cost plan that is organised around the specialist business capital investment. So that can become a very distinct parameter which is set out at the beginning of the project.
The third issue that can have a big influence is really is corporate image, it maybe that the name of the company and the character of the company is the priority issue to set out in the product. So people become very very enthusiastic to promote a brand and a particular standard of finish and fitting within a particular structure. It can be certain very big commercial organisation who have a very particular brand where the identity and the character the is a well guarded and protected characteristic, so meeting that brand finish and quality becomes the priority issue. So all of those issues will always exist, but it is unusual that all three of them will be weighted to the same extent at the commencement of the project, so that's really where the targets are set. The way it is measured, obviously in terms of quality when you've got a branding issue is usually a very well defined client specification of what they want the building and the fit out, and the appearance and presentation of the building to be. In terms of financial targets, there will always be a cost plan, which is set out at the beginning of the project and it will determine not only the overall cost of the project, but how that costs evolve in the duration of the works progressing. If you can maintain production in line with that particular target, it's something that is measured usually on a monthly basis, to give an overall summary which gives a very distinct measure of success or failure. And that's similar to the timescales on a project, which are set out by programme and again gives an opportunity to make a measurement of production as the work goes along. And the overall programme gives a measure of the ultimate success of the overall project. So there are items that are reviewed in quite defined detail at the beginning of the project and they set out the objectives of the construction contract.

VL: Let's talk about the project managers. Have you found yourself in the situation where you have had to choose the appropriate manager for the construction phase of a project?
UK-1: Definitely, the demands of each contract are almost unique in every site. And effectively, you are building a factory to produce a product on site, it's a very unusual industry. As a result, once you've identified what the specific priority or objective is, there are individuals that are more attuned to producing the results you want, depending on what site you are actually working on. So in terms of a time target there is no doubt that a project manager who is very site-orientated, hands-on, practically minded, a driving force to the work force on site is a distinct positive enhanced characteristic that you want to put in that particular project. Where you've got for example, a massive focus on budgetary control, you certainly need a manager who has a focus on the commerciality of the project, and maybe to a degree will 'take the foot off the gas' as far as time is concerned, in favour of gaining the best financial result that can be obtained, and that can come out from activities such as value engineering, where each individual section of the design is reviewed to make sure that we've got the most economic approach to get the employer's quality parameters satisfied. That process takes an amount of thinking time, so having that ability to pull back from crashing forward on the site operations, to take a broader view on the commerciality is needed.
In terms of quality, quality is an item that is built in strata, really, between a number of trades. But there is no doubt that having built the banks of strata of structural steelwork, block work, getting all the materials right, the final panache of achieving a very high standard in terms of the final finishes, the decoration and the carpentry, the fixing of floor finishes, etc. is an acquired skill. And it's about leadership of trades at a very sort

of grass root level and again that's a skill that managers I believe acquire over time. It's about communication with people who are physically fixing on site. So that skill in terms of communication and encouragement is another distinct characteristic that you would look to place at particular aspects of the work.

VL: So in a way, those three factors that were mentioned were relevant to the success of the project have a reflection on what you ask for when you chose that project manager, and the way the weigh those characteristics...
UK-1: Definitely, no doubt at all.

VL: If we had to make a list, of the characteristics a project manager must have (any project manager, regardless of the main focus or the main target of the project) in order to be good project manager. Just to be good project managers, if could try to define that concept, what things do you think should be taken into account?
UK-1: A project manager must be able to communicate well and he must be able to communicate well at a number of levels. It has to be financially aware and so the physical operations that go on on site must be balanced with a financial awareness of how much those operations cost. A good project manager has got to have the ability to pull back, it's very easy to get lost in the detail of individual projects, so it's important to try and keep an overview of all the aspects of the work that's going on. So if you like, I believe it has got to be a Jack of all trades: he is not an estimator, but he needs to know about how estimates are put together, he is not a quantity surveyor but he needs to know the basic framework about how quantity surveying works. He is not a planner, but he certainly needs to be familiar with how contracts programmes are put together, he may not be an engineer, but he's got to be familiar with how works are actually set out in advance and then progress into individual trades, in the envelope and finishes. He is not going to be a trader, but he's got to know the basic nuts and bolts of what makes all the trades operate, he's not got to be arrogant, he's got to be able to take advice and to listen to his team and the workforce that's on site. It is not an easy thing to achieve.

VL: If you had to define a good project manager in a short paragraph, in your own words, how would you do it?
UK-1: A good project manager is a skilled coordinator who understands his own objective.

VL: Talking about a good project manager, can a good project manager deliver a project that is a failure?
UK-1: A good project manager can turn a project that is on the road to failure around. Project managers cannot deal with history, they deal with today and what is in front. They will always try and succeed, I don't believe any manager has ever addressed a work with an objective of failure. So even faced with the Titanic, you would still try and pull the rabbit from the hat. Sometimes it possible to do it, sometimes is so far down the road, that you can create damage control, you can stop the damage getting worse, but you can't retrieve the damage that's already been done. So a good project manager is worth his weight in gold.

VL: In which ways do you think project management impacts the successful outcome of a project?
UK-1: To be honest, I think it believe it happens by magic! (laughs) I don't know where the special link is, but I think it's certainly got something to do with communication. It's got something to do with being decisive. It's got something to do with being honest.

And taking those characteristics into account, it's got something to do with looking at situations realistically and finding the best path forward. It's got something to do with reality, and not being afraid to face it. It's adopting an approach to life that says 'A fact is a fact', not argue with it. The difficulty is that people might try and hide from facts; people might try and deny that the fact exists, but they are real and we have to deal with them. That is our job.

VL: The fact is most of the time a problem?
UK-1: It can be a problem. There's no doubt that is very easy to focus on problems a lot of the time, but it's unusual to be in a situation where there aren't factors that show a light at the end of the tunnel. I never hit a project where there is no hope. There are certain aspects of the work which have been difficult to try and correct. And even on a successful project, it's very difficult to create total success in the three parameters of time, quality and cost. You can normally get two of them, getting all three is fairly well impossible, it's an ideal dream. You can get a fair way down the road, but there is always room for improvement, and I think part of a good manager's essential characteristic is to recognise you are never going to get total success. You need to get as close as you can, though.

VL: You mentioned that the link that exists between project management and a successful project had to do with being decisive. Could you tell me a bit more about that please?
UK-1: I think leadership is a skill that needs to develop over time. The best managers that I've come across and certainly the managers who taught me, have to grow into it. Decisiveness is having a good degree of self confidence, a good degree of professional knowledge, and a good degree of luck. The reason for that is that we often make decisions which are not based on a 100% of information, there's an ounce of a guess in most decisions that most project managers make. So you need to have an element of experience and an element of training, and that will arm you well for making the guess. But the guess is still a guess, and the guess is defended by 'literally' an on site experience and a feel for what is going on. Leadership the ability to chose your time and decide that you are going to set a distinct route of action, and to commit to it, wholeheartedly. That comes from a personal judgement, and once you've made that judgement you have to encourage your team and your work force to come with you. In my experience the way to do that is to unify, to share a united front in terms of that decision being carried forward, and that's why integrity is important once you've committed to it... ...it is a personal decision and you do it in the interest of your company, your employer... you do it in good faith, but you never blame others after that, it's your decision. If it goes wrong, you have got to be big enough to stand there and say 'It went wrong, and now we know it's gone wrong, we're going to do this' and change target. I think leadership it's about just having confidence in what you are trying to do, but equally the ability to recognise and be honest when things are not on the right track and then reset what the direction is.

VL: Could you give an example of a decision in which part of it is a guess?
UK-1: From today? For example, we have at the moment a specification on a particular type of skirting which is in one of the buildings. The skirting that is involved is not high quality high finish durable material. And for very similar cost we can get a durable material in there, that's easier to maintain in the life of the building, so from the employer's point of view we believe it's the better option to go for, however we are contracted to put in the lower grade material. So at the moment I'm making the decision to change direction. Following some initial conversations with the employer I

believe that's the right direction, but in terms of the formality of a contract in structure, that's not in place at the moment. So I am acting outside the strict definition of the contract requirements. I believe that's in their interest – the principal contractor and the employer's interest. So I am instructing on site that that is the direction we are going in there. The reason for that is that if I wait there could be an impact on the programme on the overall delivery of the product. Now I don't want to penalise the employer in terms of looking for bureaucracy to obstruct his product coming through, so in the interest of the contract, the employer, and ourselves, I've taken the decision, and the bureaucracy will catch up with me.

VL: When you talked about being honest, when you were talking honesty in terms of saying 'I've done wrong' or 'the decision I took was wrong' or what kind of honesty were you talking about?

UK-1: Its being honest with yourself and being honest with others. There's probably two aspects to that, really: the first is that on a daily basis you get very close to a project and its characteristics and so close at times that in fact you will see what you want to see, and that's part of this question of stepping back. Occasionally you have to step back just to make sure the information you perceive as being correct is actually correct, and that point in time, that point of query will come from a number of directions, it may be that just a passing comment by a tradesman or a client will make you stand back and ask of an issue 'Is that right? Why have we just said that? Why has someone else said that?' Let's revisit it to just make sure that what is being said is, in actual fact, a fact and not something we want to be a fact. Sometimes when you look at those issues you will find that is not quite the way that you perceived it, and that's an element of honesty: it's not what you want to see, is what is the fact.

The other aspect is that people want to be a success; everyone wants to be a success, so in terms of the monthly reporting, people will naturally take an optimistic view of what the current position is. Optimism is not a bad thing, but it can mislead you, so in terms of looking where a contract seats financially or in terms of quality assurance non-conformance reports, or in terms of safety audits reviews, or in terms of programme position, you need to look at it with an eye on the cold light of day. You'll notice on the desk at the moment, this is my contract programme. There is no secret in there, and you will see that there are operations that are ahead of programme and a lot of operations that are behind programme. Now I think it's worthwhile for everyone to keep that kind of thing in focus all the time, we are all human and we can't look forward in time and define and forecast things with the ability of an Old Testament prophet. This is the real world, things go wrong. Our ability as managers should be measured by understanding that basic concepts, and having the ability not to fall apart when it occurs, but to plan forward from each day in the event. So that's what I mean about honesty, that's what I mean about integrity.

Another aspect is questions and answers. One thing a project manager is never short of is people to report to. I'm a great believer in information being correct, and if at that moment in time we don't know that the information is correct, we shouldn't issue information. If we know that we are uncertain of a position, we should say that. We may need more time to respond on a factual report, but it's not a bad thing to say 'I don't know, I'll get back to you', and I think people try to fire monitoring reports on a hugely detailed construction, a big production exercise, very fast... and that's a part of the problems of the modern age: emails allow no response time at all, and that is just not acceptable to a good project manager. A good project manager will choose the time to make the statement of what the direction is or what the current position is. You can't allow outside influences to dictate what the pace of movement is, that's the project manager's job. He sets the direction and the pace.

VL: That's the way you work?
UK-1: Yes. There's a whole range of people who will scream for information from this office and it will range from the main financiers on the project. This project is run by a principal contractor, the principal contractor appoints a project manager. He has ownership of that project, his job is to deliver the project, and he should be given the space to do it. So it's quite an old fashioned idea really, it's like a ship in its own right: the captain runs the ship. When the ship pulls in, it is somebody else's job. When we are at sea we are under captain's orders.

VL: Which things should a project manager be constantly looking at? What are the big challenges of a project manager?
UK-1: That is a very broad question. In terms of technical skill, there is a lot to think of. An average project will have in the order of about 36 major sub-contracts, so having a degree of technical awareness of each one of those trades is quite demanding. Having an awareness of your own company structure and its departments is in itself quite an extensive amount of knowledge; and again something in the order of about 8 to 10 major principal contractor departments contribute to putting a project together. That will include estimating, tender planning, safety assessments and audits, temporary works control, planning, quality surveying, material procurement, a lot of various departments. Once it arrives on site it will certainly involve safety administration and auditing, quality administration and auditing, design, procurement and control, site quantity surveying and value engineering, site engineering, site trade supervision, so there are lots of aspects of the work where you need at least a very good understanding of what each department's procedures are and how they relate to each other. In terms of people skills, you will need to develop and watch the whole basis of administration and communication and bureaucracy, so you would need skills in people presentation, meeting control and agendas, letter writing, minute taking, communication in terms of drawing and specifications. In terms of forward direction you will need skills in terms of short term targeting; that will include off-site fabrication and procurement, and the physical departments and interfaces between the different trades on site. Individual trades are very good at their own specific skill; the problems on projects tend to come as a in most things, I suppose, at interfaces. That's true in terms of the compartments; it's true in terms of the corporations and companies that interrelate as the job develops. So, just to summarise what that means, I mentioned an average of 36 major subcontractors on a project, there will be something in the order of 40,000 different components. There will be something in the order of half a dozen primary design consultants; there will always be a CDM co-ordinator (Construction and Design Management); the employer will be advised by their own quantity surveyor, and probably commercial manager. The employer will have an agent, and will have clerks of works on site. So the interface between companies and the familiarity, the ability get to a routine in running a project, and promoting communication is a skill that a project manager needs to be about. So there is a lot for project managers to take on board. If you wanted to be a project manager, you would need to come into a corporate body with a degree of technical skill that tends to come from an academic trade. We run training on site which is targeted to about 18 months or to 2 year period, to bring about a basic site supervisor; we then expect to develop a site supervisor to a project manager status over something like 2 to 5 years, depending on the size of the project...

VL: That is in your company?

UK-1: Yes. At the moment I am Senior Project Manager at this project, which valued just under £32m or thereabouts. It probably took me about 10 years to get the status to take this size projects on. The reason for that is from a commercial point of view. A large multimillion project will always be a substantial contributor to a company's turnover, even a multinational company will tend to work on a regional basis, so the international company will be a group of companies, so within that group even though a company may make a turnover of a billion pounds, on a regional basis a £30m would be a sizeable project, in terms of the regional budget. So it's quite a big responsibility to take on board. Actually I'm frightening myself here! Maybe I shouldn't do this job at all (laughs).

VL: You said that a Project Manager must have technical skills, were you referring just to having the appropriate degree of knowledge?

UK-1: Project managers tend to come from a lot of backgrounds, so in my experience each project manager brings their own original skill into the project management frame. My degree is in construction engineering, so I've always been site-based, so I enjoy being site based to this day. It has come from a background of physically setting out individual works, and seeing a variety of the operations from an engineering point of view on site. Is only as I moved into project management that I have been able to get the depth of knowledge of the other departments, finishing trades and so on and so forth. There are project managers who come, for example, from quantity surveying and they are very very strong in terms of detail contract awareness, commercial development, cost planning and cost measurement; where I would automatically look at my primary controls in terms of timing targets, a commercial project manager coming from quantity surveying or estimating would probably look at financial measures. In reality there is no difference, because although you take a priority measure of your own performance, you always check that measure with the other skill. So if you think you are on programme and in week 41 I am showing operations complete to week 41, I would step back to the costs and say 'well, if I am on time in terms of operations on site, the costings must be on target. Where are we on forecast cost?'. If there is a difference there, then that is a sign that automatically says 'there is something I'm not understanding'. And that's the point where you would say 'I'm not issuing this information, I just need to look at this in little bit more detail' where exactly am I at the minute.

Some project managers come from a complete trade background, they are very skilled at a particular, usually key trade operation. I have known project managers who have been concrete frame operatives, steel frame installers, and they bring particularly that sort of driving force and the nuts and bolts ability to communicate on site. So there is a variety, there's an origin skill that can come from all sorts of sources. But once that skill has arrived, and you are moving to this new environment in project management and supervision, that special skill will always be a strong guide but it's only a part of what you are looking at on the project.

VL: You said you had around 20 years of experience, during this 20 years probably a lot of things have changed in terms of what the project manager is expected to do or to deliver. Which have been the biggest changes?

UK-1: fundamentally, I think that the three target measures have always been cost, quality and time. I think the thing that has changed is the extent of procedural reporting that's needed. In some respects I think it's a good thing and in some respects I think it's a bad thing. And I'll give you an industry example of that: something that changes direction, and is still changing direction is the issue a very popular issue, is the safety consideration in construction. When my experience I began, safety regulations were

very prescriptive items, were very specific about individual minimum standards specified to be reached in all sorts of aspects of the work. My view at the time was that it was over-prescriptive and the reason for that was that although the regulations were very detailed, they were trying to foresee all occasions in all types of work, and it was just an impossibility to do. So as a result there was quite a distinct change in the 80s, early 90s, in which all prescriptive regulations disappeared and it was a more descriptive approach. What we should do is to assess in individual projects, which makes more sense. It puts more responsibility, particularly on the principal contractor, but as project managers should be big enough for that, we should take ownership of it. We should relish the ability of taking ownership and getting the bi-products that enable us to make the decisions, and set the directions. So I thought that was a very positive stand. The thing that was slightly unusual is that in terms of the industry the onus was very much placed on the principal contractor, and yet the principal contractor picks up an objective, it doesn't form the objective, the objective is given to him by the employer. So I always thought that that responsibility for that safety assessment about the way the project should be carried out, about how design should allow a safe construction on site, that has just been recognised, so we've got a new regulation coming through this month in fact, which is placing a similar approach to safety on a broader responsibility. So the employers are now taking some of the remit for a safe assessment of individual projects. So in terms of change, in the sense of bureaucracy and ownership, the onus is falling much more on a project specific measurement and assessment. That means that people need to have the ability to make those assessments, to have the professional ability to do them. And having made the assessment, then make the decisions on what the safe, most economical, best quality best finish is. So that's an item that pigeonholes individual item of consideration. Clearly safety has always been an important aspect; quality assurance has become a much more prominent aspect. To be honest I think quality has always been and always will be an objective. The bureaucracy provides traceability on how quality is being achieved. Management systems, that is interesting, every 10 years there a huge shift on what management concepts what the right way forward should be, but I think it is a fascinating field, there must be new steps forward to be made on how we train project managers and managers in general. So it would be interesting to see how your project develops.

Appendix E.2: Participant UK-2 Interview Transcript

VL: How many years of experience as a project manager do you have?
UK-2: 20 years, as a manager 10 years. I started off as a foreman and so on and so forth, and developed through the industry that way.

VL: How would you define a successful project considering only the construction phase?
UK-2: Obviously it's got to be successful financially; quality job, a job that –on a personal basis really- you can be proud of, as far as I'm concerned you've got a start date, you've got a finish date, as long as you achieve those dates; in a sense our entire industry is built on targets, and in achieving those targets you know you have a successful project. My interpretation of a successful project is handing in a project within the overall time and within the budget costs. That's for me a successful project.

VL: You just referred to a work you can be proud of, if I came to you in two years time, and I show you a project I have built, and I ask 'Should I be proud of it or not?' Which would be the things you would be looking at in order to assess?
UK-2: Is like everything, is like purchasing a car. When you purchase a car; most people purchase it of the looks, and the quality of the vehicle. Once you get into the vehicle and you start using it on a day-to-day basis, like the end user you may not like the seats, you may not like how it drives, you may not like –after a certain time- the colour. Is like everything, I mean a building is all about the end user, is all about that person that facilitates that building, who uses the facilities, the requirements and everything else. We all have our own particular likes and dislikes, I think the quality of a building goes on further than that, its design, execution, to the quality, to the end user; and if you can captivate that over a certain period of time and go back to the project and say 'how is the building being used? Do people enjoy the environment they work in?' That's for me a successful job.
I have done the medical schools by Derriford Hospital, and that was a fascinating building because it's all about space, and it's all about light, and it's all about just creating the inside out, so you felt like you was outside, you felt the environment around you and people loved it; it was a very nice building, but building it was nice, is was a very pleasurable building to build, and the quality was excellent, and the team (I worked for [x] at that point). It's about ensuring, from start to finish, that the end user goes in and goes 'WOW! I could work in this environment. It doesn't always happen like that but that is part of what you do. There is nothing better than walking someone around a building, and they come in at each stage of the development, and they don't really know much about the industry, but they can really see themselves working in it: 'Yeah, I could work in this environment, is a nice building, it's got nice facilities, easy access to town...' All the things that matter to people, that's for me a successful job.

VL: Do you consider that specific job, the one at Derriford Hospital, successful?
UK-2: Yes, very much so. Because of the fact that obviously I visited the site several times after the project is completed. And just listening to people that work in those offices, they just like the idea of the space, because it was basically a bridge over a valley, it was a building over a valley. You've got the woodlands... the cafeteria

overlooked the woodlands, and there was a stream that run through, it was idyllic in the sense that you were out inside, but you were actually outside, if you know what I mean; and people enjoy that.
There's a preconception of builders working in shacks, it's a misconception. We want to be working in a decent environment; we want to feel comfortable in the environment we are working in. It's very much like carpets on the floor, and things like that. That idea that we are doing is important as much as working in a proper office environment; because we move around so much is that creates... we've got a room downstairs that is for us to seat and have a coffee, and it's away from all the fuzz and the buzz, and it gives people the sense that 'OK, I work in a very busy environment, but there is no reason why I can't step away, have a cup of coffee and stay away from it'. It gives people a 'feelgood' factor, that's the word I am looking for... because the environment we particularly work in is very intense, it can be very demanding, intense, argumentative, aggressive at times, and sometimes you just need to pull away from that a little bit and just have a little space, and do something that is completely separated. And that's the same with any building that you construct...
We –as a project team- particularly on D&B, we have certain input on the design so there's a lot of experience here; the Senior Project Manager is an absolute gem, he is a very forward thinking person, I'm a forward thinking person. When we think of design we see that's it's not going to work because we are adding our experience to it, it enables the project to develop a little bit better; and all from mistakes from previous jobs you carried forward, you alleviate them, you know what to expect, you got the design team taking on board people's experiences, and then that's captivated in the job, so then every job you do gets that little bit better, if you know what I mean. Because you take out all the problems...
I broadened a bit, sorry about that, it's that I am passionate about, that's why I do it.

VL: You mentioned a 'feelgood' factor. How important do think it is that a project manager creates this 'feelgood' factor or that 'feelgood' environment?
UK-2: I think its fundamental, it's the most difficult...it takes a lot time, a lot of experience really to get to the point where you feel you get the balance right. It's difficult because people, everybody is individual: they got their own ways of things and everything else, and as a project manager, you've got to realise that people can be better at one thing and not at the other, and you've got to balance that team to get to a point where its beneficial for the project, and that's the important thing, it's the project, and the people involved in it are important. And to make that project work you need for them all to be going in the same direction. I think –don't get me wrong- at times it can be difficult, you get different personalities, different understandings of the industry, you get old heads, you get young heads, you get people that got different perceptions, different ideas, and you've got to really captivate that. The team we have got here in particular, we had to work very hard to find balance. But there's always room for improvement, or I'm always looking for room for improvement. There's times where I get things wrong, the Senior Project Manager gets things wrong –he'll be the first one to tell you-, but it's how you learn from that, and how you carry that forward and ensure that it doesn't occur again, or particular situations that arise that you can handle them a little bit different. I think at this moment, it's about putting your arm around people, people that like a kick at the backside, it's about getting that balance; I think I just about got there. I'm from a typical background of fast track jobs which are very very aggressively brought. I'm from a background in Birmingham, which is a very fast, quick, you've got a very short programme, a very tight budget, you've got all people just rushing to one place. I've been in the South West for nearly ten years, and people like the Senior Project Manager here is finally tuning all the experience I've got and making

more politically correct, if that's the correct word. That makes our industry a lot more cultured, in the sense of etiquette... is this preconception again of the industry having this –I use the expression- shaggy-arsed builder, that's now being enhanced quite dramatically. £30m jobs, £20m jobs, £10m jobs, £5m jobs, £2m pound jobs, you've got the same etiquette in them which is great, you've got people with professions that go in there and they approach the projects correctly. As far as I'm concerned, I've never worked on the premise of crisis management or anything like that. Its proper planning, and getting the job spot on... when you get that fine balance it's fascinating. I enjoy it immensely...

VL: You were just talking about etiquette; do you think that etiquette has improved the status, or the possibilities or just the role of the project manager?
UK-2: I use the word loosely, we have an academic status if you like, we've got people of professions such is architects, engineers, consultants, all this people. The project manager has developed quite rapidly on the last few years, a project manager today would be -10years ago or 15 years ago- a senior site manager, I think the particular role of the project manager has developed from quite bottom ranks. Don't get me wrong here, you do get project managers are still academic background, but you get project managers that have come through the ranks if you like, I mean I started as a general foreman. And I have developed my skills over a period of time to get me to the point where I am a project manager. Over the last 10 years that has grown quite dramatically. I think the etiquette aspects and the professionalism has (min 14:40) and I think its brilliant for the industry that has widen down to site managers and general foremen, I think that's developed quite rapidly over the last 10 years.

VL: Do think it's possible to outline the concept of a good project manager?
UK-2: Again, that's open to interpretation.

VL: From your own opinion
UK-2: My own opinion... The reality of the industry is quite brutal, I would say, in respect of your own success in your last job. A good project is one that can facilitate needs, ensure the project runs smoothly, financially viable, ensure that the work force, that the people that work in your ground come out feeling that they've actually achieved something. Actually come out with more belief in their own ability and so on and so forth.
It's financially driven, it can brutal, but I think with correct planning, correct understanding of the project, a good project manager will come out feeling that is a successful project as well as enhancing the training of the people that have actually worked within it, within the project stream. I think we will come out this particular project as a successful project, but there will be people working within the team as we have it now –we have a training regime at the moment- and they're will be people walking away from this job that advanced over the last 2 years, I think. If you look at that in 3, 4, 5 years time they will show up on my site a lot better than what they were 3 years ago. We've set our sites very high; we've got 5 people in this site that will develop within the industry. We get a great satisfaction that we've helped that, we've enhanced that, and I think that in itself is a success, as much as the project is.
I think a good project manager is about self-motivation, is about creating an environment that you comfortable in. Our Senior Project Manager is very much like that, I'm very much like that; don't get me wrong, we strive to be successful, I go home with a smile on my face –not every day, it's not always a bed of roses- but, I think this is a very enjoyable project, it is a very enjoyable project because we have 3 different types of structures, 3 different types of staff experience-wise, and I think if you put it all

down in one basket, its quite a mixture! It's facilitating different needs, and at the moment we are doing very well in adapting and evolving and making sure that people that walk away from this job have all feelled it, and they get different experiences, and different outlooks and different... its quite fascinating, we've just had a team meeting downstairs and it was very much about communication, and you get people that have never done that in their last jobs, like when they give you their ideas, and I feel great, because they are contributing something; when people start thinking that they can contribute things, you get the best out of people, and you can actually see where they've developed, where their weaknesses have gone, and once you get that balance you can start drawing on the good things, and then enhancing those things. So you can pinpoint that and say 'that guy is brilliant, he can't write a letter, but he is willing to learn'. Because letter wise, it is just knowing certain things, I can't stop him writing now! He's got into that because he enjoys it now, he feels comfortable with it. He doesn't feel judged. That's the other thing as well. There's nothing better than walking away saying 'I can contribute more, because people are looking at me and are not judging me anymore' so that's what it's about. It's not just about the project; it's about the people you work with. It's nice to know that they are developing through the project as much as the project is developing itself.

VL: Could you please define with your words what you mean by 'a project that runs smoothly'?
UK-2: That is right across the boards, I'll use an example such as the residential block in this project. The residential block is this section here (indicates a drawing). Success defined in that building is that we've got a system of work that's operating which is a sequence of work, what we call a sequence of work... and that basically balances itself out within a concept of structural building to complete, we've started first with the first, second and third, which is a sequence of work that is going through the building...

VL: floor by floor?
UK-2: floor by floor. So we've got this sequence of works going up this building. As far as our sequence of works is concerned, everybody that's involved in that (subcontractors, my management team, etc.) knows how it works, and everybody likes it; they turn up to the co-ordination meeting and straight away you've got people within the room are not going to waste the next half hour. That is a successful job. I'll give you an example about a non successful job: it's for argument's sake we've got water ingress into a building because it's incomplete, where on the first floor you've got first fixed items like electrical job, mechanical, you've got carpenters going in form the other side of the building, and you got water coming in, etc... straight away you've got a meeting then with a group of people that they want to do is go, they just want to leave the site, because nothing is cohesive, nothing is following on, nothing is giving them pleasure, and this is the other thing, this is a key thing: the subcontractors will have a smile on their face if they are making money and they've got consistent work: they know where they're going, they now what the direction is exactly, they know that the work is being monitored, they know that they can get into an area of work that's clean, that's neat and tidy; and when they finish their elements of work, they tidy up, they clean up for the next trade to come along. When you get that mentality and that momentum going it's so peaceful. Let me give you another example, a load of blocks going from one wall to another, if he comes along and there are lots of things in his way and he just can't get anything done, he's just going to moan, he'll knock on my door and say 'look, you owe me a day chief, I've lost a day'. If he comes in and he has all his block lied down, he's got everything marked... he's going to be lying blocks all day long. If I turn around and I say to his boss 'I want that other wall built', on the first

scenario he will go 'I'm not giving you anymore, you've cost me a day' but in the second scenario he knows he can make money, he knows he'll be going in there and it will be clean and out of the way, that is a successful project in his sequence. This related to the 'feelgood' factor: the foremen and the site managers are running their sections of work, they are happy because their work is minimum, all they do is checking, because they know the sequence is going on. Can you imagine a manager with 10 or 15 people banging on his door saying 'I can't do this, I can't do that, I can't get this'... he's thinking there 'What do I do with this?'
That's the difference between successful and unsuccessful, and as a project manager I've got to make that work, I've got to make that happen to enable everybody that is involved in this project; my director feels comfortable and happy with the way I run things to enable the project to run smoothly, financially better off, the 'feelgood' factor and everything else that goes along with that, and then future jobs with subcontractors are more than happy to price the works, and they will price that little bit lower, because they know they can get on with the works. So that's what you get, and that's a knock-on effect with this industry, is a very small industry in this region and people know who they can trust and who they can't trust. It's very difficult to get a reputation where you know the subbies are going to be comfortable coming out to a project and knowing that they can walk away from a successful project where they haven't lost weeks with correspondence about delays, delays, delays. I've got a subcontractor at the moment with me who's been with me just over 7 months and I've got one letter of him, and that was to confirm that he'd sent the methods statement. Don't get me wrong, it's not all bed of roses, we do have our hiccups, we do have our problems, but the majority of the time, I would say 95% of the time we keep that momentum going, we keep that smoothness; and I pride myself on the correspondence because the less it comes to me, the less I have to dish back out. That's the way I like it. Its' successful, as a project manager you need to be able to get to a stage where that is successful: right from the programme to the procurement, through design, right through to the subcontractors, to the co-ordination meetings; all of that is the way to go, the right way, because everybody is involved, everybody is having their input... and once you get that, like I say, you can walk away from jobs and say 'that's been a successful job'. Now I've got a new system, a system that is new to us full stop... there is a small percentage of things in that system that it wouldn't make any difference if I'd known, because we know we are not perfect, and next time I visit, those are the things I'll be looking for... and next time it'll make it a bit more successful than we've had the last time. Does that make sense?
VL: Absolutely! Thanks very much.

VL: If I asked for some advice regarding finding a project manager for a project that has not much available information, and you haven't got much time... could you provide me with some hints on how to choose that manager?
UK-2: Organisation, organised. Can programme, that is part of his good organisation. He's passionate about what he do... I mean we interview so many site managers, and you can tell within the first couple of minutes what they are about, some people will say 'I'm very animated and very passionate about the industry, that I've been involved since I am 15 years of age'. It's enthusiasm; and you can ascertain information from a very very short conversation. It's about organisation, it's about structure, it's about man management. I would give them a scenario, to be honest, I would give them a scenario and ask them how would you deal with...
In our industry is very very difficult because there is so many different ways in which people approach it, or attack it, if you like.

I had one in this morning, a subcontractor that argued with my sectional manager. He didn't brush off site, he came to see me, because I try to take an impartial view, because it's never only side, there's always two sides to every story. He was very animated, so it's just 'go away for 5 minutes, have a cup of coffee, sit down, just calm down' and we had a chat about it, and we got it sorted. In respect to the project manager, specific to organise and understand the programme, understand the procurement obviously understanding the industry. I'm always particularly interested in character, how they perceive things, how would you perceive a successful job, for instance. I'm all about man management really, that's my forte. The only reason I feel that I can say I am a success to a certain extent is that I deal with people very well, and that has not always been the case. I've developed that over a number of years, and people... you can normally tell a lot out of how they approach things, is no good having a sectional foreman or a project manager that is aggressive, that is all about the bully factor, because the industry has developed so much further than that, that it doesn't really warrant it anymore, there's means and ways of getting the best out of people without talking with that attitude. I'm a firm believer in attitude...
There's a lot of questions to ask, to be honest, but I would say it's all about how I see the character, how they come across, how they feel about the industry. You get a lot of people that are quite bitter and a bit twisty about what the industry has done to them, and it's difficult because what you make out of everything, it's what you get out of it. If you can't go out with a smile on your face, you really need to look for another job, in another industry, that's how I look at it. It's not a chore as far as I'm concerned, I enjoy it immensely, and I like to people that work with us feel the same. It's about being positive about everything, and trying to get...
I'm a problem solver as well. That's what I do for a living, it's going in and dissecting something that might potentially be a problem, it's how you deal with it, how do you approach it, it's not a blame culture, you don't adopt a blame culture: we tend to look at where it occurred, how it occurred, how to do it... the other thing is that the management team we've got here (foremen, site managers, etc.) they know that, so they know that they can come to you with a problem, because some people in this industry tend to take it to one side, and then it's too late to do anything, what we try and encourage is that if any problems occur, is bring them forward quite quickly, we can then deal with it and we can get over it. Like I say, it's knowing your industry, really... that's my opinion.

VL: You said that the project that you worked on at Derriford Hospital was very 'pleasant' job. If you had to put that into one or two sentences, why was it so nice for you to work on?
UK-2: The people that worked, I think. Actually worked away enhancement, personal enhancement. I look at every project that I do, I like to think that I come away a better person for it. That's my personal development; it's how I look at myself. Each project I do I get something out of it, as much as I put into it I come away with something that has improved the way I do things, how I go about things... with the Derriford project was the people, the organisation, the structure, it was the professionalism, a lot of things that 'homed' my skills, and that's why I feel that in every job you should come out with a satisfaction, the project has given you useful things. As much as you give it, it gives you something back. That could be anything from the type of building your constructing...
I was telling the lads... there's a lot of them that had never got involved in job of this magnitude; me and the Senior Project Manager have. I told them that at the end of this project their personal profile is going to be better, because they will come with so much. Some people say 'I'm not learning anything'. Bloody hell! They are learning a

tremendous amount... and when they actually go and sit there and talk about it, they go: 'blimey! It's right...'

VL: So what makes a project more rewarding for you personally is that your able to see that you've acquired certain skills, that make you a better project manager or a better person?

UK-2: It homes your particular skills. It's particular situations, that's the beauty about our industry: it throws up so many different problems in so many different scenarios, it's very difficult that you can't physically come away from it without feeling that you've learned something else. I think our industry itself its developed so much over the last 20 years that I personally think it's got better, and I've improved because of it. The majority of people involved in industry now are far more focused and professional –I'm not looking at the higher end of the spectrum, I'm looking at the lower end- that has come on leaps and bounds in the last 20 years, if you know what I mean.

VL: You were talking about what makes a good project manager, and you mentioned enthusiasm, being passionate about the job. How do these two characteristics make a difference when a project manager on site, why would you look at those traits.

UK-2: Because it says a lot about a person... a lot of passion –don't get me wrong, passion could be a hindrance as much as a help because you could try and run before you can walk, a lot have been guilty of that. But I think they are important things to have within the industry... and sense of humour, you need of sense of humour. But I think they are important because they tell you a lot about the person, about how they feel about it; it's what we do, it's not a mundane job, it's not a negative job, it's a job that really can throw a lot of problems; and if you have a mentality that you enjoy the challenge, the opportunity to dissect a problem or anything like that, that has a lot to do with your enthusiasm, your passion for the industry... having the ability to do that, I think that says a lot about a person. This industry could really really really batter you, and you need that enthusiasm and you need that passion to carry you forwards in times. But I think its fundamental, it's important. A lot of people in this industry love what they do on a day-to-day basis. I go away sometimes a bit fed up, but that's life. The majority of it it's about being positive about what you do, and that is passion, that's enthusiasm... and that to me is important, very important that anybody that does anything in this industry should have...

VL: Do you think that a successful project has necessarily an enthusiastic and passionate project manager?

UK-2: Yes (laughs). I do. I think because enthusiasm breeds a lot of things.
We were talking about forward thinking the other day, a lot of people are guilty (and I count myself in that) of 'can't see the wood for the trees', forward thinking is very important. That's forward thinking: really looking at the project, really looking at what goes along with it, really dragging in all the scenarios, all the problems. That is enthusiasm and passion: visually being able to build it and dissect it, look at it and call people in and say 'look, now you need to look out for this, you need to look out for that'. A good successful project manager has got that trade, has got that ability, has got that understanding of how you approach different projects.

VL: You also mentioned that is very important to have an impartial view of situations. How do you think that is important, would you mind explaining to me a bit more?

UK-2: Well, some people perceive things differently, don't they; you get different people from different backgrounds and different industries, and so on and so forth. It's captivating the views of all the people to enable you to develop for argument sake,

develop what is the system. I don't perceive that I would tell the foreman who works for Bell and Webster... and I wouldn't expect anyone in the team to do so; what we try to do is to get an understanding via his experience. Now if we offer a view that's different to his, could have a detrimental effect on the overall project. We've got to understand that there's a lot people with different views and getting to work –as a project manager- enables a project to develop and move forward. It's ensuring that we take everybody's knowledge and understanding, and encapsulate that. We learn from that, we learn from other people's perception about the construction. And you learn from that, and there's time where you say 'well, why don't you do this' and there's not a valid argument, and they'll say 'OK'. There's times when that will happen, that will occur; but people have to love their site, people have different views about how they perceive their industry, about how everything fits together, sometimes it takes ourselves as project managers to step forward a little bit: the interface between different trades for example, it's fundamental, there's a great bound between the two elements, and as facilitators we ensure that that is a smooth transition, from one to the other, that's what we try to do.

VL: About man management, as you call it, why is it so relevant and so important, and which are the things that are key about being good at this?

UK-2: man management is fundamental, if not, one of the most important things, because you need to have an understanding of the people you are actually working with, I'll give you an example: you'll have a person who everything that you ask him, he'll do, without a moan... and you'll have people that do what you ask them but they constantly moan, they constantly be upset, they constantly want to leave, you'll have people will say that they did it, but they don't do it, you'll have people that turn up half of the time and the rest they disappear! You will find people who blatantly lie! Its how draw from that. I'll give you an example: I've got a chap who works for me who's brilliant, he is an absolute gem, he's worth his weight in gold, he really needs treating kid's gloves, you can't chat to him you get a non-response, and say this to all my managers about respect each other's needs, none of us likes to be disrespected, we've got to feel that we've got certain amount of importance. I'm only as important as my job title. The guy who sweeps the canteens is important, because he's got a role like everybody else.

Successful man management you've got to be able to understand that everybody deserves respect, everybody needs to feel that they are part.

It's like when we had our top-out ceremony for the roof, and they all came in their suits, and stood up in big line... the reality is that we get everybody on board in here, everybody gets to be in that photograph and because everybody has had a role to play in respect to get that building to where it needs to be. We can do all the marketing stuff, but they really need to feel that they want to be a part of it... it gets everybody together, and the most important thing is that they care, they care about coming in the morning, they care about a bit of rubbish in the corner, they care about the environment they are working in, and they transmit it to the new people that come to site, like the subcontractors. Then everybody has the same attitude because people have been treated with respect, they understand the importance of what they're doing, they understand that to get a successful site, a successful work place everybody is involved, everybody is part of it, from the guy sweeping the hallways cares about what he's doing, the guy that is painting cares about what he's doing, he doesn't leave an empty tin of paint at night, everybody cares... because we keep talking, we keep communicating, we keep letting people know that people matter, we all matter, you can walk outside when its freezing cold, you've got ice on top of the water, the plasterer has got to break the ice, it's not a pleasant job to do, but he does it knowing that we try our best, that if we can we are going to get heaters on... when it was too hot in the

summer, we put air conditioning units in the canteens and that, and they appreciate that. They know that they can come and knock the door and have a chat, we just have an open door policy, and it works very well... I've adopted that attitude for the last 6 years, and I can honestly say, I much prefer that openness... you'll get some that are really really quite animated. I say 'have a seat, would you like a cup of tea?' it's brilliant because you defuse the situation really quite well, it allows people the opportunity to vent their frustration, because it's not going well for them out there, and they are frustrated and they may try and take it out at someone else, but we diffuse that. It's communication. But it always needs improving, I am a firm believer that you can't always get it right, but you can do is just try to strive for that improvement.

VL: Could we say a good man manager provides consideration and respect to everybody, and gets commitment and trust in return?

UK-2: Trust is a word you develop over a number of years... one of our subcontractors is MITIE engineering, which have worked with us for a number of years and the trust is good, but it's only as good as the contract (laughs)... trust within our work environment I think is fundamental, amongst our own staff: we need to be able to trust each other, we need to be able to communicate, and like I say it's to highlight problems and have an open policy with people, if anything occurs, we plan for it, we don't tuck it under the desk and hope it'll go away, which is the bad old days, to be honest.

We try and communicate and enable us to plan it and get over certain problems, which we've done successfully up to now, I believe. So far, so good...

Appendix E.3: Participant UK-3 Interview Transcript

VL: Let's talk about success in a construction project, considering only the construction phase, not the whole life cycle. What makes a project successful?
UK-3: Safe project, a project with no accidents or as near as zero accidents as you can get, making a profit, delivering to time, and delivering the quality that you have been engaged to deliver...

VL: Through the specifications?
UK-3: Yes.

VL: Would you prioritise them in the same order?
UK-3: Safety first, definitely. From a business point of view, yes, profit. Time and quality are sort of equal. I think something that we find is that if you got a safe project, generally the others will follow by default. If you run a safe tidy site and you set clear goals, it just sets the perception and the rest of the things tend to follow. Not all of the time, but a lot of the time they follow.

VL: Do you have a personal opinion about these things relate? How safety leads on to meeting other targets?
UK-3: Its organisation, it shows that you've got an ordered mind, or an ordered site, and gives people the chance to work in an ordered environment. They can work in a clean area, things are ready for people. Where you tend to have problems is when you haven't thought about what you are doing. You tend to try and get things ready for people.

VL: So that is how it relates to delivery and profit?
UK-3: Well, and by default, doing things efficiently, you do it quicker, you make more money... Generally speaking.

VL: So you would define a successful project as a project that has almost zero accidents...
UK-3: You strive for it. You can strive to get it as safe as possible.

VL: And that makes a profit, delivered on time, and to specification.
UK-3: Yes.

VL: How do you think project management –and you think of it as your job or the job of the project manager and his/her team- influences the outcome of the project? In which ways?
UK-3: The way I run a site will dictate what happens in it. Full stop. All the decisions I make have a direct result out there; be it safety or programme its driven but what I decide to do. By the way the subcontractors are picked, the programme we set at the outset. In this particular project the brief we wrote for the client, because effectively this

job is built on the back of information that we have developed with the team. This project has a design and build contract, the client's brief wasn't set really at the outset. We developed it, because the concept architect wasn't able to transfer it to British standards. It was a foreign architect who came up with a great concept, but nobody gave us detailed information that suited, like building, planning regulations and things like that.

VL: So you have been involved in that project since that stage...
UK-3: Yes, literally, I have been involved since –are you aware with the different RIBA stages of design?- The employer's requirement was meant to be set at stage C, which gives you basic plants, elevations, floor plans, things that work, not information that is in the sky. But because of the problem with the concept architect, we ended up developing that, so very early in the job we were involved: they had been having discussions for about a year before we got involved. So it's been three years since I got involved.

VL: Do you think it has made a substantial difference that you know each and every single detail of this project?
UK-3: For sure, a lot of the details in here have been developed because of our knowledge, my knowledge of building, to make sure that everything goes together. Because there is nothing worse than having a great design but not knowing how to make it work. Just spending time analysing having a building and speaking to specialists and making sure we get the right advice and then the design team to develop it that way. So this is a design I am happy with and the company is happy with, then we'll meet the specification. So yes, the earlier you get involved, the better. There's no doubt.

VL: Do you always get the chance to do it this way?
UK-3: There's a lot more of it now, where you got this two stage tendering process: were we tender our staff costs (usually time related costs), but you wouldn't price any physical work, and you would tender that, and win it on that basis. Then you get the second stage in which you physically get into the work and develop the information and then price the actual work on site. In recent years there has been a lot more emphasis in going that way for tendering, which does give you the chance to influence the design, and make it workable. If I think back to when I first started, it was the old ways of 'here's the design, go away and make it work', and it all became confrontational. The way we do it now still has some confrontation at times but generally by being physically involved in the job, and if not contractually you feel morally responsible at times as well. You are involved and you build relationships out of that.

VL: So could we say that it runs smoother?
UK-3: I think so...

VL: If you had to rank the different categories of tasks that you perform in terms of which are the ones that you consider more relevant for ensuring the success of a project, under the terms you have defined success, which ones would you say are the most critical ones?
UK-3: Ensure you got a good brief from the client, fully develop your information (detailed enough), have a clear plan of how you are going to build things (programming

but also the logistics building something), so that when you tender it, you tender it with that knowledge and you are giving people a clear plan of where you are going, you need to get specialists on board early. Consultants nowadays tend to be quite into the big picture, they don't always know the detail. The days of the architectural technologist in which they could draw anything out of their mind is gone, so now you need a specialist to do that. So you get them on board as soon as you can, try and build a team around the project as well, a team that covers all the things you need to make the project successful.

VL: How would you define a good brief from the client?
UK-3: You need to know what they want; they need to understand what they want. Be it be clear on their aspirations, make that is on paper that you know where you are going from. It's OK to say you want a certain type of building, but what do you want? Do you want 5000 sq m? Do you want 10000 sq m? Is it budget that is driving it? So you understand exactly what their criteria are, it maybe that you need to speak to the end users, it might be the CEO that tells you what they want. But it's getting it down so that you have got one document that you can work from, and you can give people a brief to work away from, otherwise you are guessing, you are wasting time.

VL: You mentioned logistics as part of a clear plan, what do you mean by logistics?
UK-3: It's just how you are going to build it. For example, cranes: are you going to use tower cranes? Are you going to use mobile cranes? Are you going to use crawler cranes? Is that sort of thing, picking your plan, selection, what type of formwork you are going to use for the concrete frame? Talk to the specialists, there is a lot of systems around. Some systems are modular, you can crane around very easily, there's some of them have to be broken down all the time, and it's that sort of thing that you need to decide on as early as possible.

VL: Regarding the team, the people you work with, do you generally get the chance to work with the same people, or your team is always changing?
UK-3: With consultants, the external team, that would generally change from job to job. With my own team I generally try and keep the core members together, so here I have got 5 of us out of 14 that have worked previously together. Some of us have worked together now for 9 years, and other people you bring in depending on the size of the contract. So, it depends, it's quite a fluent industry, people move around depending on where the work is, and we have got a base locally, and we keep the core guys here. Next time the job could be half the size, so we'd split the team, and possibly I would be overseeing the two jobs, it depends on what the situation is.

VL: Do you think having these core members of the team that stays around most of the time, helps you achieve more?
UK-3: It reduces the learning curve, because you haven't got to start from scratch every time, they understand your ways and you understand their ways, their weaknesses and strengths, so people know what I'd expect and I know what to expect from other people, so yes, having a core that works together you can get on and hit the ground running easy. But it's not always possible.

VL: Who manages the project, the project manager, the team, or both?

UK-3: I am accountable for delivery, for the profit, for the safety, for the quality... what I can do is set the standards. I can't do everything, you have to rely on people and delegate, which is easier said than done sometimes...

VL: Not good at delegating?
UK-3: I try... (laughs)

VL: So you think that is you basically who manages the project...
UK-3: Generally yes, I set the standards for delivery. Don't get me wrong, you get a team to go off and deal with the safety issues, I am not checking every scaffold or anything like that, but its clear what has to be done. And we meet up weekly with team and we go through everything and make sure that it has been dealt with as it's meant to. If we need more resource, that's what my role is; to make sure the resources are hopefully available to cover the shortfalls. So I think it's about giving people the tools to do it, to deliver the job.

VL: What do you think is a 'good project manager'?
UK-3: For me it's somebody that delivers a safe project, on time, to the budget or makes a profit (back in the early 90s it was turnover, so you would deliver to a budget), and to a good quality. I think it's also about being able to listen to people. Being a 'team player'... might be the wrong word, but being able to build a team and get the best out of people.

VL: Could we call that being a good team leader, or is another sort of skill?
UK-3: Probably a good team leader, a good manager. But it's also about others like subcontractors, who are slightly different members, not as close as the core members of the team. Where possible, try to work with subcontractors you have worked before, they know what you are about, you know what they are about.

VL: So the way you see it, if I got it right, is that good project managers are people that have good interpersonal skills, and that is a key thing to be able to build teams, deliver trust.
UK-3: Yes,. yes. I have worked with some people in the past who just haven't got it; they go off and don't deliver because they won't talk to the project manager or they just do their own thing. So it's having a bit of control as well.

VL: So it also controlling and monitoring...
UK-3: It's setting goals that are deliverable. It's no good saying we'll finish tomorrow if it's not achievable. Setting fair goals, know where you are going, and keep on top of it.

VL: If somebody asked you to give some advice on how to chose a project manager that is likely to deliver a successful project, and you can't do it, so you would have to chose somebody else, what would you look for?
UK-3: If I had a chance I would and look at the sites, see how they are being run. Because I think you can tell a lot from just the way things are organised, and set up. I would look at their previous track record, see if they had recently done a job of a similar size, or whether it's a set up. References from other people, get feedback from what you are being told about. Look at the finished building and see what the quality is, if it meets my aspirations (if you were the client), look at ideally a similar job. See if they

got previous experience of the same thing. Some people have a good record track in retail, or hospitals or whatever. It comes down to being adaptable. That's what I would do, look at what they have done in the past.

VL: So looking at the site would be a good way to assess...
UK-3: I think so, there are some buildings that you walk past and you think 'What the hell is going on?!' It makes it difficult that the industry has got a bad image from a safety point of view, the 'builders bum', the shirts hanging out, and all that... If a site is not organised is a total mess, and I think that just leads to poor standards of work, poor safety, etc. I like to think that we try hard: We've been over two years now and the facilities still we provide are still in good condition, they've been used, but they are in good condition, because we try to set an environment of respect, and that also generates respect for the building as well. On sites where you have poor conditions, the building gets abused. And that comes from a mindset; that if you set yourself up to look tidy, and you have some decent offices, it generally trickles down through... you still always get the few idiots, but I think most people don't set out to wreck things.

VL: Do good project managers always deliver successful projects?
UK-3: Not always.

VL: Which are the other factors?
UK-3: People (laughs). Other people, there's all sorts of things, it could be weather. If you've got a very fast track project, you put your best project manager on it. Say a retail project; they have a quick turnaround, something very quick, let's say a big shed. If you have the worst winter, you can't control the weather; yes you can do things to try and mitigate, but you can't necessarily beat that.
And people. As much as you can try to influence a client or a design team, sometimes people don't want to listen, for whatever reason, perhaps they've got their own agendas, perhaps they think they know better, or perhaps you are wrong... I've had it in projects before in which they just don't want to listen; they've got their own way of doing it. In the end they got removed from the project.
What else affects it? Having resource available, sometimes there is just too much on, no matter how much you shout you are not going to get it.
Information, if you are on a type of contract where the information will be provided by other people. If I am on a design and build, if I haven't got the information I'll decide what to do, or I'll get one of my guys to decide what to do. On a traditional contract you can't, or you can but you are exposing your company to something that you shouldn't. So, you've to sit and wait, so you are losing time: All you can do is ask the questions early as possible, interrogate the information provided and set out at the start what information you want when, and keep asking, and chase it, and do whatever, but then it all becomes just confrontational, and that spirals out of control. That's how I see it. You can try and maintain generally good working relationship with people and get the whole team to do the same thing. Then you stand a chance to make it work...

VL: That people you are referring to is the external team, isn't it?
UK-3: Yes.

VL: We were talking about the site, and the set up of the site. I assume you need to engage people to keep your site up to a certain standard, don't you?

UK-3: Yes

VL: How do try to get that from them? How do you do it?
UK-3: Where possible, you can use the same people that you have worked with in the past. I know you don't necessarily get the same labour, but if you've the same manager or somebody at that level, they know the standards of the company, that helps. When the operatives of a labour actually turn up on site, they are inducted and told from the outset what is expected. Here you can't physically get on the site without an induction, you can come through the footpath and you can get to the induction room, that's it, unless you are escorted in or you get a pass. So I think that sets the tone that 'you are going to play by our rules' as opposed to some sites in which you can just walk up to the gate and nobody challenges you, walk in do a whole job and leave the site without being challenged. It's telling people from the start 'we are going to clean up from the start: you've got to clean up after yourself'... We are trying to give them good facilities. We've put showers, three canteens, lockers to keep your kit locked up, etc. as opposed to having a couple of cabins and ask them to fight for a bit of space. On site you keep it clean and tidy, and you try and show them you are giving them a safe environment to work in. If they have a concern, they say it. Nothing's perfect but if it is a genuine concern it generally gets dealt with, you take action and they see results.

VL: Going back to the project manager, this person that has good interpersonal skills, that knows how to control and what to control, and when and how to set goals... This professional that delivers a safe project, generates profits and delivers it on time. Would you say those are the skills that you need or you'd like to incorporate other sort of skills?
UK-3: You need to have a good technical knowledge. You can't know everything, for instance here, I have never done this type of foundations before, you bring specialists on board. There are only three contractors in this country we felt could deliver these foundations, so we interrogated them: we went to see their offices, and the way they worked, so we found one that we could get on with – besides the price, that had to be tendered. There was a recommendation to work with the company that we had better rapport with. Having said that, I still don't know the specifics of it, but I know if they have good building practice, so I can still challenge that. So yes, you need an amount of technical knowledge. I don't think you can bring a project manager from another industry and drop them on the site, doesn't matter if it is the best project manager in the world, they would be lost. I would be no good in a bank! Given time, I'm sure they could learn, but you need a certain amount of technical knowledge to learn how things go together, so you make sure that you don't ask for the carpet information before you get the foundation... that sort of thing. Having said that, I wouldn't work in a bank, because I don't like to work in a suit (laughs).

VL: So probably the more technologies of a job you have worked with in the past, the easier it is. Your risk changes...
UK-3: Yes, it does change. If there is a lot you haven't worked with, then what you would need to get to understand the project is more time. As a company, we would say we want more time upfront. The more enlightened clients will give you time. Let's say they are all new technologies so everybody is in a level playing field, so you've got no different abilities; so you've got four builders (companies) all saying the same thing. The client decides for one, they would give them more time to interrogate it, you

wouldn't start unless you are desperate – but the client has to accept that there is more risk, so potentially they would have to pay more money for it. When you get something totally wrong you may end up having to rebuild it, so you have to put yourself in the eventuality that you would having to put more money. There are some contracts now in which you share that risk with the client.

VL: Going back to team, you mentioned 'core team members'. Who are they?
UK-3: Here it would be the guys like a surveyor, a design manager, secretary, and then on the site side itself the site managers, but you need a site manager that can interrogate designers. There's always been a perception that architects are always right, and they like to think that they are always right, but they are not. My philosophy is that is not difficult to change things on paper, when it's up in concrete is more difficult to change, so you need a really good design manager to make sure that the information you've got is right. You need a surveyor who interrogates the design to make sure that is cost effective, so that you don't end up over-specifying. Sometimes we do get it wrong so we've got to spend the money. And then on the site team you need a good strong site manager who will take the information and deliver it, make sure people know what they are doing, when they will be doing it.

VL: Anything else you'd like to add?
UK-3: No, I don't think so.

VL: Thanks very much.

Appendix E.4: Participant UK-4 Interview Transcript

VL: What makes a project successful?
UK-4: Primarily is information, that's brought from a clear and concise client brief to the consultants, and good accurate information from the consultants to the construction site. With well referenced drawings, so you can find the right section, and you can work from that; timely information; commitment of the client to the project, and the client wanting to be part of the project team I think is important, and the consultants wanting to be part of the project team. The old ways of building are not as good the partnership path which in my opinion is the best way forward.

VL: In terms of commitment of the client, what is a committed client?
UK-4: Of course the client has an interest on the project being built, all clients have otherwise he wouldn't do it. But the best clients are the ones who are proactive, who are helping the project team sort out problems, getting information for them. The best client I've ever worked for actually demanded to be part of the project team, to be involved in the construction process in the decision making, not just as an onlooker but also because he could add some value to the hard process. So that's the sort of commitment I am looking for, to be part of my team, to be actually building the project.

VL: Do you think that is necessary to achieve success?
UK-4: Not critical. Provided the information is good and correct, it is not necessary but it is helpful. Because there is no such thing as a perfect set of documentation, drawings are an interpretation of what the client's brief is, but if the client is not sophisticated enough to be able to drill down the document pack, he is not necessarily going to pick up that is not reflecting what his thoughts are, and quite often you'll get on with the project and the client will say 'That's not what I was saying, that's not what I wanted'. That's not common, because most clients if they are not heavily experienced, they'll employ a project manager that will do it for him, and they will have the qualifications and the experience, and you get a variety of experience form them as well, it can actually be very good or very poor as well... (laughs)

VL: So what would be critical? The first one you mentioned was information...
UK-4: Definitely. As is said it stems right from the client's brief to the consultants, and then the preparation of drawings and documents, as-built or existing information, and then construction drawings, and a clear and precise specification too I guess.

VL: That would be part of the critical information?
UK-4: Part of the pack, yes...
The other aspect from the project team's point of view is enthusiasm. I've got a great team here and enthusiasm is fantastic, the team has bonded well, it's the first time we've as a group worked together and it has worked really important, so enthusiasm is really important...

VL: How many people do you have in your team?
UK-4: There's 7 of us. So I've got a site manager, a site engineer, a logistics manager who's gate man looks after all the deliveries, looks after clean up and stuff like that, I've got a surveyor, a planner, a secretary and that's team.

VL: So you think the team's enthusiasm is key to the success of a project?
UK-4: Yes!

VL: How do you think you achieve that enthusiasm?
UK-4: it's very difficult, if you've got for example a site manager who is very negative, you will find that that negativity disseminates through the whole team, and it's very difficult from our point of view to motivate someone like that... it can be done, but it's very difficult. It's so much easier to work with a guy who is self motivated, obviously. That enthusiasm is just, I don't know, wanting to be successful, wanting the project to go well, wanting the work to be fun, which I think it's important. All those sort of things, which you can't bottle it, you can't buy it, and it's very difficult to instil in someone who hasn't got that enthusiasm. I think generally a construction project is a bit of a microcosm of society: there are various types and some people are very easy to work with and I guess my job is to make that variety of people to work together as a team.

VL: Do you identify the site manager as a key member of the team?
UK-4: Yes, definitely. On the commercial side the surveyor is important, and on the construction side and the progress and programme the site manager's important.

VL: Who's responsible for making the team enthusiastic? Is it just the way they are or do you see a way to achieve it?
UK-4: The enthusiasm manager (laughs). I guess is my responsibility to be driving the team, in enthusiasm. Is the project manager's responsibility to be working the team or working with the team to ensure the project goes well, because I guess ultimately I've got a responsibility for programme, cost quality, safety, all those things... and one of those things is team involvement I guess, and as I say it's easy if you've got enthusiastic guys waiting for you, if you've got someone who is less enthusiastic it becomes a... I guess my responsibility is for all the team to be bringing the staff on.

VL: Are there any specific things that you do to ensure that your team has an enthusiastic approach to the job? Or for your team to be committed, or success driven?
UK-4: Success driven is a good way to put it, there's lots of things, on this project we've got Tropical Fridays, and we all wear floral shirts on Fridays, and it's silly things like that can motivate the team immeasurably.
Being successful, breed success I guess, if you are on programme everyone's happy, if you are delivering on budget, again, everyone's happy.
I was telling people next door earlier, I went back to [abroad] and did a job which was an absolute nightmare: we had a couple of bad subcontractors; a very, very difficult client, technically challenging job... it was hard, hard work. We were just working on small milestones, taking one step at a time, getting there and then moving on. It was a very, very difficult job, I took it over from a project manager who quit, and after about 6 months on the job they were something like 12 weeks behind programme, so it was hard work for the rest of the project. They've made some serious mistakes in the ground, and of course when you lose that time, you never get it back... you always get there in the end. And you just got to be focused on those milestones, achieving those milestones, and trying to encourage and enthuse as best as you can. It is hard work, it was a tough job, the toughest job I've ever done... and it is hard work.

VL: And you think the team played a key...
UK-4: Definitely, very good team, lots of team spirit, you know, the relations within the team, the interactions within the team...

VL: If I ask you –as an expert- on how to choose a good project manager, what things would you tell me to look at in order to choose a good project manager?
UK-4: Project manager for the client of for the contractor?

VL: For the contractor, the project manager on site.
UK-4: Obviously experience, you can't borrow that...

VL: What kind of experience?
UK-4: I think a variety of experience, if I was to select somebody for my position I would look for somebody who has done a variety of different kinds of jobs, can demonstrate that he's continuing professional development: doing seminars, and whatever. I think I'd be looking for references (laughs) – which are hard to get too, a lot of clients don't like to give a 'well done' at the end of the job, some do some don't. I think I'd be looking for enthusiasm, an understanding of construction processes... There's so many things you can think of, but experience and enthusiasm are the two big ones. I think enthusiasm is one of the most important things in the industry, if you haven't got that things will drag, everything is hard work.
The construction industry, by its own nature is a problem solving industry; you've got things to do and ways to do it, and with all the best will in the world things get missed, and you have to then recover from that position; going back to your question I suppose being able to look forward, having the ability to see a problem before it arises as a problem. Problem solving, I think more than anything in my role, we are managing people, and also for the site manager. We are not actually building anything ourselves, but we are managing people, trying to get the best out of people. It's very, very important that you have a happy site and again enthusiasm, that is worth... you could not put a value on how much a happy site is worth: a situation in which the 'subbies' and their guys are working with you rather than for you, I suppose... so if there is something that they don't think is right, they'll come and tell you 'I don't think this is right' rather than do it knowing it's wrong and say 'bugger him' or getting paid for putting it right later on... So there's an attitude that we've got to foster out there, that the 'subbies' as part of our team; it's not just the 'subbies', it's the foreman and its operatives. So a project manager needs to be a bit of a team builder... it's all touchy-feely stuff, isn't it?

VL: So that is a good project manager?
UK-4: I think in CV you are also looking for a repeat business: I've done 5 phases of a retail project... very boring work, big tin sheds, but the fact that the client kept saying 'I want [Suname] back' was a big pat on my back, I really appreciated that.
We are people managers, obviously we need the knowledge, and we have the experience, but primarily we are managing people, and that's not just my team, it's the consultants and also the 'subbies' and to a lesser degree there's the authorities, the utilities and building control...

VL: What are the characteristics of a good people manager?
UK-4: I think you've got to be open, you've got to be approachable - this is the first time that door has been shut *(points at the door that separates the room where the interview is taking place from the rest of the offices)*. I demand from my guys that there are no surprises: I think you've got to be involved in problem solving, if there is a problem, I have to know, it's not a 'demand' is that if there is a problem I want to be involved in it. So having this in the I believe is critical; and all the things like motivation, which is very difficult or really easy depending on the person you are managing, setting targets,

guiding, being a bit of a mentor, memory jogging: talking to the site manager and discussing when and where and how, it's leading as well as controlling... I don't know, I can't tell you anymore (laughs)... It's planning, you have to have a programme, not just the mechanics but knowing the way the things go together, and again, forward looking, planning the 'subbies' arrivals, planning around problem areas and logistics problems 'we can't build that, because if we do that we won't be able to go in and do that' that sort of thing, that comes with experience I guess... It's not about not making mistakes, it's about not repeating them (laughs)

VL: Will good project managers always deliver a successful project?
UK-4: Qualified, yes... I was telling you about the job from hell I did in [abroad], and I guess all project managers have at least one in their career, when I took over it was over time, but I think with the right team and I think if I had kicked that job off we might have finished on time... What was your question again?

VL: We were talking about good project managers delivering successful projects...
UK-4: It can happen that a project manager does not deliver a successful project, but you measure success in several different ways in a construction project, there's the safety: a very, very poor project on programme can deliver all the results on safety; a very, very poor project on programme will struggle to deliver financially, because you will be spending a lot more money on the time, your staff is here longer, your infrastructure is here longer, and a very, very poorly performed project in time can deliver well in respect to community relations and corporate responsibility, that sort of things. A poorly performing financial project can deliver on quality, can deliver on time, can deliver on CSR and can deliver on safety. Have I answered your question?

VL: You've started answering my next question: what other factors do you consider critical to the success of the construction phase of a project?
UK-4: Again, there are many ways of measuring success: quality, time, community, relations, industrial relations – which used to be a big issue in [abroad], safety. So can measure to those, you can set a target and you can measure against it as response to success or not.

VL: When you finish a project, when you go home and you'll start somewhere else the next day, when would you say 'I've been successful' or 'this project was successful'?
UK-4: I think a project is successful if you deliver on time, on budget, without hurting people, with neighbours who think 'well, that wasn't so bad', with a happy client who would willingly engage me or us again, with a team of consultants who though 'that job went really well, I'd recommend them for a job'... I think that covers it. I mean time and quality are the most important to me, as it is budget as you've got to make money on the job, and if you deliver on time unless you've got some very poor estimating and your budgets are not right, you know, if you deliver on time, you'll quality deliver on budget. Quality is something we deliver on a daily basis.

VL: You mentioned the neighbours...
UK-4: I think it's not critical, but I think it's important that we get on... I mean we come into a community and we try not to, but we are dusty in the summer, muddy in the winter, it's totally noisy at all times, we keep antisocial hours: we start early and finish late, we're sometimes pouring concrete 9 or 10 o'clock at night sometimes, I think the success of a project with respect to community relations is based in communication, we do newsletters to the neighbours to let them know what's happening, we publish our contact details, and if they know that there's going to be some disruption then they're

prepared for it, and if we can minimise that disruption, well, that's been a successful job.
You know, sometimes... for example in [abroad] you have to put up and take down cranes on a Saturday or a Sunday. So if someone has worked hard over the week and they are trying to sleep on a Saturday morning and we start putting up the crane, it's very difficult... but if you knock on doors and tell them what's going to happen, they might sleep with their windows closed at night... it's communication in all respects.

VL: So the involving community makes things easier...
UK-4: Yes, exactly. There's nothing worse than having the local environment officer form the council knocking on your door 10 or 15 minutes later because you are disturbing the neighbours sleep or waking them up early, but if they know about it...

VL: You mentioned that the two key factors for you were quality and time. How do you define quality?
UK-4: Personally I define quality as if it's not good enough for me at home, it's not good enough here. There are various ways of measuring quality, British Standards and all that, but I think if I wouldn't accept it at home, it's not good enough here either.

VL: So you have your own personal standard. DO you think that makes a difference in the way you work, compared to other project managers?
UK-4: Definitely, definitely.

VL: Why?
UK-4: The construction industry is a fascinating industry; it's a great industry to be in, there's lots and lots of job satisfaction, there's variety in projects, in project teams, there's all sorts of reasons why the industry is great. I think one of the best things about the industry is the satisfaction you feel at the end of the project, if you look back on a job and 'wow, that's a fantastic looking building, it's finished well'. I think it's hugely important the self satisfaction thing, and the rest of the team its sharing that opinion, a good team...

VL: Have you ever found yourself working on a project where the specifications do not meet your personal standard?
UK-4: No, I don't think so... I think most clients are after a good quality standard.

VL: Going back to what a good project manager would be and what you understand for project success. What is a good a project manager meant to do in order to deliver success? In other words, what are the key things that are necessary for that project manager to deliver a successful project?
UK-4: I think we've got to demand from our employer –the contractor- that we've got the right people on board, that we've got enough people to do the job, I think need to be checking the documentation as it comes out to make sure that is something actually buildable, that we are not trying to build something that is not going to work. We already talked about enthusiasm and fostering that, and leading. Planning, we've got a master plan, we've also got a three month plan, and we have a four week plan, so we are constantly planning the work, and looking forward, that's critical; and the more complex is the project, the more critical it is to do in-depth planning. I think it's important that we get the right subcontractors on board, and that is driven to a certain extent by the contract conditions we have: If we've submitted and they'd said 'yes, the job is yours, go ahead, start', and the estimators have used the cheapest price they could find, it's finding the good subcontractor to do the work for that price, it's no

easy... One of my responsibilities is to deliver on budget, I think getting the right subcontractor on board to do the job in the right manner, to the right quality is more important than to maximise profit. Because they will inevitably try and spend their entire time making more money in the project by submitting variations or whatever, so subcontractor selection is key. I guess just thinking a bit ahead, sit down and programme so that you work your way out, basically, so you understand your project, you understand the constraints of the building, or whatever it is your building, so that you don't makes those mistakes, like what I mentioned earlier.

VL: You said that with regards planning you had a master plan, a three month programme and a four week programme, that is the way you work. What's the aim of the four week programme?
UK-4: We do fortnightly meetings with the 'subbies' so we look back a week or so and we look forward into the next three weeks. Again, its planning: what is going to happen? How it's going to happen? And 'you can't come in here yet because he's got to finish' or 'you've got to be out of here because he's coming in'

VL: And the three month programme?
UK-4: The three month is a snapshot of the master programme expanded, blown up so we can put more detail, more flesh on the bone if you like. It's just a more detailed programme of the master programme.

VL: So it helps you to have this rough idea...
UK-4: That's the rough idea, the three month is the rough idea, and then the four week –three weeks ahead, one week back- it's greater detail again, its nuts and bolts

VL: How do you see the relation of success and failure as the outcomes of a construction project?
UK-4: It's a very difficult question and it depends where you sit. For example my surveyor will see success as a project where he has made money, and whilst he's interested in the quality and the safety and all that, primarily he's interested in the money. The client will see success as a project that is delivered on time, and doesn't care about the money unless he's paying extra. A lot of clients don't care what the builders lost on a project as long as it is handed over on time, the quality is reasonable, and you can sell it. From my perspective I think all those things: time, budget, quality, safety, all those things are important, and a successful project to me is one that is delivered on time, on budget, to the right quality, without any injuries and incidents.

VL: What if you meet only three of those targets? Would you say the project is a failure?
UK-4: No, I wouldn't know. I did a project a few years back where our estimator made a big blunder, and it cost something like £30k to fix it. And the job was brilliant, it finished really well, it still looks good and it's now 8 years old, it looks really well. We walked away from the job without making any money, but without losing anything, to me that's a success. Starting from a negative point... for the commercial manager it's not good that we didn't make money, but it's quite good that we didn't lose any...
It's interesting I did a performance appraisal about two years after that, I mentioned how good that job was, and the guy that was doing my appraisal hadn't been involved in it, he said 'I thought that was a disaster'. Well, it was going to be a disaster but it didn't turn out to be one, so that was a successful project, because we turned that loss around but for some people might not have been. I think if you tick all the boxes for all those 3, 6, whatever it is key performance indicators, you've got a hugely successful

project. Generally speaking you might tick 5 out of the 8 or 3 out of the 5, you still have a successful project. If you don't get a tick in any of those 5 you've got a disaster in your hands and it's a failure.

VL: The way you see it, there are some specific circumstances which will define how you measure the success of the project...
UK-4: Sure

VL: So the project itself defines...
UK-4: But again, don't forget that depends where you are sitting: if you are sitting on the employer's seat, your key performance indicator is different to if you were sitting in my seat. The architect, for example, has a different set of key performance indicators, he's looking at quality, he's looking at an award for the building, for how the envelope looks I guess, and is looking at the time spend on the project because the detail wasn't right at first. I think for the entire to say the project was a success, you've got to be successful financially, programme, and you've got to be successful on quality.

VL: And that would be the team on site...
UK-4: The broader team and the team on site. Did I answer your question? (laughs) You can sit down probably, I don't know, may even 10 key performance indicators for each project... staff development is a key performance indicator, that you've got a site manager and on his next job he's been brought on so that he comes out as a senior site manager; or a young surveyor who's working under close supervision from another surveyor, and on the next project he's project surveyor. So under the key performance indicator of staff development, that project is a success. Budget is easy, programme is easy, quality... not so easy but, happy client, good quality – it's not too bad. Industrial relations I mentioned earlier, its big in [abroad] – we used to say the performance parameters for that indicator is no time lost on site through industrial disputation as a top score. You can come with all sorts of key performance indicators if you let your imagination run wild.

VL: As part of what you do, do you define those success factors before you start, or...
UK-4: When I was in [abroad] we used to, we used to sit down and come up with a project performance plan, it was called and I think they were 7: time, budget, quality, community... can't remember the other ones.

VL: But you had a set of key factors, and you would clearly define the objectives...
UK-4: Yes, with three levels of achievement and we'd report against that.

VL: Where those defined by the team?
UK-4: Yes. Defined by the team and then approved by the management.

VL: So the management could make amendments?
UK-4: They could say 'You've set the bar a bit low in here...' (laughs)

VL: Do you see a difference by not doing that here?
UK-4: I think a good project manager has them at the back of his head anyway... he knows...

VL: What about the rest of the team?
UK-4: Again, the surveyor will have cost as his key performance indicator, subcontract performance might be second, and safety might be in his end bit as well. The site

manager has got programme, subcontract performance and safety. For the planner is programme and subcontract performance so, you know, it depends on where you sit as to what is more important to you.

VL: But meeting and defining those indicators together, for everybody else to know, would that make a difference to the team?
UK-4: I think a team member would embrace all your performance criteria, have an interest in all of them. For example one guy in here is really, really keen on fitting in the environment, and quite often the guys are pointing on the other side and aren't interested on what's happening on what's going on outside and so on. Whereas he is quite thoughtful of what happens with neighbours... whether that's from bitter experience in the past, I don't know (laughs)

VL: Do you think it helps if everybody in the team knows what the key issues are?
UK-4: Yes it would. I think an understanding of what is important to each one of the other team members will help the entire team... that's a good way of putting it.

VL: Is there anything else you'd like to say? Any experiences or any thoughts on what we've been discussing...
UK-4: We've talked an awful lot about what happens with the team, but I really do think that the key to a successful project is the information that we are given to work with. All of those things, you know, committed enthusiastic team and all that stuff, work with all the neighbours, safety problems and financially is looking good; but if the information that we are getting from the consultants is dross there will be remedial work, its hard work, hurting the budget, hurting the programme, 'subbies' are getting annoyed and pissed off with it all, and they don't want to be here, you've got an unhappy site because they've just finished and they want to do it again, so key is the information.

VL: How can you ensure you are getting the best information?
UK-4: As I mentioned earlier you've got to be vetting drawings as they come in, looking forward on the programme, looking forward to respect the programme, identify areas where we think there is going to be an issue or whatever, firing questions back to the design team, getting responses and drilling down in the design and making sure that fits, that it works

VL: So that is key in terms of making sure you've got the relevant information...
UK-4: We have a duty –defined by contract- to be asking questions, identifying issues, blah blah blah... but a really successful project is one where you put a good set of consultants who are giving you good information, in a timely manner, so that then you can build with the minimum fuzz.

VL: It doesn't turn out to be that way always?
UK-4: It doesn't turn out that way very much, no.

VL: Besides asking the right questions at the right time or as soon as you can, is there anything else you can do as a project manager to make sure you've got that info that you need in order to do things the best way?
UK-4: I think that's it in a nutshell, but a part of that is developing our relation with the client and the consultants... if they can see that you share their interest in the project, and there's a common goal of success, and if you are not trying to set them up, so to speak, and they see that your goal when making questions is to deliver a successful project, they share into that, the problem solving, so I think your relationship with your

client is very important. That's why I said that the best ones are the ones that want to be part of the team: you don't have to drag them and they are not suspicious of what your ulterior motives are, that sort of stuff. So openness, I guess, I don't know...

VL: And willingness of the client to be involved?
UK-4: Yes, yes...

VL: Do you think this 'information factor' -if you like- is more relevant at certain stages?
UK-4: Its' relevant throughout, but timeliness is important. For example having the drainage details before the footings is important. I had a project once where they had a commercial kitchen and we'd done the drainage and we were about to cast the ground floor slab, and their chef walked away... the client was switched on, and put that area on hold. Got a new chef in and he said 'this design is rubbish, this won't work' so they decided to redesign the kitchen. So went on with the new design and when we got the new price from the commercial kitchen contractor, when the price came and they didn't like it, he said 'we are going back to the original design', and I said 'no, you can't because it's going to cost you three times more money' and... Where was I going with that? Yes, so timeliness it is very important. It's not important having the roof details when you are doing the footings...

VL: So its information delivered in a timely fashion...
UK-4: Yes, at the right time. I mean, generally speaking these days you do get it at the right time, and helps to get the information from the consultant to you, and it varies with the form of contract: with traditional tender, you get all the set of information there. This is a construction management contract, so we started off with quite a good set of drawings, but the design is developing as we build. Some of the two stage tenders, where you've got to have 80% of the cost certain before you begin site... and then the client's perception as to how you understood the job and they want you on board, and then they spend the next 6 or 9 month with the designers going through each stage of the design.

(Break)

UK-4: Safety management is part of the legislation, I think a good site is a happy site, and I think safety and production, safety and programme go hand in hand. I mean, its costs nothing, in my opinion, to have a site that's safe, costs an awful lot to have a site where you have an accident, a serious accident, and get in lots and lots of trouble. I had project with one, a broken hip... fortunately there was no fault on our side, we did have an investigation, but we didn't have HSC closing the site with a major investigation... if you have an unsafe site where someone falls off a dodgy scaffolding, you can be stick for weeks whilst HSC are doing an investigation and that is not good for anybody... safety and production go hand in hand because you can't expect the guys to deliver the quality your after if they are working in a shithole.

VL: Some project managers actually identify safety as key...
UK-4: It's not a driver, but is certainly a constraint. Once you've got the key performance indicator, is the one that will affect everything else tangentially. If you've got an untidy site is an unsafe site, you cannot expect them to deliver quality when they are working in rubbish. It goes with things, but is not a primary driver, if you know what I mean. You have to do it: a) because of the legislation, and b) Because it makes sense to do it. I couldn't imagine what it is like to have a guy die on a site, horrific... so, yes, it

is very important. We put it on top of the tree, because we think is important, but is tangential on everything else... do I make sense?

VL: Yes, it does. And I think that's a shared view
UK-4: Good!

VL: Is there anything else you'd like to say?
UK-4: No, I don't think so.

(Break)

UK-4: The job that I did in [abroad], which I keep calling job from hell, had a difficult client, it was behind programme when I took it on, we also had a couple of really bad 'subbies', we had problems with the windows, we also had a very difficult client; we were in joint-venture partnership with the developer, it was a technically challenging job, it was a very, very high service building, a bit like a hospital: lots and lots of lifts, huge air conditioning and that sort of stuff... so all those things put together made it very difficult, so when you were asking about success and failure, it was successful: we finished it, we finished it with extremely high quality. It was because we lost $1m, primarily because of time, we had two really bad subcontractors... there was formwork that was critical on a tower, tall building, they were useless: we got to level 6 when we realised that they had misplaced the lifts, and that was a disaster... so success and failure, depending on where you sit is totally different. I think that job was successful because we finished it a very high quality. It was a failure because the 'subbies' were bad, and we really had to work hard to achieve that quality and it was financial disaster, it was a success because we got an award for it so, you know, measure of failure depends where you sit.

VL: Do you think that the technical issues made that project more difficult?
UK-4: ...I continued to try to lead that horse to the water, but I couldn't make it drink: I had a site manager, a carpenter and a foreman who had formwork background, I continuously presented that as a resource to the formworker, but they consistently and repeatedly refused to take their advice. I had the senior management on site 20 times saying 'these two guys in here have grown up doing formwork, use them as a resource'... it got to the point where my site manager would say 'why don't we do this', and they would do exactly the opposite, it was just weird. As I say it was really, really difficult job, but it was successful in some respects; and looking back on it, it was successful and there's lots of things to talk about, some good memories because we had a great team, lots of bad memories because of those programme and subcontract development...
Something else that I didn't mention before: my support from the office was atrocious... there is not one member of that team that still works for that company. My surveyor left before the project was over, which I was really offended, well not 'offended' but I was disappointed... the site manager stayed because he had been there for a long time, so he had a pension scheme to look after. My co-ordinator left, my planner left, I left, my foreman left, ... my boss left, because the guy that he was reporting to had left and the guy they put to replace him was a dickhead, an absolute arsehole... so when my boss left I was reporting to the dickhead, and that was really difficult.

VL: How relevant is that support for the project manager?
UK-4: It's critical.

VL: So it could be one of the factors that leads to the success of a project...
UK-4: Certainly! Only in a few occasions in my career have I needed that support, with my actual company I know it's there, with that company it wasn't 'just fix it'

VL: It could make think easier or better?
UK-4: They have more experience than I have – at least in theory, so they may have experience to bring to the table, they are more senior, the can ort a few things out...

VL: Anything else you'd like to say?
UK-4: No, just turn it off! (laughs)...

Appendix E.5: Participant UK-5 Interview Transcript

VL: During the construction phase, what makes a project successful?
UK-5: the ultimate thing from a contractor's point of view is financial: to make a profit is the reason we're here and the business is run. That's got to be number one; there are lots of other things that affect that financial success. Of those other things safety is obviously important...

VL: As a different factor?
UK-5: As a different factor I'd say, yes. We don't want to be in the business of hurting people and that... (laughs). Client satisfaction is key to the work that we do... there are not many clients in the South West so we try and keep them happy, so we have a steady stream of continuous work. A lot of work that we do is for City Councils in the South West... Big sort of public clients and all that; so if you fall out with them, in the South West there aren't many places to go later.

VL: So the location of the company, in the case, plays part in prioritising client satisfaction as a third success factor?
UK-5: I would say, yes. And also the type of work that company strategy is looking at doing as well.

VL: Would you mind elaborating a bit more?
UK-5: We do very little competitive tendering nowadays. We work for big clients, either big companies or public sector. Because you know that can get paid for it at the end, I guess...(laughs). There's the opportunity to make a good margin: we are a large company and we take on a good bit of the risk, so you can make a good profit.

VL: You take the risks and the money...
UK-5: Yes! (laughs)

VL: OK, is there another factor you would put on the fourth place?
UK-5: Quality, is sort of a big issue which I guess is important for this as well, but also actually from the guys doing the work, the brick layer, the site manager, the company as a whole there a kind of pride in turning out with what you know to be a good quality product in the end. It ties in with the satisfaction and the financial side is the completion on time.

VL: So the most important issue would be the financial issue, the second would be safety. Would you say that you need this 5 to meet a certain target for you to be able to say that the project is successful?
UK-5: Particularly the first three. In particular is those first two don't go straight, then you'll probably won't achieve those *(points at interviewers notes)*.

VL: So if time or quality are not met, you will probably not make a profit or achieve the client satisfaction.

UK-5: Yes

VL: What characteristics of a project manager would ensure –or would be likely to ensure- a successful outcome?
UK-5: That's a good one, isn't it? (laughs). The first I guess is going to be personal drive, wanting to succeed. I guess in our industry sort of experience is quite important as well. Particularly on a smaller job, where you have to be fairly hands on, and understanding the trades. If you are on a mega multimillion pound project it's more about managing people, maybe you could get somebody without construction background because you are talking about managing people, other companies and all that. But I think for the sort of smaller jobs we do you need to have that technical expertise.

VL: So in a way the scale of the project defines a gap between the worker and the project manager, and the larger the project, the more distanced they get, then the skills required would change?
UK-5: Yes, definitely, yes. And if you are on very large project they'll be engineers and foremen in the middle management, looking after the work and all that. So a lot of our jobs we do with or staff, we need 2 or 3 people and that's all to run the project – as staff, so you got to get involved in looking at the brick laying or doing the concrete and all that, so you need to have the knowledge of the technical side... no subcontractors are trying to pull a fast one and all that (laughs)

VL: What does it mean or imply to be good at managing people?
UK-5: Respect I guess, both ways. Good communication skills that will enable to convey clearly what you expect and... a lot of people have completely different styles and they're still successful if you like. You can get very forceful very angry type of people that will get results, or kind of quiet and more reserved, thoughtful kind of people that got the respect and people will listen to them, they still get the results. I don't think you can say you've got to be like this, or you've got to be like that... it's difficult, some people can do it and some people can't, if you can't put your finger on what it is... then you could learn it from a book, but you can't. It's an intangible kind of skill really, I think, being able to motivate people and that isn't it? Which is the same in every sort of industry: you get good managers and bad managers, and you get different people. So, I wouldn't say there's a good way and a bad way, there's a lot of different ways...

VL: But you do see respect and communication skills as something that the 'angry' manager and the 'quiet' manager would have?
UK-5: Yes, can do, yes (laughs).

VL: So these skills might not be strictly necessary but they would facilitate 'good' management?
UK-5: Yes.

VL: Is there anything else you would relate to being good at managing people other than respect and communication skills?
UK-5: I can't think of anything now.

VL: The characteristics of the project manager that would deliver a successful project is somebody that really wants to succeed, the second was having experience and then

we went into talking about the scale of a project would requiring different things from the project manager. Apart from that, how does this project manager look like?
UK-5: Organisation skills, organised mind, ability to see/appreciate the overall scale of the project, not get too caught up in the fine detail, be able to see the big picture.

VL: At the same time, the project manager that is on site is accountable for everything, so if the detail is not fine, he/she is going to be accountable for it as well, right?
UK-5: Yes.

VL: So how do you think these two things can be balanced?
UK-5: I guess one is having confidence in the people you employ. And sometimes that confidence will be missing, and you will have to get involved in the detail.
Through the supply chain and all that we have subcontractors that we've worked with again and again and again. You know that you've good people; you know what you've got to watch in them, that helps...

VL: I was just thinking to be able to be confident in what somebody else is doing, you need to know how they work... but the nature of the construction industry is change, isn't it? So it must be difficult.
UK-5: we do work with the same subcontractors again and again and again, that's the preferred way, really. If you are working with a company that you have not worked with, there's always a risk there...

VL: But to know them helps, makes life easier, I guess?
UK-5: Yes

VL: We have so far four characteristics... You mentioned having an organised mind, what do you mean by that?
UK-5: Because of the vast amount of information you've got to deal with, yes. In any project, even a small project, but large projects in particular. The importance of making sure that you work with the correct information, that the drawings are available, that the right drawings have been issued to the right people. I think even more so now, everything's done on email and all that, is very easy just to forget to send somebody some vital bit of information.

VL: So it's basically the management of the information?
UK-5: Yes, and there's lot of regulations and stuff like that you got to deal with as well. There's the safety stuff, and the specifications, any test that you've got to do, any inspections, make sure it's done at the appropriate time. Making sure the paperwork is in place and all the safety systems you got to run, it's just a hell of a lot to do. And if you approach it in a unorganised way, it won't happen.

VL: At the same time this is related to the experience and technical knowledge, isn't it? These two things get together when you talk about knowing what to do and when and how to do it...
UK-5: Yes

VL: Anything else that is important about the project manager....
UK-5: Superman (laughs)

VL: It sounds like it sometimes, but it's this professional that is able to generate profit, keep acceptable levels of safety or health and safety, that delivers client satisfaction,

with quality to specification and delivers the project on time. To be able to do that, you have told me that you have an organised person that is able to look at the big picture, and detail when necessary – probably there's a constant assessment of when to get involved in the detail and when not to, that is somebody that really wants to succeed, that has the skills and experience according the scale of the project, and that is good at managing people.
UK-5: Yes, I guess the other skill that comes with experience as well is being able to appreciate other ways of doing things, that's often where you can make a lot of money in a project... rather than following the specifications and all that rigidly, being able to have bit of lateral thinking, and those are the kind of decisions that can save you lots of money. Something that on the drawing or specification, you can come back and say: 'Why don't we do it this way instead?' those are the kind of decisions that can save you a quarter of a million pounds, for example.

VL: So it's a bit about being creative?
UK-5: Yes, a bit of creative thinking, yes... Instead of taking all this contaminated material off site, why don't we get somebody to treat it and then we can use it as fill.

(BREAK)

VL: Creative thinking, what can help a project manager to acquire this creative thinking?
UK-5: First as I said early in the beginning early, experience, I think.

VL: So you are thinking of things he/she has done or seen before?
UK-5: Yes, it's sort of keeping up to date with sort of developments, training, and technologies all that kind of thing. Reading the construction press or whatever, knowing about new ways of doing things. Sort of social networking properly as well (laughs).

VL: That's useful?
UK-5: Yes.

VL: What about training, what kind of training?
UK-5: That may help that I guess. The training that we do is we have gone through the normal safety stuff; I do the temporary works things, team co-ordinator which will only just enable you to do your job.
You meet people as well. We get various companies come round and wanting to little courses like CPD sort of stuff, that is for them to sell stuff. You learn stuff from that as well.

VL: You see that as something that is useful generally?
UK-5: Yes, yes it is. Often is sort of a pain at the time because everyone's busy and 'Oh, I have to go to that', but a couple of years later you say 'Yes, we had this chap talking to us about...'

VL: ... So that's how a project manager looks like?
UK-5: Just going back, sorry to interrupt, the one thing I missed was sort of building good relationships, with the client in particular, that is the key person that you have to deal with day to day, and if that breaks down then things can go badly wrong. So that's kind of a personal kind of thing.

VL: There's a bit of politics...

UK-5: Yes, that's right, yes. Being able to bite your tongue a bit (laughs).

VL: Knowing when to bite your tongue...
UK-5: Yes

VL: The project manager that delivers a successful project is what you consider a good project manager?
UK-5: Yes

VL: So good project managers always deliver good successful projects?
UK-5: No

VL: Why?
UK-5: I guess the most common would be sort of through the estimating process or whatever: there's not enough money in to do the project, that's the worst thing. The difference between a successful and a non-successful project, only a small part of that is what happens on site. From the contractor's point of view, if you are 5% short a good project manager will make that up, but if you are 10% or 15% below what you should have gotten in, then you've no chance, even if you've got Superman involved.

VL: So estimating would be...
UK-5: I mean a lot of what we do now is design and build, but anyway that's obviously a big issue, which is where I am also involved... getting a good design, economical design but keeping the architectural quality that the client is looking for... it's very much a temptation to, when you are going through the design, get everything stripped down to the minimum, generally that is not acceptable to the clients. You've got to manage his expectations but also appreciate that people don't want just sort of a bland boring building.

VL: And if you delivered that, you wouldn't be successful
UK-5: No, no.

VL: If we go back to these three key factors, which are profit, safety and client satisfaction. If you were to assess whether a project, the construction phase, has been successful or not, and you were using these three criteria. Would you say that the project can either be a success or a failure?
UK-5: From whose point of view?

VL: The project manager's point of view...
UK-5: I think from the project manager's point of view for it to be fully successful you need the three; from the client's point of view you wouldn't necessarily be worried about number one *(referring to profit)*. We have had very happy clients from jobs in which we have lost lots of money (laughs)...

VL: Have they lost money?
UK-5: No. There are some jobs in which we thought it was a disaster that job, but the client was over the moon with it (laughs). What the wider public think its successful is not necessarily what the industry considers successful. For example, the Millennium Stadium at Wales, which is a fantastic project for the public; but for the major contractor, so...

VL: So you can have a project that is a failure for the project manager or for the company, and a success for the client. Can it be the other way around?
UK-5: Yes, for some companies. For our regional base, client satisfaction is a lot more important than for probably other companies. But we do do one off projects, with clients that you are never going to work for again – in that situation it would be possible.

VL: In that case client satisfaction wouldn't be a part of the success equation...
UK-5: Yes... without all three you can't say the project is a total success, but with these two *(points at safety and profit in the interviewers notes)*, the company would be pleased with the outcome. But I wouldn't say the project is a total success because at the end the client is not happy with it, how can it be?

VL: If we are looking at a project, regardless of the set of criteria that we are using to assess whether or not it has been successful. Do you think that the possible outcomes are either a success or a failure?
UK-5: No, there are shades of grey

VL: Shades of grey? So you could have a project that was OK, not necessarily fantastic, but...
UK-5: Yes, definitely. Which I'd say in most projects you do things you're not happy about, things you would have done differently...

VL: Is failure the opposite of success?
UK-5: you fail on some counts and succeed on other counts in a project. Say you could lose money on a project and still be a success: 'What a fantastic building!' and all that. The safety issue, if you killed somebody in a job or whatever, I don't think you could ever describe it as a success... but there could be an unfortunate, unlucky accident... the project could still make money and have a good outcome, but I don't think you could ever call it success...

VL: If we use that example, the project manager wouldn't consider that a success...
UK-5: No, probably not.

VL: Because you would be accountable for that person or accident...
UK-5: Yes, exactly, and it would affect you personally.

VL: If there is a project that has several challenges, that is complicated for example technically speaking, even though it may not generate any profit, the client might not be happy because, say, it's delayed. Could it be considered by the project manager as a success?
UK-5: Yes, yes, yes. If there are a lot of challenges to overcome and...
Taking another scenario that happens occasionally if there's a client that you are very keen to work with but you have been able to, we may take on a project with not very good margins, but we are very keen to get the job and impress them and that, and then get more jobs form him in the future.
We roofed a prison up in Bristol, awful job, you know, actually on the ground and that...

VL: Did you actually do that with all the people inside the prison?
UK-5: Yes, with all the people inside the prison. It was a Victorian prison, all the timber was rotten and that, and we lost a lot of money doing it, but of the back of that we then got a number of very good contracts after that, because the client was very impressed of how our staff were very professional with the prison governors or whatever, how they

actually dealt with managing the project...it was a small job, just a few hundred thousand pounds and we lost some money on the back of that, but we got a £7m project on the back of that as well...

VL: So you made for it as well...
UK-5: Yes (laughs), we did.

VL: In that specific project, for example, did you know that it was possible for you to end up losing some money?
UK-5: We knew that there was quite a lot of risk involved in taking on the project because the prison was occupied and that, we didn't have the opportunity to inspect everywhere were we would have liked to, because it was very controlled access. We had to have guided trips around, so we didn't have all the information that normally you like to have at the beginning of the project and we took on quite a large amount of risk. That on normal circumstances we wouldn't have.

VL: And in that case you succeeded as a company?
UK-5: Yes, because we got the client, but the project was absolutely... If you look at the project in isolation is not successful, but in the big picture yes it was... so the company as a whole would say it's a successful project...

VL: I think we've covered everything, would you like to add something?
UK-5: Yes, one thing that comes probably of the back of it is something we have not discussed is the environment that you can count as well...

VL: What do you refer to by environment?
UK-5: The whole big picture, waste management and contamination, but also issues like the neighbours and all that, keeping them happy, put them in that category as well.

VL: What role do the neighbours play?
UK-5: we run this considerate contractors scheme and also for many of the jobs we do there's an assessment on that as well. Other people can make things difficult, you can get some local residents that know exactly all the details of an application and what you are and not allowed to do, and if you get lorries at 7 in the morning and he knows that in your planning conditions you are only allowed to start 8 o'clock, he'll be on the phone straight away... so that could make it for the manager of the project more difficult. If you've got a commercial client and if you interrupt what they're doing or whatever, or if you cut their access there could be legal ramifications as well, and that impacts production...
Long time back we had a project in which they dug up a gas main and they had to shut down a factory for 24 hrs or whatever, and asked us to compensate and all that (laughs).

VL: And about the characteristics of the project manager...
UK-5: About the detail and the big picture, when to get involved in the detail. I guess involved with that as well is delegation skills, if you got the staff it's being able to let other people get on and all that. Being able to recognise that, let them do things the way they are going to do it, as long as they achieve the same ends (laughs). The getting involved in the detail and all that, hopefully, if you've got somebody there that's capable and you delegate, you don't need to in the details, it's only when you've got people below you or contractors that don't have the skill that you have to go 'I will have

to deal with it myself'. It's got to do with making time for yourself to be concentrated on that big picture.

VL: Being good at delegating, involves knowing very well who you are working with, so it might take some time?
UK-5: Yes, and not being insistent that everything is done your way (laughs), but recognise in that what it is providing me as an end product is right.

VL: Is there a trust issue with delegation?
UK-5: Definitely, yes.

VL: How does it work?
UK-5: Communication, which we talked about obviously is very important and all that, to communicate clearly exactly what's wanted. Trust issue starts when you've got someone (for example a 17 year old that we've got here) and you give them a task to do, you keep an eye on what they're doing... and when you give it to them the second time, you just give them the instruction or actually 'no, he's going to need some help' and you provide the guidance. Try to put them in courses and all that, how to do reports and stuff. You need people to report back to you so that you know how things are going...

VL: The way you see success as the outcome of a project, is it the work of the project manager or is it the work of the team?
UK-5: The team. Although the project manager is a big part of that.

VL: Is the project manager the team leader?
UK-5: Yes, he is... in here we have different types: we have a project manager or if we have a number of small projects we'll have a site manager for each, and a contracts manager that oversees a number of small projects. In that case the contracts manager is the team leader.

VL: The most senior...
UK-5: Within the company we use the term project manager if you are the most senior person site-based, and is the leader of that project. We do have project where we have a contracts manager, the most senior person, and we have site managers doing the day-to-day running of the site - from your point of view, form what you are looking at, the contract manager would equate the project manager I suggest.

Appendix E.6: Participant UK-6 Interview Transcript

VL: Part of the research methodology is that once I've got the transcript done, before I analyse your answers, I send the transcript back to the project managers. So that you can have a look and you can give an OK, or say 'you know what I've changed my mind'. Or you can say 'you know what I like this answer but I think it's incomplete and I would like to answer it again'.
UK-6: OK that's a good thing Yes.

VL: E-mail?
UK-6: Yes I can let you have that.

VL: If we consider the construction of the project, not the whole life cycle of it. How would you measure the success of that project?
UK-6: How would I measure the success? I would suggest that the project is successful if you have come in on time, i.e. your programme was right from the start, and that you come in on budget. I think fundamentally those are the two most important things that a client particularly is looking for. He needs to know that the programme that you've developed gives him assurance that you know how long it is going to take you to open, for instance, a road like we've got now. And he also wants surety that the price you've put in for that road is going to be the price at the end of the day. Because ultimately if he has got to go and try to find some more money, for instance like the Highways Agency, they've got to go to the Government and say 'look our contractor is now saying it's going to cost and extra 5 million are you going to give it to us? Can I have some more money?' And the Government wants to know why the predicted cost wasn't right in the first place. So, I think that fundamentally the set of a project are that those main, two items are on time and on budget. And I think most project managers would probably tell you the same. I would hope so anyway (laughs). Because at the end of the day, we want to do more work for the Highways Agency. So, we need to make sure that we give them projects on time and within their budget. Because if we don't then we know that the next time they want to build a road they'll look for somebody else to do it. Because we haven't produced the goods and so I think it's fundamentally important for future works as well within our company, that we are seen to be producing.

VL: And if you had to look the project itself or, the relevant elements within the project besides of course, the management of the project. Are there any other factors or variables that you would identify as relevant for delivering a successful project?
UK-6: Any other factors... it's difficult I think the thing I said to you when we went out on site was that, fundamentally the problem that we're going to have with this job, coming in on budget, is the design. I think making sure the design is workable and feasible from day one before you actually get on site, to me that is what's cost this project more money than anything. So, I think management of the design at the design stage, I know you wanted to talk about the construction factors ...

VL: Yes...

UK-6: ... but the two years that we spent designing this job with our designer has ultimately not fulfilled, or not given the project, the satisfactory ending with regards to financial terms that it should have done. I think what should have, by the end of that two years before we started on site we should have had more of a design with full construction drawings. We should have had more input into the cost of actually building the road. Because what happens is, you do your target cost based on a basic design, do you see what I mean?

VL: Yes.
UK-6: ...And it's not until that design is fully done that you could then think 'well OK maybe it's going to cost us a few extra hundred thousand because we're now doing such and such'. So, I think management of the design at an early stage is most important – definitely! This project was done on what we call and ECI which is Early Contractor Involvement. So which means that, in the old days the contractor wouldn't get involved at all with a design. We would just get, when we land on site, these are the drawings and this is what you're going to build. Whereas now, on this job, two years before we started we were involved with the designer in formatting the design for the job.

So, I'm not just blaming the designer, I'm blaming the guys from our side that were involved in that. That maybe didn't put enough or, have enough forethought to make sure that design was actually going to work on site. So I think that's fundamentally important.

VL: That's what I was going to ask you because if you spent two years before you started and you still have problems like, you know the railway and that sort of thing.
UK-6: Yes, absolutely.

VL: A change in design could have made it so much easier or even faster. So that is a process you can fast track so as to catch up.
UK-6: Definitely, definitely... I think that is important and I think things like the bridge design were maybe not started early enough. I don't think everybody realised quite how difficult that was going to be and certainly if you don't realise how difficult it is, you don't then realise the cost of it. And all of the little pieces that go together to actually getting a finished arch over the railway. As I said to you about getting possessions on night works means you're having to pay guys overtime at weekends, and nights. All of that cost should go in at the start of the job so that the client has then got confidence that the target price you've given him covers everything. And I'm not convinced that actually happened.

VL: OK.
UK-6: So again, I think that's very important that you know... I think more involvement should have been, more guys maybe. Maybe we should have had more people involved in the design stage. We only had three guys I think for two years. Maybe we should have had more people involved and I think then you would have got a more precise target cost.

VL: Yes.
UK-6: In my opinion, anyway.

VL: So do you think that maybe involving more people would have, sort of maybe allow them to dedicate more time?

UK-6: Yes definitely.

VL: Into the task of looking at the design?
UK-6: Definitely, definitely I think by having only three people there, they were looking at the drainage, the railway and other things. Whereas if you had more people, one guy could look at the railway, one guy could look at the drainage, do you see what I mean? So that you're getting, you're focussing on certain aspects with different people.

VL: Could it also be that it's something related to the background of that people?
UK-6: Yes definitely.
VL: Because it could be that they don't know enough about how to build it.
UK-6: Absolutely, absolutely, absolutely right. I think that, in fact the guys, the guy that we had in, the main guy that we had in the design office, he was a structures guy. But he was having to look at the drainage drawings and the road works drawings and make a decision, and he is a structures guy. So, I think you're absolutely right that if they'd have brought in somebody earlier who was experienced in roads and drainage then he would have automatically seen that there were problems. And, we could have designed those out before it got to site. I think that's becoming very clear now on site that the drainage drawings, for instance, were not looked at properly by somebody with experience of drainage. And we're making so many changes now on the site that it's costing money. Because fundamentally the design actually doesn't really work. It's OK on a piece of paper but out on site, if a guy has got experience of building drainage on site, he knows whether it's going to work or not. I think that's, that was very clear at the early stages that the guy looking at the drawings wasn't experienced enough, in certain aspects and I think that's why it...
VL: Well it happens in all sorts of areas I think in construction nowadays because everyone is so specialised the actual ...
UK-6: Absolutely I think you have to be, actually.
VL: Yes but I think you need somebody to sometimes cover that gap between the designer or the specialist.
UK-6: Yes.

VL: And, the one who is going to actually build it. You need somebody to tell the specialist 'you know what it's a good idea but this is not going to work'.
UK-6: I think the other problem I would say at design stage is that when we first start the project, we put a tender price in. So we would say to the Highways Agency, *it's going to cost 30 million.* We then go into the two year design, proper design, trying to get down into the nitty gritty of it. When we then come to that point we've said 'right we've now designed it as per your specification and it's now going to cost you 35 million'. The HA then say 'no we haven't got that money you need to knock out another 3 million, we can get 32 but we can't get 35'. So you then have to then take out certain aspects to get down to the budget, do you see what I mean? So he is forcing you to drop your price and by doing that, if you know it's going to cost you 35 million to build it, and yet you've told him because he's saying, *well you need to knock your price down,* that he is saying 'I'm only going to accept 32'. Before you start on site you're thinking you know we're three million down already before we even start. We've got to try and find three million pounds of savings on the job. So that's always very difficult.

VL: Does that make it even more difficult?
UK-6: It is, oh absolutely. That's the point and you're now starting day one and you're thinking 'Christ I've got to find three million pounds here somewhere'. Do you see what I mean? To try and then get our company to get some profit out of it. Because you

know that, I don't know what percentage we get, probably 5% we go in profit that we would expect to get. On 35 million that's probably 1.75 million that we would expect to get as a company. Now if he's already taken out 3 million from the start, where do you go? So there's an awful lot of pressure from above, from inside our own company to say 'come on lads, you know we're three million down and we need to get back up to 1½ million to get some profit out of it'. So there's an awful lot of pressure there too so....

VL: Yes, generally speaking not specifically related to this job, about issues in the relationship with the client and the company policy. Because I know that your company likes to keep their clients happy clients, because well, in this part of England anyway, you don't have a lot of demand.
UK-6: Exactly.
VL: So you try to keep your ...
UK-6: You need to! yes...

VL: So what do you think, generally speaking, about situations like this? And trying –at the same time- to develop a friendly working relationship with the clients so you can keep them.
UK-6: It is difficult, it is difficult because, as I say, you are under a lot of pressure from clients to get it on programme and on budget. So, it does become difficult to try and please everybody all of the time. And, that for me is all part of how you, how you go to work, how you deal with the client on site. It's all to do with your, almost like your personalities that you put in on site. For me, good project management is not only having a good project manager per se, but having a good team under you that you know you can trust. For instance in meetings, when you're talking to the client, they come up with the right answers and it's having the trust of people to be able to do that. So that it's not just you doing it, it's your whole team that are doing it and I think that's very important. Client satisfaction is a very difficult thing to try and break down to be honest. Because, some clients are happy that OK you might be three weeks late but you've come in on budget. Another client might be happy that you've gone slightly over budget but at least you're giving it two weeks early. So, judging what the client really wants is sometimes difficult. It depends on what, on who the client is really. But, certainly as a company if we're going to continue working in the south west then we need to make sure that we are ... because there's not many clients in the south west, that we are getting the work time after time, after time. And we can only do that by making sure he's satisfied with each job that we produce for him. And it's a difficult thing to try and do I must admit. I think building is slightly different to civils. There aren't many major civils works in the south west but the building guys almost have the same client every time. Plymouth City Council for instance, they're doing a lot of schools for. They did the same at Cornwall County Council, they built something like 12 schools for them. So they build one and then move onto the next, next, next. So, by the time they get to the third one they kind of know what the client is looking for each time. So by the time they get to the twelfth one that is the perfect one do you see what I mean? So it's almost like you do it in stages almost.

VL: Do you get, do you have an idea of what the brief of the client is?
UK-6: Yes from day one you do.
VL: OK, but that doesn't tell you much about what he priorities are?
UK-6: No.
VL: So you have to read into that?

UK-6: You do, you have to read round the words if you know what I mean? But it's also about talking to each other isn't it? It's about having meetings, it's about listening to what the client is saying maybe about other contractors. There was a job down the road at Bodmin that was going on the same time that we started here and we were hearing a lot of displeasures from the client. The same client was here as was down there, so we were hearing a lot of things about things that had gone wrong down there on that site. That we hopefully, would not repeat on this job. So that was quite handy to have ...

VL: Right as if you can make notes what to do and what not to.
UK-6: Absolutely, absolutely. Yes absolutely right. And, in fact, some of the clients' representatives that are here on site started down there two years ago. So, they've moved from there to here. So it's good that, you know, I can go to him for advice and say 'look what did you do down at Bodmin Peter? I mean were you happy with what they did? Because we're intending to do the same'. So it's all part of client satisfaction because he could then ring up the client and say, 'well he has asked me and I'm happy and ...' You know at least we're talking, it's all about communication I think definitely.

VL: And in this case you have a contract with the Highways Agency.
UK-6: Which are a Government Department if you like...

VL: How does the contractor/client relationship develop? When you have like a part or a department of the Government as a client? Do you have just one representative? Do you have a team of people? Does it make it different?
UK-6: Our contact is with one person to be honest. A guy called Andrew Allcorn is our contact so, he will be appointed by the Government as the project manager for the Government, or the Highways Agency on this job. So he is like their project manager, so he is our one point of contact. We don't have to deal with numerous other people. If we have issues then they get sent to him and then he will then disperse, bring the answer back and then it gets followed down to us. So that's good, I think that's a good thing, because in that sense it's one point of contact.

VL: It's not a lot different from having a private client...
UK-6: Absolutely, absolutely so very similar.

VL: Is there anything else related to client satisfaction that you would like to add? In terms of its relation to the success of a project?
UK-6: Probably not at the moment, but when you send the transcript, I'm sure I will be able to add to it.

VL: Good! You were talking about the elements of the management that make the project successful, or that enable you to create a scenario in which the success of the project is a likely outcome. How do you think the things that you do, as general things or everyday things, all sorts of things, affect the successful outcome of the project? For example, how do you see the of the project manager as having an impact on delivering on time?
UK-6: Crikey that's a toughie. Are you saying the things that I do personally on a day to day basis? Is that what you're asking?

VL: Yes, the things that project managers do...
UK-6: I am probably repeating myself but I think a good project manager is somebody that communicates to the rest of the team daily on what the requirements are for that

day, if you like almost. We do what we call a two weekly programme of works. So that is then communicated down to the guys on the workforce, the engineers, the foremen. So that they know on a weekly basis or two weekly basis what's coming up. But almost on a daily basis we are communicating in the office on what's got to be done, what's got to be achieved, because we have this overall programme that we have to try and meet. And that programme is then broken down into tiny, tiny almost daily activities. And I think a good project manager is somebody that communicates almost to that finer detail of what needs to be done on almost a daily basis. It's a difficult question that – it's almost trying to appraise yourself isn't it? Which is difficult, really...

VL: Can you think of another project manager that you know?
UK-6: Yes, Yes I know a few. What does he do on a daily basis? God that is a toughie! Can I leave that one for a minute?
VL: Yes that's fine.
UK-6: Sorry it's ....

VL: That is fine. If you had to think of somebody that you consider a good project manager or be that you admire for certain characteristics, them as a person or your idea of an ideal project manager if you like is. What characteristics do they have?
UK-6: They're very calm... Certainly in the face of adversity, if you like. If things go wrong on site, which they have on this site, that that person is calm, collected, makes the right decision i.e. a thought out decision. Which some people may not like but ultimately as the project manager those decisions have to be made. We do have a guy here that I do admire and look up to in that sort of vein really. It's the contracts manager. I've known him for ten years, and he has been a project manager of mine for many years and I kind of see him, I look up to him. And I aspire to be sort of the guy he is really and, he is very much like that. He's, if ever there's a problem or, something happens on site he's never shouting, and ranting, and raving. He is just very calm, talks to you at that sort of level. This is what we've got to do, makes decisions and that's what I admire. And I think, I think the team need to see somebody like that at the helm. Not somebody who is ranting and raving and throwing plates around and stuff like Alex Ferguson at Manchester United! But somebody who is very calm and can steer the ship and that everybody, you know, gets behind really. And I think we have got that here, and certainly with him. I think people respect the guy and I think that's, that's probably the word is, 'respect' but you have to earn that don't you? You don't just gain respect you have to earn that. And, certainly in the ten years that I've worked with him he has certainly earned my respect. Because of the way he works really, and the way he talks to clients, the way he goes into schools and talks to the kids. It's all part of being a project manager and again, I'm repeating myself, but it's all about good communication. Talking to kids at that level, talking to the client up here, talking to the Directors of the company, being able to talk to everybody ant any level really. And that is most important, most important. So that was an easy one for me... (laughs)

VL: What about the respect of the team?
UK-6: Fundamental.

VL: What does it enable?
UK-6: Well, I think it means that people will back you and they will work for you. And they will go along, basically, with everything ... OK they've all got their own ideas on how to do the job. But ultimately if you've got the respect of the workforce then, they will back you and they will build the job to basically how you need it to be built. Because they do respect your decisions and I think if you've got a project manager

that's weak and he is making decisions that people basically don't agree with. Then, you've almost got a mutiny on your hands, people will mutiny. But I think, again going back to this guy, he's got such a good personality that even if his idea is wrong, is that he almost makes you believe that it's the right thing. Because he's very good at, he gains respect and also he is very experienced, and generally when you talk to him and he has an idea, it's based on his past experience. And you respect the fact that he has got experience. So Yes I would say that's what that gives really, it gives you, it gets the team behind you. Again, I keep going back to the football, it's Alex Ferguson you know, his players play for him because he has the respect. He has the experience, he knows what he's talking about and it's the same with this. You know if you've got somebody up there whose speaking confidently on the subject of, I don't know, client satisfaction or, how are we going to do this part of the job, then people will believe in it. And, do the job how he wants it.

VL: Do you identify any other characteristic in this person that you say is a good project manager?
UK-6: I just, again I am repeating myself I think because he is so calm and he has got the demeanour that he's not going to panic. You see if the guy at the top is panicking then that gets down to the workforce. And I think if you're seen to be, not laid back, but not panicking about it, making decisions. That ultimately you're not making rash decisions but making thought out decisions, then I think you'll go a long way personally.

VL: You also mentioned respect. Is there anything that you purposely do to get the respect of your team?
UK-6: No. I don't think you can, I think respect comes from your actions. So it's what you do on site everyday or working with certain people. If they, if you're doing the right thing, in my opinion, then respect becomes automatic. And I think you know if people respect you to be honest. I can tell, I think, if people respect me or not.

VL: How do you know?
UK-6: I think if, well for instance, if I come up with an idea to build a certain part of the job. And I'm talking to an engineer and he's basically arguing back with me or whatever, without grounds. Then I would say that he probably hasn't got any respect for my ideas or experience. I think you can tell, I think you can tell if people respect you. I'm not saying that they have to go along with your ideas. Obviously as a good project manager you need to take on board everybody's feelings and everybody's views on certain things. But, I think again if you take those things on board and you make a decision based on, not just what you want to do, but you've thought about it, you've taken on aboard some views on how to do things. And you've then come up with a probable solution based on everybody's ideas. Then I think that's, you then start gaining respect because people say 'well you know he is listening to me. You know I have done this before, maybe you haven't done it before. You listened to me, we did it and it worked'. That's when you get the respect I think.

VL: Hmm, oh OK so at the beginning of the project when you start working with a new team and strange people.
UK-6: Which we have here, a lot of the guys here have been new to the company.

VL: Yes what do you do then to replace that respect that you've....
UK-6: That you haven't already got?

VL: That you haven't already got as the leader of the team, if you like

UK-6: Yes that's an interesting question actually. That is an interesting question, I think again and I'm sorry to keep repeating. I think good communication is key. I think being able to talk to people that are maybe starting on site that haven't worked for us before, maybe haven't done a big road job before. It's being able to sit down and talk to them, what's expected of them, talk about the project. Go into the fundamentals of the budget if you need to. Talk about the commercial side, this is where we are now, this where we need to be in 12 months time. I need you to be looking after drainage and earthworks in this section. And again it's just talking to people, it's making sure they're aware of their responsibilities and then hopefully that respect, day in day out, you're talking to them. And hopefully that respect builds up and builds up, and builds up. And also respect for them as well it's a two way thing isn't it? It really is a two way thing. So I think that's, we've had a lot of new guys on this site and I think it's worked very well... I was a bit nervous about that at first to be honest.

VL: Too many new people?
UK-6: Too many new people Yes. But I think it's worked definitely. Certainly on site it's worked very well you know?

VL: Is there anything that you identify as your contribution to that working well?
UK-6: I suppose, yet again you're asking me to praise myself now really, but I think it's my personality. I think, I'm not a brash person, I don't, again I'm a bit like the project manager I was talking about, I'm not one that jumps up and down and shouts a lot. I mean people, if things go really wrong and it's somebody's fault then generally I get a little bit sort of ... if they've done something stupid. I don't shout but they know that they've done something stupid but, again I think it's about personalities. And I'm pretty laid back actually, I'm quite a ... not laid back,laid back but, again I don't rant and rave. I make sure things are done properly on site and if the guys have got a problem they know my door is open. And they know they can come and talk to me. That is key I think because if they know there's been a mistake out on site. That they've done something wrong, if they can come and tell me before it then gets picked up by the client, at least then I know and I can do something about it. And it's them knowing that they can come and speak to you about things like that, that to me, shows a bit of respect. And shows the fact that Yes you are communicating with these guys well because they know that they can come in and speak to you about things. So I think that's quite key actually.

VL: If we had to say from 100% of the success of the project, how much is due to the project manager and how much is due to the team? How would you distribute that?
UK-6: Blimey! Oh that's a tough one... I would say, I would say probably about 50/50. What have others said? Come on! Do most people go 50/50 or?

VL: No some of them have said, some of them have said 100%, and some other people say 'without the team I wouldn't do anything'.
UK-6: Absolutely that's my point, yes that's my point. I think, I think good leadership as a project manager, if you haven't got that then you haven't got anything. I think without your team you're nobody anyway. You would never get it done, so I can't see how people would say it's 100% me and nothing of the team. Do you see what I mean? And I can't believe that people say Yes it's 100% the team and nothing to do with me. So I think it's, as I say, I think it's about 50/50. I think you've got to have a good leader but you've also got to have a good team. And, if you haven't, if you've got a good leader without a good team that doesn't give you anything. And similarly the other way around. You know if you've got a crap leader and a good team ... Yes OK you get

more done but it's the respect of the client isn't it? The client deals with the project manager, the client doesn't necessarily deal with the team. So the first person he will speak to, the first person he will see, the first person that he will contact is the project manager. So if the client is unimpressed with the project manager then you are really struggling from the start I believe. So this is what I mean about making sure that the project manager is the right personality and that he can speak to the people at the level that he needs to, and communicate.

VL: In terms of personality traits, what would be good other than communicating and being calm?
UK-6:I think understand the clients' needs is definitely key and I think, a good personality, I think you have to be a good listener to the client definitely. I think you've got to listen to understand what the client wants. So you've definitely got to be a good listener, what else? I think you've got to be confident because if you're not confident then the client has got no confidence in you. Then I don't believe he has got confidence that the project is going to be successful. So confidence as opposed to arrogance, you know there is a fine line, very fine line between confidence and arrogance. So I would say arrogance is definitely stepping over line but being confident in front of the client I think is very key and being calm. I think if you're ranting and raving, and chucking coffee everywhere, and I don't think that's a good sign. Do you see what I mean? So I think calm, confidence, that sort of thing. Also I think being smart, I think wearing a jacket, wearing your tie. Being smart in appearance, maybe it's not personality but it certainly, I think helps.

VL: Yes?
UK-6: Because otherwise if you're unshaven, and you're tie is over here *(points to his side)* and you're ranting and raving.
VL: What does it project?
UK-6: Again confidence I think. It projects probably confidence, maybe honesty probably. I think that's the other thing that I was going to say is that, honesty to a client is probably one of the main things that he's looking for.

VL: Only to a client?
UK-6: Well no obviously to the team as well but, I think definitely to the client. He wants to see that you're straight down the line, you're honest you know. If things are going to go over budget he wants to know and that you're telling him if it's only going to be a million pound it is only going to be a million pound. Do you know what I mean? And he doesn't want to find out in six months that it's actually six million pounds. So I think honesty, confidence, calmness I think all of those things really go together as a project manager.

VL: The project manager has to be a good leader. What kind of leader does the team need?
UK-6: Again it comes down to the same thing. I think they need to believe in him and they need to believe that the project can be brought in on time. Because if the project manager is telling them stuff that they don't believe in, then you may as well pack up and go home. So I think he needs to be believed, again it's all to do with the confidence that the project manager brings to the team. I know I'm repeating the word but again it's all down to that I think. It's having belief in the guy and having confidence that he is going to produce what he says. I don't know if there's anything else that I can really add to that to be honest.

VL: What do you think about trust issues in a team?
UK-6: Very important.

VL: How does that work in a construction team?
UK-6: I know that when I come in, in the morning if I set the engineers to work on a task, that I have the confidence and trust in them that they can go out and actually do that task. Because if I haven't got that in them I wont ask them to do it. Do you see what I mean? I will go and ask somebody to do it that I know has done it before or, who can do the job. But, on the other hand you've also got to, with the younger engineers, you've also got to give them the trust that you can set them a task that they may struggle with. But that they will then ask somebody, or come to me and say, *look I'm not really sure what do I do?* That to me is trusting them Yes to go out and do the stuff but also come back, if they've got the trust in me, to come back and say 'look not really sure what you want, can you explain again?' That I feel that they would have the confidence to do that and come and see me and you know? I think you've got to have the trust in the guys, you have got to have the trust in their ability probably more than anything as a project manager. Because you do have to delegate tasks, that's what a project manager does really. Delegation is very key, some people say that you may delegate too much and that you should be doing things yourself (laughs)... I don't agree with that actually. So Yes it's, if you're going to be delegating you need to trust the guys that you're delegating to. That they can actually go out and do the task to probably the standard that you would expect from yourself. That -to me- it's quite important. Because the last thing you want, if you're sending them out to do something, that you think 'oh maybe he is not going to do it. Or maybe he isn't going to do it very well. Oh but Yes OK we'll let him do it anyway'. Well that to me there's no point in doing it. It needs to be, you need to have the trust in people to go out and do the stuff that you're asking them to do. And I have that I think with the guys I've got. All of the guys that I've got here, you know if I ask them to do anything, I know it's going to get done. If I say I need this doing in the next hour, it will get done. It gets done... Yes no problem at all. So I have that confidence in the guys.

VL: Good, how does it work at the very beginning when you start working with them?
UK-6: Yes it's difficult, with guys you've never worked with before, it is difficult. Because you're learning how they work, you're learning what they can do, you're learning what they're not very good at. So it is a learning process definitely. In fact the two engineers below me that I project manage, both of them were new to Interserve and I think both of them were pretty new to road building. So, it's really sort of giving them a task, at the start, Yes he did that OK. Maybe a bit slow but he Yes he did it and then you build up giving them different tasks to do. Maybe give them something that they may not have done before and you know that it's going to take them longer. So it's all about judgement, it's judging what peoples' abilities are and that sort of things is very important as a project manager. And as I say it has been difficult with a lot of new guys on site and it's learning their abilities really. A good project manager -I think- knows the abilities of his team do you know what I mean? I think that's very key, very key.

VL: Yes so get to know their strengths if you like in a reasonable kind of way?
UK-6: That's it, strengths and weaknesses. We all have strengths and weaknesses don't we? You know we all do. We're not all good at everything. So, yes it does take time. You won't know that for the first few weeks certainly, but you do, you build up.

VL: The work that you do –as a team- is quite intense. And it probably doesn't take much because I guess well, at the very beginning can be a bit slow but usually they work ... because of all of the targets that you have to meet on a construction site?
UK-6: Absolutely, absolutely yes absolutely. It's also trusting people to do things that maybe they haven't been asked to do. But they know have got to be done do you understand what I mean? I don't necessarily need to tell my engineers to go and do something if I know that they already know it's got to be done. And it's trusting them to go out and actually do it without being told to do it.

VL: And having that initiative then, do you think is that something that comes with who you are?
UK-6: Yes.

VL: Do you think it's something that you can develop?
UK-6: No, I think that is a personality trait, definitely.

VL: Do you think that the project manager needs to have that personality trait?
UK-6: Yes definitely.

VL: OK and what about delegating? You mentioned that...
UK-6: Oh you've got to be good at delegating to be a good project manager without a doubt.

VL: Yes? How difficult is it?
UK-6: To me not very (laughs). But to some project managers it is, the guy that I was talking about earlier, he has a big problem delegating. He would ask for you to do a report, you do the report and you know when you give it to him that he may as well just do it himself. Because he is going to go through it and scribble this out, there will be red pen all over it and he'll give you it back. And you think why the hell just didn't you do it yourself you know? So he is pretty poor at delegating.

VL: Yes what is the problem with being poor at delegation?
UK-6: You tend to want to do everything yourself and I don't think you've got enough hours in the day to do everything yourself. And I think you then become overworked, probably more stressed because you can't trust the individuals below you to do what you want them to do. So you end up saying 'bugger it I'll do it myself'. And you do, you get all of this work on top of you and then I think you tend to not do things as well as you could do them because you're rushing to get so many other things done. Do you see what I mean? So I think it is a very, it's not for everybody. I don't think everybody can delegate very well but I think it's something that I probably do reasonably well.

VL: And after that delegating what's the next task of the project manager?
UK-6: I suppose the next, if you've delegated something that's reasonably important you need to know that it's been done right. So I suppose the next point is that you have to check what they've done. I know there's trust involved and we talked about it, but it depends on the importance of the task doesn't it? If it's a most important task you would probably do it yourself anyway. If it's slightly less important you may delegate that but you'd still want to know that when it comes back to you, or the task has been done and it has been done to your standards, I think that's important. So I would say the next step on the delegation is probably making sure that it's been done to your, what you would do yourself.

VL: Is there any way in which you could transpire that standards that you have for working?
UK-6: I think they do... I think they're working with you day in, day out. They understand how you work and that almost rubs off on them, hopefully. That if you're doing a good job, that hopefully that will, in years to come, they will look back and say 'oh when so and so was project manager he used to do this'. And hopefully that sort of gets into their brain and they also work the same way. So I think again it's working with these guys, they see how you're doing it and I think that rubs off on them definitely. Rather than trying to teach it. I think you teach some things but I think most things they will gain from just watching what you do and how you perform. And how you go about talking to people, clients and I think that does rub off on the junior guys definitely.

VL: What happens, for example in your case, when you were mentioning the contracts manager that you admire for the characteristics that he has. But when he asks you for a report and then you know that you're working on something that he is not going to like anyway. Because he already has a very clear idea of kind of what he wants, so he might as well write it himself. What happens with the person that is working for somebody that isn't able to delegate?
UK-6: I think, I don't know really. I think with him, if I can use him as an example. If he gives me a report to do and I know he's going to put red ink all over it, it winds me up to be honest. I think well what's the point in giving it to me in the first place? Because you just know what you want so if nothing, if this isn't good enough for you then you may as well just do it yourself. Maybe that's the wrong thing to say, I don't know, but specifically for him that's the way it works with him really. I think he does delegate but, it's the way .... it's delegating and then, as I say, if it's a report he delegates it to you and then he ends up doing it, he may as well just do it himself. That annoys me because you just wasted your time then, do you see what I mean? If he is going to accept maybe with a few alterations of your report then fine. Then I think that then gives you confidence to think 'well Yes OK next time he asks me to do it I'll do it again'. But, if he is writing red ink all over it and he asks you to do it again two weeks later you're going think 'well what's the bloody point you know?' So I think there's a fine line definitely there. It's a bit of a skill delegation I think but they reckon I'm good at it (laughs)

VL: OK so all of the characteristics of the project manager were to be good communicator at different levels, to be calmed, to generate or create respect both ways or so it is to create probably respect for working relationships, to be a good listener, to be a good leader, to be able to delegate properly, to be an honest and confident man?
UK-6: Yes, definitely.

VL: How would those things have an impact on the successful outcome of a project?
UK-6: Well, I said at the very start that a successful project is, in my opinion, is giving the client what he wants. And that is normally getting it on time and in budget. I'm not sure that being a confident project manager or being a calm project manager, I'm not sure if that gives you a project on time and on budget. So, I don't know what the answer to that is to be honest.

VL: What does it give you to be calmed and to be confident?
UK-6: What does it give me or, what does it give?

VL: What does it give to a project manager in general? If it's not directly related to the successful outcome of the project? What does it provide for the project or the team?

UK-6: I think if you're calm and confident I think the team is generally calm and confident and goes about their work in a confident, well mannered way. Which I suppose if a client comes to the site and he sees that then it's good from that respect. I don't know that is a tough question that actually. I'm going to wait for the transcript on that because I thin I can do a bit more on that one. Is that alright?

VL: Yes that's fine.

UK-6: Sorry to duck out but that's a toughie that.

VL: No don't worry that's fine. That's absolutely fine is there anything else that you find relevant that you would like to mention? Or anything that you would like to ask me?

UK-6: No, I'll wait for the transcript.

Appendix E.7: Participant UK-7 Interview Transcript

VL: If you could focus on your experience on site. What do you think makes a project successful?
UK-7: A successful project is a good teamwork relationship with both your client, your client's representative and obviously your own team and supply chain. You need to set up good communication links. You need to earn their trust and trust them to an extent and know that trust builds up as you go through the project. You need to have a clear plan of how you're going to do the job, which you need to review regularly. As often as is necessary, so that you finish the project as early as you can, to the client's satisfaction. You need to keep a close check on your costs. To check on overspend, or indeed underspend. At the top of the list, obviously, is before all that really is health and safety. You need to have a good health and safety culture.

VL: Before communication and trust. Before teamwork or ...?
UK-7: Yes, health and safety is key business that I belong to. Health and safety is the top of the agenda. If you get health and safety wrong, you will get your costs wrong. If you have an accident, your project will suffer programme wise and you will certainly lose all trust of anybody that you work with if you don't treat health and safety with the severity that it needs. So you need your health and safety correct. Quality, you need your site team to be focussed on quality, providing the customer with a quality product. You obviously need an environmentally sensitive team that can react to environmental issues.

VL: Mm hmm. Anything else you'd like to add?
UK-7: No I think that's all.

VL: The first one was health and safety and you mentioned that that's a relationship between taking care of health and safety on site and the trust that people have? How does that work?
UK-7: The project manager is the top of the tree and everybody looks to that person to, for a steer on health and safety. If the project manager can show that he or she is dedicated to health and safety and the health safety of everybody who works on his project, be that, whether it's visiting members from the client or the client's agent or his own team or his own workforce or his supply change workforce. Anybody who comes into contact with that site and in addition to the members of the public that we interact with. If he can show that he's dedicated to protecting their health safety and providing their welfare as well, then that will filter down through that whole team. And then he will get the response back again that you will generally have a safer team. That everybody's behaviour will respond to that project manager's behaviour.

VL: Ok. So it's a more general issue about behaviour then?
UK-7: Yeah. We have all the systems and the procedures in place to help us provide a health and safety environment. We're taking it one step further with project management that we're looking at people's behaviour on site. You know, we've brought our frequency action, frequency rates as low as we can, pretty low, nearly as low as we can get them. We're still having accidents with all the procedures in place to

stop these things but people are still injuring themselves. So we've identified it's their behaviour. It's why they take shortcuts? Why they trip and slip? Why don't they look out for each other? So, the project management can get focussed on that and get the whole team looking out for each other. And looking at little minor things which they generally just walk around or walk by. Those are the little things that make people fall, make them slip and trip, and cause the more serious accidents so frequently. If we can get rid of all those smaller issues, the bigger issues will look after themselves generally. So, that's where the Project manager's got a big influence.

VL: Ok. The supply chain team is not only provided but also sub-contractors, the way you see it or...

UK-7: The supply chain is your suppliers. So that could be your material suppliers, and it's your sub-contractors, yes.

VL: You mentioned communication as a factor that makes a project successful. How can the Project manager facilitate good communication between the parties?

UK-7: Well, there are various means of communicating. There's obviously written communication, whether that's on paper form, letters, memos, etc. There are email forms, email which you can use. You can communicate verbally, either one on one or to an audience, either in a meeting or to a presentation. And the other sort of communication is the visual communication as well. I mean if you turn up professionally, smartly dressed or dressed appropriate for the job that you're doing should I say? Then that is a communication as well. If you wear inappropriate clothes or your appearance is inappropriate, you will get the same response from the people that you're talking to or that you're managing. If they see that you're sloppy, slovenly, don't care for yourself. They're going to have the same, they're going to have that opinion about you and act accordingly. So there's a visual communication as well. Letters have their place for official communication under the terms of contracts that we deal with. We have to write letters to confirm things or to request things. Email is obviously easy, but can be dangerous because you don't know who they're being sent on to and generally is a less formal form of communication but it does have its dangers. Verbal, not just one on one talking, and the more of that you do, the better, to be honest. People react better when you're talking to them. They can see it's face to face. They can see your expression, whereas when you're typing something on email, they can't see what expression you're putting into it. But it's all about talking, especially if you can share your office facilities with the client's representative. You're next door. You can talk to them at all times. You don't have to pick up the phone or arrange a meeting next week. If you've got an issue, you can literally walk down the corridor, knock on his door, on his or her door, and then go and talk about an issue and get it resolved a lot quicker. And that tends to build up the trust. And if there's good communications, you generally find the site will run quicker. Communicating to the workforce. We do that by communicating generally to the whole population, bring them in either all at once and giving them a briefing about something or telling them about something or we can do it through representatives. They might have one representative to represent the whole of them, and that's sort of bring them into meetings and discuss all the issues on site with them. And if they feel they're being included and involved in the decision-making, they will react better and give you better performance. And obviously team briefings as well with your own site staff: regular meetings, regular discussions. Getting involved in their issues and having an open door so they can come and talk to you if they've got any problems or issues, anything they want discussing.

VL: So those are the dimensions of communication?
UK-7: All sorts of things, yes. You've got to be a jack of all trades to be honest.

VL: What about trust? How do you create trust as a project manager? When you start on site and sometimes you've worked with some of the people that you have in your team. Some of them are new to you. Some of them might be inexperienced. How ...?
UK-7: I think when you've got to set your own standards. I mean, set your standards how you will run the job and how you see it. So, you'll probably have worked on the job before it starts. You maybe worked on the tender so you've certainly got a feel for what the job is. What the scope of works is. What the programme periods are and any milestones that may be along the way that you have to hit. You should know the inside out of how the tender is formed. What money, what allowances you have to work with and what plant and equipment you're going to use for example. The site team will look to you to provide that information so the earlier you can brief them and get them involved in developing the whole product, the whole process, the better. If you don't, they will just go off on their own track, and if you let them, they won't come back to you. They'll not trust you to tell them the information. They'll go and find it for themselves and they'll go off maybe down the wrong route and do something incorrectly. So trust is built up very early, showing them that what your standards are. If they don't live up to those standards then you deal with it depending how far from the standard they've wandered. It's sticking to your own standards really and if they can see that, then they will trust you to do that. But if you say one thing and do another, then they'll very quickly pick that up and then you lose the trust. That's both with your site team and the client as well.

VL: So in a way, you have to be very careful to work in just one line? To set the standards and work to those standards yourself? If you show signs that you are not meeting your own standards, then the rest will not follow in line?
UK-7: Yes. Yes, absolutely.

VL: The jack of all trades ... You were referring to communication. Do you see the project manager as somebody that needs to know about a lot of things generally speaking or you just referring to communication?
UK-7: When you're the project manager, depending on the size of the contract, but take an average size contract, say two or three million pounds worth of contract; you're running a two or three million pound business. It's like a managing director of a small company. You've got to be the personnel manager. You're not necessarily the cost manager because you generally have quantity surveyors that look after the commercial side. But you need to know about. You need to understand it. You have got to be a planner and you've got to be a programmer. Although you may again, have somebody doing the actual nuts and bolts. You've got to understand it. You've got to understand. You've got to be able to develop. You've got to be able to foresee things. You've got to be a health and safety manager. You've got to know about health and safety. You've got to know about quality and all the issues about quality. You've got to know your own procedures inside out. You've got to know about everything. You don't have to do everything, but you have to know about it all.

VL: And what about the project itself? What things do you ...? Should know? Or should understand about the technicalities of the project?
UK-7: Well generally, I mean as you come through from either graduating at College or University or there are other various ways of coming up through the engineering ranks, you build up all that technical expertise anyway. So by the time you get to project

manager, you'll know how it's done. You may not remember how to do it yourself. You have engineers that'll go and do it. Or you may have quantity surveyors to go and do the commercial aspects of it. And you'll have supervisors and general foremen to go out and manage the work. So, you'll know how it's done but other people will do it generally. But you have to manage it all. You have to make sure that they're all doing it at the right time, in the right place. And even if you don't know the answer to something and maybe the site team doesn't know a specific technical issue, you have to know where to go and ask the question. A company like ours is big enough that we've done most types of civil engineering the world over. So there's always somebody that knows the answer to whatever it might be. That's one of the benefits that we have. We have a big back-up system. Whether it's in temporary works, permanent works, IT, health and safety, quality. You name it. We've built bridges, tunnels, motorways, harbours, towers, tunnels. We've done it somewhere. And if there's a problem, there will be somebody that we can call upon. But you need to know where to go and ask the question.

VL: Yeah. So most of the work that you do is in civils?
UK-7: Yeah. We're a civil engineering company, yeah. Our company's Group does all the disciplines. It's got a construction division which is the building division. We've got mechanical and electrical. We've got the civil engineering division that we have. We've got tunnelling. We've got people who build hospitals. We've got companies in several regions in the world. They build a lot of these army bases in America. There's a seven hundred million dollar business in America. It's a big group so there's not much in construction that we don't do really.

VL: Yes I can see.
UK-7: So we can call upon whoever we want. But that's part of the project management is knowing where and when to go and ask for help and where to go and get it.

VL: What characteristics of the project manager - as a person or as a professional - would facilitate the success of a construction project?
UK-7: Well the project manager's got to be the leader. You've got to be a leader. If we ever lead a team... It's all about team work but he's, he or she's got to be the person who leads that, sets the direction of the team he's going to work in and being able to manage, to go in that direction. But also to be able to change direction if needed, because things happen on construction sites. Whether it's an unexpected event or a ground condition or the client changes his mind or whatever it happens to be. He's got to be able to change direction quickly if needed and he's got to be able to get the resources to do what he wants. So ultimately, a leader.

VL: You mentioned that he or she should be able to change direction quickly if needed. So in a way, that means that the Project manager should be assessing constantly what's happening in ...? So that he or she gets clear idea of when they need to change direction? How do they know when?
UK-7: It may be an obvious situation. It may be constructing something in the ground and you come across water or unsuitable ground conditions for the foundations that you're building. So the team will notify you, 'we've got a problem'. The project manager then has got to say, 'what do we do about it?' Do we just say stand back and go, 'It's not up to us. It's up to the client's designer what to do'. Or do we go to the designer, say 'look, we've got a problem. This is what we think we should do, do you agree?' If they do agree or they've got some other idea, they tell you what to do. You

go and do it. But that might be a total change of direction. It might be total change of construction technique so to be able to stop the works and change how you're going to do it so, to get the team refocusing on a different direction. It may be that you're constantly monitoring your costs and your costs are going up to an unacceptable level. In other words, your cost is outweighing the value that you're going to get back. So you've got to say 'well, hold on a minute. If we keep on at this rate, we're going to lose money. What do I need to do to bring that back in line?' So that may be a change of method again. Do it a different way. Do it a cheaper way or a quicker way. But its needing to know everything that's going on at all times. Getting feedback from different people whether it's your commercial team, whether it's your planning team. Whether it's the site supervisor that's giving you feedback on how it's going on site. Your sub-contractor may be having problems. That if you didn't keep in communication with your sub-contractor, you'd never know about it. Sometimes sub-contractors go bust and the only time you know about it is, you get a phone call saying, 'we're not coming in tomorrow. We've gone bust. The administrator's in'. Well then what do you do? But if you're in constant communication, you can maybe foresee these things. There's all sorts of changes of direction. I mean every day's different. One of the good things about being in civil engineering is no two days are the same. That's the challenge.

VL: Yeah. Why's it good?
UK-7: Why's it good? Well it's better than sitting in an office doing an office type job where every day seems to be the same. You look at the same room everyday. Every day is different.

VL: Why's it good? Would that be a characteristic for example of a project manager? Somebody that likes a changing situation or a changing environment?
UK-7: Yes, I would say that most people who come into construction, whether it's building or civils or whatever it happens to be, does it because it's different. And it could be just the different weather. One day it could be sunny, the next day it could be raining. That presents so many different challenges to you, whether it's rainy or it's sunny, because of how it affects the ground conditions or whether you're painting something or welding something. You know, just the environment changing, changes how you do your job every day. And I think, certainly, engineers that come into construction like that sort of challenge,

VL: Are there any characteristics besides being a leader, identifying situations in which you need to change, liking challenges that would define a Project manager? Is there anything else, for example, professional values or personal values, anything that you can think of?
UK-7: Yes, I mean people that like to have done something tangible. In other words, that you can at the end of the Project or half way through, you can stand back and say 'I contributed to something physical. I built that road or I built that bridge or I built that building or the tunnel that you're driving through is; I project managed that or I had an involvement with it'. That's certainly what appealed to me whenever I was deciding what I wanted to do with my life. That I lived not far from a big construction site that was building a bridge and I was lucky enough to be able to have a visit to that bridge construction site and so got me interested. That's the sort of challenge that engineers like. That's what they like doing. They like being able to stand back and go 'I built that'.

VL: And that you've seen in other people as well?

UK-7: Oh yes. Absolutely. Yes, yes. You take some other profession. I mean my wife's a lawyer. She likes doing what she's doing, but to me you couldn't stand back and say 'I did that', because there's nothing, apart from some papers, what else has she produced? It's different, she likes it for different reasons but that wouldn't appeal to me at all.

VL: If you could think of someone you consider a good project manager? Somebody that you've met or somebody that maybe you looked up to when you first started? ...as a good project manager. Can you describe me that person? Or maybe an ideal?
UK-7: The Project manager I'm thinking of is different to the way I did it but I still looked up to him at the time as a good Project manager. Totally different time with the way things were done then and they are done now. He was certainly the Boss. You didn't approach him. When I was a young engineer, I didn't know on his door and just walk in and ask him for advice because he was ... not God ... That's too strong a word, but he was unapproachable. The only people who went into his office were more senior managers. We weren't included in meetings as the young engineers. We just had a job to do 'go and do it'. The only time you went into his office was when you did something wrong and he was there to discipline you. But, the way he managed his jobs, he got the job done. He made money. He got the job done within programme and the clients were generally satisfied with what they did. He was a roadworks project manager. We built roads. It's a different style. Totally different style that would be acceptable, it wouldn't be acceptable the way he did it nowadays. No. But I remember getting a grounding in the way that he did it. That he was totally focussed on what he was doing and he got it done. He made sure that the people in his team did the job. There was probably more of the stick than the carrot but it got the job done. Today, you can't be as hard today on people. You've got to be more open, communicative. You've got to talk to people a lot more. You've got to understand everybody's issues. Some people say that's not such a good thing but, you've got to be strong. If you need to discipline people, then you need to discipline people if they've done something wrong. That's another part of project management. We don't often get involved in it, but we have to do it. If somebody does something stupid on site which could affect their own or other people's safety, then you've got to discipline them to make that it doesn't happen again and that may mean removing them from the site. Anyway, the guy I used to look up to. I think he's dead now to be honest. But it was quite a few years ago. A totally different role, the same role, but different way of approaching it.

VL: One of the things that I understand from what you've told me is that that was somebody you respected very much? Do you think respect is still something relevant?
UK-7: Oh yes. I think so. Definitely, yes. I can think of project managers that aren't very good at their job. And they're not very good at the job because they haven't got the respect of the team that they're trying to lead. The team know that they're not very good. The team know that they haven't got a grasp of what they're meant to be doing. They haven't got a grasp of the work scope. They've got no idea what their costs are. Their relationship with the client is bad. And this is all lead by the project manager. And if the project manager's not doing those things, the team will see that very quickly and react accordingly. The team will not work. Everybody will go off in their own directions and they won't work as a united team. So, by saying the people who don't do it easily, it's easy then to see what they should be doing. Probably good project managers and they do all those things well. They do most of those things well, some people are very good at all of it, but most people are very good at most of it. But that's all part of the learning process.

VL: So in that case that you mentioned in which it's not a very good project manager in which they're not able to make the rest of the team respect them, is there a confidence issue or is it something that ...
UK-7: Sometimes, yes. I mean the one I'm thinking about at the moment, it's not a confidence issue, I mean he's certainly confident. He's confident in his own ability but it's misplaced. He thinks he's doing a great job and it's everybody else's fault that's it's not doing, it's not going as well as it should be. But everybody else sees where he's going wrong. Sees what is going wrong and when you speak to them, they all blame him. He blames them and they blame him. The team is breaking down.

VL: There's not really a team spirit?
UK-7: No. There's a bit of a blame culture. Don't get me wrong, the job is still going well and everybody gets on with each other, but as far as a professional working unit, it's slowly starting to break down. He hasn't got control of his costs. He doesn't know what his costs are. If he asked for them, he could get it, if he knew where to look. He's got a team of commercial people there that can provide him that information but he's not asking the right questions. He's not looking for the information properly. The health and safety is suffering a bit. Although his health and safety is not so bad because if he doesn't do it well somebody else will step in because they just feel obligated to do that. Dealing with the client it's becoming very fractious. Because I think the client sees him as not a very strong leader. So they will try and run over him and try and get him to do things which he will do but he won't realise they should have been paid for it. So they'll try and run right over him. So If you don't do your job properly, people won't respect you.

VL: So you have to gain that respect?
UK-7: To gain that respect, you've got to be good at it. You've got to be good at it.

VL: You mentioned that nowadays it wouldn't be acceptable to be a project manager as the project manager you thought of as being a good project manager. The fact that in time standards have changed and project managers are expected to do more, to cover more areas, does that mean that project managers have had to develop in time certain skills or personal characteristics like which for example?
UK-7: Well communication characteristics and skills. And that's more the personal skills, the human resource type skill, HR. They've got to be able to speak to you to know every member of their team and be approachable. There are times during every working period. During the working day or week, where you're busy and you can't speak to everybody. You can't always have open doors and anybody can just waltz in and talk to you about the time of day. You still have a job to do but you've got to be able to set aside time for somebody who's got an issue that needs to speak to you about it. We didn't do that in the old days (laughs). The Project manager and the Senior General Foreman were the bosses and you just did as you were told and shut up and got on with it. If you had a problem 'well tough, just get on with your job!'

VL: Do you think it's better now?
UK-7: I think generally, yes. Definitely better, yes. But in some areas, we've swung too far the wrong way I think. We can be too soft.

VL: For example?
UK-7: PC politically correct. We're not allowed to shout and bawl and scream at people because they've done something wrong. Because you might upset them. It's a hard business. It can be a dangerous business. We can lose a lot of money. If we

don't do the job properly, we might not get another job from that client. It's a tough, ruthless business. And if we're always softly, softly and sweetness and light and we don't want to upset people, you know, we're going to get ourselves in difficulties and sometimes you need to be hard with people and show them that they've done something wrong and kick them to make sure that it's done right. Some people react to that different than others and again, that's part of it, you've got to identify which people you can speak to in a certain way and which people you can't. Yeah but at the end of the day, it's a business. We're here to make money. We're here to make provide a safe working environment ultimately and provide the client with a quality product. In our company our shareholders expect us to make money at the end of the day. That's what we've got to do!!

VL: Ok. Do you have any questions that you'd like to ask me or anything else that you would like to add regarding the subject?

UK-7: That's all.

Appendix E.8: Participant CH-1 Interview Transcript

VL: Hablemos acerca de los proyectos exitosos, basado únicamente específicamente en tu experiencia en terreno. Si puedes por favor concéntrate en tus años de experiencia en terreno ¿Que hace a un proyecto de construcción exitoso durante su etapa de construcción?
CH-1: Durante su etapa de construcción, uno de los elementos que hace que sea exitoso es que previamente a la etapa de construcción haya existido una adecuada coordinación de los entes participantes en el proyecto y especialmente, y específicamente, una coordinación e integración de los diferentes diseños. La adecuada definición de estándares de calidad. La adecuada definición de las especificaciones técnicas que definan los estándares de calidad, con las respectivas tolerancias. La adecuada documentación administrativa, que haga un buen marco para la etapa de desarrollo del proyecto de cómo se van a relacionar las partes, qué va a ocurrir cuando un imprevisto, alguna falla ocurra durante la obra, cuando haya algún cambio durante la obra, cómo se van a administrar esos cambios. Es decir, contar (para la etapa de ejecución) con: un buen 'rayado de cancha' y una buena definición de aspectos técnicos y administrativos previos al inicio al inicio de la obra harán que la ejecución de la misma sea de mucho mayor éxito que el no contar con ello.

VL: ¿Y durante la etapa de ejecución?
CH-1: Yo creo que el elemento que hace que un proyecto sea exitoso, es la adecuada comunicación entre las partes...

VL: ¿Cuáles son las partes?
CH-1: Empresa constructora, el administrador del proyecto general o representante del mandante, que en algunos casos en Chile se traspasa a la ITO (Inspección Técnica de la Obra) pero que ya paulatinamente cada vez va tomando más fuerza la figura del administrador de proyectos para el mandante, y los diseñadores del proyecto. Al menos entre esas tres partes debe haber una fluida comunicación y una formal comunicación. Y cuando digo 'formal' me refiero a que queden los registros de esa comunicación de una manera adecuada, en las vías que hayan quedado estipuladas como válidas para formalizar esas comunicaciones, léase libros de obra, correos electrónicos, etc.
Otro elemento que hace que la ejecución sea exitosa es que la constructora haya tenido el tiempo necesario para planificar y programar la ejecución de la obra. Yo soy un convencido de que darse un tiempo, antes de partir con el trazado y excavación, para sentarse y pensar cómo se va a abordar la obra, ese tiempo que se invierte en eso claramente se recupera con el avance que después va a tener una obra que ha sido adecuadamente planificada y programada. El partir ya, por no atrasarse, con la obra sin invertir ese tiempo en planificar y programar, inevitablemente va a significar muchos mayores retrasos que el tiempo que se podría haber invertido en planificar al inicio.
El tercer elemento que debería llevar a que un proyecto sea exitoso es que la empresa que ejecute el proyecto tenga internalizado dentro de su organización, idealmente, sistemas integrados de gestión. Léase: Sistemas integrados de gestión de calidad (ISO 9001), de Gestión medioambiental (ISO 14000) y de Seguridad (OSHAS 18000).

Idealmente, digo, si no son Sistemas Integrados de Gestión, al menos que tenga internalizado sistemas de gestión de calidad. Para lo cual se hace necesario que los diseños hayan definido claramente especificación, estándar y tolerancias. Que la constructora sea capaz de tomar esa información y transferirla a un plan de control de calidad en la obra. Yo creo que ahí están los tres elementos base para que un proyecto sea exitoso: comunicación, planificación y programación, sistemas integrados o bien al menos de calidad.

VL: ¿Podrías definir, con tus propias palabras, cómo se mide el éxito de un proyecto?
CH-1: Primero que nada, yo diría que el proyecto final terminado sea concordante con los distintos diseños de especialidad para ese proyecto. Y ahí insisto en que es tremendamente importante que los proyectos hayan sido específicos en determinar qué quieren, cuales son los estándares mínimos y las tolerancias admisibles. Si todo esta previamente bien definido, para mí el proyecto va a ser exitoso desde el punto de vista técnico si es que el proyecto cumplió con los diseños originales. Dos, será exitoso desde el punto de vista administrativo si es que cumplió con los plazos establecidos y si es que cumplió, o se enmarcó dentro de los costos establecidos; y esos tres elementos -desde el punto de vista técnico, me estoy refiriendo a la calidad; y desde el punto de vista administrativo, me estoy refiriendo a los plazos y los costos- ahí están los tres elementos que para mí definen un proyecto exitoso: que cumplió con la calidad esperada, que no se salió o se mantuvo dentro de los rangos de costos esperados, y que se mantuvo dentro de los rangos de plazo esperado.

VL: O sea, si es que un proyecto alcanza los estándares que estaban preestablecidos, dependiendo de que es lo que el cliente quiere y qué es lo que la empresa le puede entregar ¿Si esas tres cosas se cumplen, entonces el proyecto es exitoso?
CH-1: Sí, así lo veo.

VL: ¿Nada más?
CH-1: Yo diría que son las tres variables fundamentales. Porque podríamos incorporar otras variables, por ejemplo que se cuidó el medio ambiente. Hace poco visité obras en Francia y, claro, ellos consideran otras variables para medir el éxito de un proyecto: visitamos una obra en la cual el tema medio ambiental era tremendamente riguroso para ellos, y cómo ellos respetaban el entorno de donde se iba a construir. Entonces, el cumplir con ciertas normas medioambientales podría ser una variable que yo creo que en el futuro en nuestro país, que va en vías desarrollo, va a pasar a ser una variable que también se va a ir incorporando a la visión del éxito del proyecto. Otro elemento sería cumplir con ciertos rangos de seguridad en obra: tanto para los miembros de la empresa constructora (trabajadores, profesionales, los que están físicamente en la obra - accidentabilidad) como para el entorno (daños a terceros). Insisto: como mínimo las tres primeras.

VL: Entonces existe una combinación entre un buen sistema de comunicación (que es fluido y formal), una planificación y programación previa a las faenas en terreno (la cantidad de tiempo necesaria para hacerlo de buena forma), y sistemas integrados (especialmente la calidad).
CH-1: Exacto

VL: ¿Cómo estos tres factores contribuyen a costo, plazo y producto final?
CH-1: Hay una sinergia entre todos ellos, en el fondo. Por ejemplo, la variable calidad. Obviamente, el hecho de que una constructora tenga un sistema de control de calidad

implementado va a ayudar a que el producto final cumpla con la calidad previamente establecida en los diseños.

VL: ¿Va a asegurar el resultado?
CH-1: Va a ayudar a que las diferencias del producto final versus el esperado en la etapa de diseño sean las mínimas posibles. Calidad total no existe.

VL: Pero se busca reducir ese margen...
CH-1: Pero ese margen tú lo puedes reducir con todo este tipo de sistemas. Entonces ellos están íntimamente relacionados. La planificación adecuada, el ver cómo ataco la obra, cómo abordo la obra, va a implicar si puedo esperar un producto final de acuerdo a lo esperado. Sin lugar a dudas el sistema de gestión de calidad es el más relevante – estoy tomando solamente la variable calidad. Las tres que te mencioné: comunicación, sistemas de calidad, planificación y programación, las tres influyen, pero claramente desde el punto de vista de la calidad lo que más influye es el sistema de gestión de calidad. Insisto: todo esto parte de la base que los diseños estén pensados también en función de ese futuro plan de calidad.
Respecto de la variable plazos: una comunicación formal, a tiempo, en forma y en tiempo, la fluidez de esa comunicación va a ayudar a tomar decisiones más rápido, por lo tanto va a impactar en lo planificado y en lo programado. Dos, los sistemas de gestión de calidad en sí debieran implicar una reducción en trabajos re-hechos, lo que conlleva a un impacto positivo favorable en los programas de trabajo. Finalmente, la planificación y programación por sí mismas debieran generar una adecuado tiempo de planificación, una adecuada programación, con adecuados vínculos de cómo se relacionan las partidas, de cómo abordo la obra, bien pensado y a tiempo debieran significar un impacto claro en los plazos. Finalmente los costos están relacionados con todos los anteriores, o sea: un sistema de calidad significa disminución de los trabajos re-hechos implica una disminución en los costos, una comunicación fluida y formal que muestra adecuadamente cómo hacer una modificación de obra, cómo impactan en los lazos las modificaciones de obra, también va a impactar en los costos; finalmente si tengo tiempo suficiente para planificar y programar, obviamente voy a tener un impacto en los costos favorable sobre todo desde el punto de vista de los gastos generales. Hay una sinergia entre los 3 elementos que yo veo que son necesarios para el éxito de un proyecto, y las 3 variables son en las que pongo el acento que son con las que yo podría medir el éxito de un proyecto.

VL: La situación que tú me describes es una en que ingresa cierta información al sistema del proyecto, que son los planos, etc... Nosotros sabemos que esa situación es dinámica: el proyecto cambia, el cliente –a medida que el proyecto avanza- es capaz de darse cuanta mejor de lo que él quiere, por lo tanto existen modificaciones que pueden mayores o menores de acuerdo dependiendo, tal vez muchas veces de los problemas que pueden haber entre el cliente y los diseñadores, que no necesariamente tienen que ver con la empresa constructora (dependiendo del tipo de contrato que existe)..
CH-1: Hasta, en ocasiones, por motivos comerciales.

VL: ¿Cómo ves tú que esta situación que es dinámica afecta esta armonía o desarmonía que se pueda dar en terreno? ¿Cómo podrían esas situaciones afectar el éxito del proyecto?
CH-1: Yo creo que inevitablemente eso siempre está presente. Yo no he conocido un proyecto que haya terminado de la manera que se diseño originalmente. Todos sufren mayores o menores cambios. Mucho por necesidades del cliente, por situaciones que

sean coyunturales en la obra, hay cambios siempre. El tema es cómo se administran esos cambios, el cambio siempre va a tender a impactar en todas las variables que hemos mencionado: plazo, costo, calidad. El que tú logres que esos impactos sean aminorados respecto de situaciones en las cuales realmente impactan desfavorablemente, o sea, un cambio no tiene por qué ser visto siempre como algo negativo, que impacte en los plazos e impacte en los costos. El cambio puede ser visto como un aporte al proyecto, desde el punto de vista de disminuir y optimizar costos, disminuir plazos, etc., eso es una situación ideal. Ahora, muchas veces va a ocurrir un cambio que se da porque, por ejemplo, no hubo un estudio acabado de la mecánica de suelos y por lo tanto se encontró la napa freática lo que implica cambiar los sistemas de excavación, etc. El punto es cómo yo logro que ese cambio sea lo menos desfavorable posible, y eso tiene que ver con administrarlo bien. Es decir, que los canales de comunicación sean fluidos, que todos los aspectos de la parte administrativa, ya sea por la vía de bases administrativas hayan predefinido cómo se lleva a cabo un cambio, quién lo autoriza, quien es el encargado de llevar a cabo el diseño de los cambios, cómo se costea dicho cambio, cómo impacta en los plazos ese cambio; de modo que cuando llega el momento de hacer un cambio en la obra, todos sepan cómo abordarlo, porque está claramente descrito administrativamente cómo se debe abordar un cambio, ya sea un aumento de obra, una obra extraordinaria o una disminución de obra. Yo creo que un elemento que debe estar presente siempre, incluso previamente a la ejecución, es el concepto de administración o gestión de los cambios: adelantarme a cómo un cambio va a impactar en otras especialidades, por ejemplo. Y ver qué hago como mandante, como empresa constructora, como equipo de trabajo, cómo hacemos para que este cambio que va a impactar en tres o cuatro especialidades más, no me signifique de plazo o de costos por sobre el rango que está establecido por el mandante, que no me afecte la calidad, y que una vez que hecho el cambio este sea internalizado en el sistema de gestión de calidad de la constructora (ya sea una nueva partida, un nuevo sistema de ejecución de la partida), lo internalice en su planificación, en su programación, y quede registrado formalmente como tal, y en que es lo que impactó.

VL: Y en una situación como esa, en que hay que hacer un cambio, porque el cliente es capaz de darse cuenta mejor de lo que necesita ¿Cómo el cliente está presente en toda esta situación que tú me describes? ¿Cómo funciona en la realidad?

CH-1: El cliente debiera estar al tanto de todas estas comunicaciones formales, ya sea en las reuniones de obra semanales o quincenales. El cliente debe siempre estar representado en esa mesa, ya sea a través de un gerente o director del proyecto, alguien que representa al mandante. Alguien aparte de la ITO. Este representante debiera, en un proyecto exitoso, tener súper clara una idea completa del proyecto, desde un comienzo. Ese representante debiera estar al lado del mandante cuando se hicieron los flujos para el proyecto, cuando se determinó cuando debería estar abriendo la venta de locales comerciales o de vivienda – es decir, él sabe cuánto debieran demorarse los diseños, cuánto se debiera demorar la obra, etc. Por lo tanto, él es capaz de (porque conoce el proyecto desde su origen) visualizar en estas reuniones de obra cómo un determinado cambio va a impactar su proyecto integral, ya no tan sólo la etapa de ejecución, sino que cómo esto está impactando el resultado final del proyecto, no sólo en la etapa de ejecución. Que debe ser además esta a persona que finalmente, conjuntamente con solicitar muchas veces la evaluación de un cambio, sea el que finalmente (con el presupuesto de ese cambio, y el impacto en los lazos de ese cambio) tenga la responsabilidad de aprobar o rechazar esos cambios.

VL: Tú ya me describiste bastante bien la situación del proyecto que es conducente al éxito del proyecto. Hablemos ahora del administrador del proyecto, por parte de la empresa constructora. El que es responsable en terreno de que se haga lo que se tiene que hacer, y que se construya lo que se tiene que construir ¿Cuáles son las características que debiera tener esa persona para ser capaz de entregar un proyecto exitoso? (de acuerdo a tus parámetros para un proyecto exitoso y en cualquier ámbito)
CH-1: Yo creo que lo que se refiere a las competencias duras, él debiera tener un conocimiento respecto de las herramientas que le van a permitir gestionar el programa de trabajo, los costos y la calidad. Por lo tanto, debiera tener conocimiento de cómo funciona un sistema de calidad, tener un conocimiento acabado de los costos la obra que va a ejecutar y él debiera ser la persona que se dio el tiempo de planificar y programar originalmente la obra, de manera tal que sea él el que da los lineamientos de cómo ir controlando la planificación. Debiera ser una persona que tenga ciertas características de líder, que sea una persona que pueda establecer buena comunicación tanto verbal como escrita, que sepa armar equipos, juntamente con eso que sea capaz de definir los objetivos que tienen cada equipo que arma. Entregándoles, para cada objetivo, qué es lo que espera de ellos, cuáles son las metas esperadas para equipo de trabajo, y ser capaz de transmitir cómo va a medir el éxito o fracaso de los objetivos y las tareas que le ha encomendado a los equipos de trabajo. Yo creo que al menos eso.

VL: ¿Qué hace a un buen líder?
CH-1: Primero que nada tiene que ser capaz de lo sigan, que las cosas se hagan porque lo siguen, porque 'encanta' a su gente. En la organización en la que yo estoy, en la parte de servicios a la industria, hemos hecho un cambio en la estructura de la organización en la que desaparecen los jefes de área y aparecen los líderes división. Al jefe se le obedece, al líder se le sigue, y para eso el líder debe ser capaz de encantar a su gente, de convencerlos del proyecto que hay que sacar adelante. Ser un líder que tiene la capacidad de escuchar, de captar información en toda la cadena organizacional. Por supuesto cada una tiene sus especialidades, recogiendo la experiencia de personas que llevan muchos años realizando determinadas tareas, ser capaz de captar esa información, de filtrar lo que él requiere para su proyecto y ser capaz de transcribir eso que él ha captado, que ha recibido de todos sus equipos de trabajo, ser capaz de fusionar la información que ha recopilado con sus conocimientos (técnicos, administrativos, etc.) y a partir de eso, ser capaz de desarrollar su plan de trabajo. Desarrollar cómo él va a medir el éxito de ese plan de trabajo, determinar los indicadores, y ser capaz de medir la periodicidad con la cual él va a estar midiendo, para tener la posibilidad de enmendar el rumbo a tiempo, y no esperar a que sea el fracaso esté consumado, del que haya que lamentarse.

VL: Entonces un buen líder es capaz de motivar, vincular a los distintos miembros del equipo con el proyecto, que sabe escuchar...
CH-1: Comunicar!

VL: ...y sabe plantear objetivos.
CH-1: Eso es!

VL: Cómo definirías tú la buena comunicación verbal o escrita por parte del administrador de proyecto ¿Qué es eso?
CH-1: Primero por el lado de la forma, me refiero a una buena comunicación verbal y escrita que sea capaz de independientemente de quién se trate (miembro de su organización o un cliente, diseñador, etc.) sea capaz de establecer conductos formales

en el trato, en los modos, en las normas de buena conducta de modo de cómo tratar a la gente. Estas cosas que pueden parecer mínimas, pero que hablan bien de alguien de él. Que sea capaz de 'hablar de corrido', escribir sin faltas de ortografía, esto es adicional a lo que hablábamos recién. Ahora en términos de fondo, que sea capaz de comunicarse de manera verbal o escrita es, en el fondo, que sea capaz de transmitir sus ideas de manera sintética. Preciso, claro, transmisor de lo que él está pensando.

VL: Entonces ¿La claridad es parte de la comunicación?
CH-1: Exactamente!

VL: ¿Qué se requiere para formar buenos equipos de trabajo?
CH-1: Se requiere que la persona que la persona que va a formar el equipo de trabajo tenga claro cuál es el objetivo que busca. Tiene que determinar cuál es el perfil de las personas que tienen que formar ese equipo de trabajo.

VL: ¿Quién forma parte del equipo de trabajo del administrador de proyecto? ¿Cómo lo ves tú?
CH-1: Que el al menos debiera tener una persona que sea la encargada de todos los aspectos administrativos de la obra y otra que sea la encargada de todos los aspectos técnicos. Esas dos personas tendrán que crecer en tamaño en función del volumen y complejidad del proyecto, previamente a eso el líder tiene que ser capaz de visualizar y desagregar su proyecto en objetivos, y par objetivo determinar cuáles son los perfiles de las personas que debieran formar parte de esos equipos que van a ir en búsqueda de esos objetivos. Y después, para hacer el 'link' entre ese perfil y la persona que finalmente va a formar parte de ese equipo, el líder debe ser capaz de conocer las competencias de la gente con la cual él cuenta. Y ver cuáles de esas que tienen esas competencias, cumplen con el perfil deseado. Y ahí se pueden dar dos alternativas: que la gente no cumple con todo el perfil que tú buscas, o que adquieres esas competencias a partir capacitación, o buscar una persona fuera de la organización que cumpla con esas competencias.

VL: En la realidad de la construcción hoy en Chile ¿Cuántas veces –de un 100%- el administrador tiene la oportunidad de elegir esas personas fuera de la organización?
CH-1: En términos porcentuales (en orden de magnitudes, para formarnos una idea) yo creo que un 10% de las veces. La buena noticia es que yo creo que 10 años atrás la respuesta era un 0%. Vamos 'en vías de'.

VL: ¿Tú crees que esa situación va mejorando?
CH-1: Paulatinamente. Sí, yo creo que hace 10 años atrás hablar de un 'administrador de proyecto' como concepto, era casi desconocido. Hoy se está incorporando, en las carreras de formación del área de la construcción, el concepto de la administración de proyectos. Hace 10 años atrás, no se entendía lo que era el 'Project Management'. Hoy cuando alguien habla de un administrador, director o gestor de proyectos, ya sabemos de lo que estamos hablando, y qué rol cumple esa persona en la ejecución de una obra.
VL: ¿Entonces la situación va en vías de ir definiendo roles más claros, y la figura del 'Project Manager' va emergiendo dentro de los roles que se definen para una obra?
CH-1: Exactamente.

VL: La ITO, por ejemplo, o el equipo de personas que conforman la ITO ¿Forman parte del equipo del administrador de proyecto?

CH-1: Puestos en ese esquema, si decimos que el administrador de proyecto (puesto en la perspectiva de la empresa constructora) y el ITO (puesto en la perspectiva de una persona que esta puesta en la obra para velar que la constructora efectivamente cumpla con lo que dice el contrato), claro que forman parte de un trabajo mancomunado para la feliz conclusión de un proyecto, desde 'trincheras' distintas muchas veces por el tema de discusiones, conflictos, que naturalmente se dan en la obra pero que pueden ser bien administrados y llevados por buen camino en la medida que esté todo plasmado claramente en las bases administrativas, etc. O sea, en la medida que hay buenas bases administrativas, buenos diseños y esta todo claramente definido, se puede dar una relación entre ITO y administrador de obra (por parte de la empresa constructora), relación que debiera tender a obtener una obra con muchos mejores resultados, puesto en términos positivos. Puesto en términos positivos, no en términos negativos de confrontación.

VL: Dentro de tu experiencia. En los proyectos en que tú has estado involucrado ¿Cuántas veces el proyecto ha finalizado dentro del presupuesto inicial? O al revés ¿Cuántas veces ha excedido el presupuesto inicial?
CH-1: 90% de las veces lo ha excedido. Normalmente se refleja en los documentos que el mandante tiene claro que el proyecto tiene un valor, por suma alzada, pero él tiene claro que se va a exceder, pero él ha considerado que se va a exceder un X% respecto de la suma alzada. Cuando digo un 90% me refiero a que se ha excedido del valor de la suma alzada, pero los que se han excedido del valor de la suma alzada más el delta que le mandante estimó inicialmente, yo diría que es un 40% a 50%.

VL: Y cuando tú definías éxito del proyecto, tu definiste una de las variables como estar dentro del presupuesto ¿En ese caso te refieres la presupuesto más el delta?
CH-1: Claro.

VL: Es decir, si tú me dices que un 40% o 50% del proyecto que han excedido ese valor de la suma alzada más el margen que el mandante determina ¿Básicamente me estás diciendo que hay un 40% o 50% de proyectos que no son exitosos?
CH-1: Y quizás un poco más, porque si le agregamos a eso proyectos que a lo mejor han salido bien en los costos, pero se han excedido en los plazos, o proyectos que han salido bien en los costos o en los plazos pero que el proyecto final ha sido deficiente respecto de lo esperado a nivel de proyecto, entonces yo me atrevería a decirte que estamos hablando del orden de un 60% o un 70% de proyectos que analizadas una o las tres variables no se han cumplido todas a cabalidad.

VL: El tema del éxito versus el fracaso de un proyecto, como tú lo ves ¿son los únicos dos posibles escenarios en los que se puede encontrar un proyecto? Dicho de otra manera ¿Todo proyecto de construcción que llega a término será exitoso o será un fracaso? ¿Es así de claro?
CH-1: No, porque depende mucho de las prioridades que otorgue cada actor del proyecto a las prioridades que hemos mencionado anteriormente. Porque si yo como actor, desde la perspectiva me interesan las tres variables –calidad, precio y plazo-, pero para mí la más importante es el plazo, a lo mejor me excedí un poco en los costos, la calidad no fue exactamente la esperada, pero cumplí con los plazos, entonces no cumplí con las tres variables pero la que para mí es la más importante en mi caso específico (porque tenía que empezar a producir, por ejemplo, chocolates, porque se estaba construyendo una planta para producir chocolates). A lo mejor para mí el proyecto va a estar más cercano al éxito que al fracaso, dado que para mí, si yo tengo que jerarquizar mis tres variables para un proyecto en particular, la que para mí

era la más importante se cumplió. Yo creo que las tres variables no tienen igual peso, no pesan lo mismo. Los intereses y necesidades propias de cada mandante determinan el peso de esas variables. No hay una norma que te diga cuál pesa más que otra. En cada proyecto el mandante va a priorizar las variables de distinta manera.

VL: desde el punto de vista tuyo, este tema de fracaso o éxito, no es tan absoluto...
CH-1: No es tan absoluto. Depende caso a caso, de cada mandante en cada proyecto que ese mandante desarrolle. O depende la constructora, visto del otro lado, que tiene grados de satisfacción para cada mandante en particular, que tiene prioridades distintas.

VL: ¿Existe la posibilidad de que haya un proyecto que no sea exitoso y tampoco sea un fracaso?
CH-1: Sí, hay términos medios. Catalogarlo de exitoso o fracaso; me atrevería a decir que gran cantidad de proyectos están en un término medio.

VL: ¿Cuántos?
CH-1: Si se toman en cuenta los distintos actores (Mandante, constructora, ITO), que te digan que un proyecto fue un fracaso o un éxito, probablemente no será más de un 20%. Un 80% de los actores de un proyecto debería decir que les fue bien, pero fallaron ciertas cosas, o nos fue mal, pero esto no estuvo tan mal. Te puedes exceder en los plazos y en los costos, que era lo más relevante, pero el proyecto cumple a cabalidad los estándares de calidad, o al revés, el proyecto 'salió súper bien, pero me excedí un poco en los plazos'. Hubiese sido mejor terminar en diciembre y no terminar en marzo (por ejemplo, querían empezar a vender juguetes para la navidad pero el proyecto terminó el 20 de enero, hubiese sido todo mejor si hubiera terminado el 15 de diciembre). No es blanco y negro. Normalmente la evaluación final del proyecto es gris, más oscuro o más claro, pero es un gris.

VL: ¿Hay alguna otra cosa que te gustaría comentar, o alguna otra idea que te gustaría desarrollar?
CH-1: Yo creo volver sobre lo die al principio, lo importante que creo yo, para acercarse más o menos con el éxito de un proyecto, de lo importante que es el vinculo con las etapas previas a la ejecución. Yo creo todo lo que alimenta las tres variables: diseños bien acabados, pensados desde el punto de vista de que son materializables adecuadamente en términos tecnológicos, de que incorporan los conceptos de calidad a través de definir claramente los estándares de calidad, las tolerancias que se esperan dentro de los estándares esperados. Cuando un proyecto parte bien de ahí, administrativamente, con bases que son claras, que marcan muy bien cómo se van a relacionar las partes, cuando un proyecto parte bien con eso, y sumado a eso la constructora se da el tiempo para planificar. Comencé una presentación en la primera diapositiva con una frase de Eisenhower, que dice 'La planificación es inútil, pero planificar es indispensable'. Esa frase recoge el concepto de que ese tiempo previo que se da el administrador de la obra, antes de atacar la obra. Sentarse a ver cómo lo va a hacer. Si bien sabemos que en la práctica al día siguiente de comenzar la obra se va a empezar a no cumplir la planificación, porque van a aparecer imponderables. Él tiene una base de comparación original de cómo él pensó el proyecto, por lo que puede ir corrigiendo, puede ir testeando las desviaciones de costo, de plazo y de calidad, respecto de una base original. Yo mencionaría esos dos temas: lo necesario delo previo al inicio de la ejecución, en términos administrativos como técnicos, como lo necesario del punto de vista de la constructora de darse el tiempo para planificar y programar.

VL: ¿Hay algo más que quisieras agregar, o algo que tú crees que está inconcluso?
CH-1: Destacar la relevancia del tema, yo creo que para nuestro país, que está bastante 'en pañales' respecto de todo esto que hemos conversado, yo creo que es tremendamente importante ir poniendo en el tapete la discusión todo lo que hemos hablado, son temas donde inevitablemente el país va para allá. Son temas culturales lentos de incorporar, pero que el país va en camino de hacer parte, en este caso, de la industria de la construcción.

Appendix E.9: Participant CH-2 Interview Transcript

VL: ¿Cómo se define un proyecto exitoso?
CH-2: Es aquel que cumple en el plazo, que tus costos sean las que tiene que ser, y que la rentabilidad que tu proyecto las puedas aumentar. Ya sea por cambios de materialidad, por darle algún sentido distinto, por buscar herramienta nueva que ayuda a disminuir los costos; aun cuando puedan tener un incremento fuerte en los costos, pero a la larga en el proyecto va a resultar mejor.
Si me voy por la parte de administración de la inmobiliaria, obviamente a mí lo que más me interesa es que el proyecto salga lo más rápido posible, que se cumpla con lo que tenía que cumplirse, y que me costó lo que me tenía que costar. Porque como inmobiliaria mi proyecto es vender, la construcción es parte de eso. Para la inmobiliaria el negocio está en sus ventas, entonces lo mejor para ellos es que se demore y que cueste lo que se pactó inicialmente.
Al administrador de la obra le interesa que salga lo más rápido posible, por un tema de gastos generales, que la rentabilidad sea mucho mayor, y que tú puedas generar un nuevo elemento de tal forma de que te pueda ayudar a desarrollar un proyecto más rápido.

VL: Entonces parte de lograr un proyecto exitoso, no necesariamente de la definición de proyecto exitoso, es la capacidad de incorporar e innovar en elementos nuevos de modo que apunten a un mejor plazo, o atenerse mejor a los costos o a generar mayor rentabilidad.
CH-2: Exactamente, desde el punto de la constructora. Porque a lo más tú vas a decir después 'Ese proyecto quedó espectacular, ese proyecto lo hice yo' que es una cuestión de ego. Pero los proyectos en sí tienen que dar una cierta rentabilidad en un plazo justo, sino la cosa no resulta, A menos que te cambien las condiciones...

VL: Por ejemplo...
CH-2: Que haya una nueva reestructuración del edificio, que el edificio estaba pensado en losas tradicionales y ahora vamos a hacerlo con losas postensadas, por lo tanto hay un re-estudio de cálculo, y eso significa que vamos a agregar un piso más, y por lo tanto el plazo que yo hoy tenía de 18 meses se me alargó a 22. Mis gastos generales son mayores, y ahí ya cambia la perspectiva del proyecto, en el sentido de que los plazos aumentaron por un aumento de obra, de que los costos aumentaron porque aumentó la obra. Va a depender un poco de qué tan claro o qué tan específico es tú proyecto. Si el proyecto es claro o específico es el día cero, tu rentabilidad o tu éxito va a ser mucho mejor si un proyecto que si un proyecto esta ambiguo. Es fundamental que esa coordinación previa de los proyectos te llegue a ti lo más desarrollada, lo más clara posible. Ojalá que en las reuniones de obra se converse de temas de actualidad y algunos detalles como las cerraduras, y no cosas importantes como cómo definimos la unión de la losa con el muro, cómo definimos la parte eléctrica que no cumple con las especificaciones. Tú te empiezas a desgastar, aunque eso no es tu pega, en llamar al proyectista, buscar al arquitecto, buscar al calculista, tener una reunión para darle solución, etc. Eso no es rentable y no es ideal. Al final tú terminas como 'choriado' con el proyecto, terminas desgastándote y gastando mucho tiempo en cosas en que no deberías estar gastando tu tiempo, y no te queda tiempo

suficiente para las cosas que sí son parte de tú trabajo, entonces eso te crea problemas con tu jefe, tu gerente de obra. Nosotros somos muy buenos para resolver problemas que no nos corresponde resolver. La constructora no está para que resuelva problemas, no está para que coordine proyectos, no está para que busque soluciones, la constructora está para construir. Ahí están las ganancias.
Al final te das cuenta que todos los problemas parten de que el proyecto no estaba bien hecho, entonces se desgastó tiempo en desarrollarlo, se desgastó tiempo en poder armarlo, se desgastó tiempo en poder planificarlo. *'Las planificaciones no sirven pero son necesarias'*. Nadie cumple una planificación, pero es necesario hacerlo para poder tener una idea de cómo avanzar. Entonces todas esas cosas que están medias turbias o enredadas, hacen que el proyecto fracase. Es imposible que de un proyecto desordenado termines en los plazos. Siempre hay problemas, pero que los problemas sean los mínimos posibles, problemas de una solución rápida y ejecutiva, y que uno tenga la solución al de inmediato, que la persona se dedique a administrar su obra, y no se dedique a administrar proyectos del especialista, del calculista... porque eso es lo que pasa. Lo más probable es que en alguna clausula del contrato diga: 'La constructora se hará cargo de la coordinación de proyectos', y entonces ¿Cómo justificas ante la inmobiliaria el costo del tiempo de esa coordinación? Es complicado.

VL: Tú me comentabas acerca de las reuniones de obra, y de lo que deberían tratarse. Enfocándose en lo que son los roles ¿Me podrías definir, de acuerdo a cómo tú lo ves, un muy buen administrador de proyecto? ¿Cómo es esa persona?
CH-2: Es aquel que conoce el proyecto de memoria, el proyecto es de él. Sabe manejar el proyecto y ha planificado el proyecto de manera de saber el día cero que tiene un problema en el piso 14 porque le falta un fierro, es una exageración, pero a eso voy. Aquel que mediante su programa o su forma puede desarrollar puede evaluar todos sus costos en forma súper clara. Es fundamental que sea una persona súper abierta a cualquier tipo de observaciones. Una persona muy cerrada no sirve, por ejemplo el administrador no saca nada con conocer muy bien el proyecto si no es capaz de darlo a conocer, de tener las ideas claras y después no explicarlas, porque va a ser el único que va a entender el tema y nadie más va a entender.
Conozca su proyecto entero, sepa cómo lo va a trabajar, lo exprese a sus pares, y reciba de ellos el feedback necesario de manera de siempre estar renovando ese programa, o ese proyecto, o esa forma de trabajar. Manejar muy bien el tema de los costos que es fundamentalmente donde se va la plata. Los plazos tenerlos súper claros. Ser capaz de, el día cero, programar su obra completa y no programarla parcial; porque se pueden tener claro las decisiones, como por ejemplo incorporar con más gente o eliminar gente, de traer o no el material, ya esto puede complicar un proyecto. Estar siempre a la vanguardia en todo lo que son los cambios o nuevos materiales que se están ocupando, o nuevas formas de trabajar, o nuevas tecnologías que ocupar, es muy importante. Uno tiende a creer que porque son tecnologías nuevas son más caras, yo te diría que eso es falso; si uno sabe que una tecnología es cara el fruto que vas a tener a corto plazo va a ser mucho menor, las decisiones que tú puedas tomar con tecnología de punta son mucho más rápidas y son mucho más fáciles, y tienes un feedback inmediato que te dice si lo hiciste bien o mal, no hay que esperar tres meses para que te des cuenta de que las cagaste. Y eso es fundamental sobre todo hoy en día que se trabaja con plazos muy restringidos, o sea si no haces un piso a la semana no sirve. Lo otro fundamental es la parte más humana, que es la parte de tener una muy buena relación con tu gente; aun cuando tú eres el administrador, el que la lleva en el tema, pero ser capaz de entender, escuchar, dar órdenes y poder retroalimentar siempre ese sistema. Para mí, por ahí vendría siendo un administrador estrella. Fundamental, el proyecto de memoria: conocer cómo es,

cómo está, de qué se trata, cómo lo vas a atacar, qué proveedores me convienen y qué proveedores no me convienen. Hay un tema comercial también, de cómo uno se vende con los proveedores, porque si hoy a ti te entregan un presupuesto para hacer el proyecto, tú puedes llegar a acuerdos muchos más baratos, que a la larga te ayudan a ir guardando plata para las cosas que no estaban en el presupuesto, pero que las tienes que hacer igual.

VL: Y entonces ¿Sería otra característica? Ser capaz de administrar la cadena de abastecimiento...

CH-2: Por supuesto, fundamental. Yo trabaje en una empresa en que decían que 'los millones se cuidan en el banco, los pesos los cuida uno' y eso va relacionado a conocer exactamente cuántas chauchas tienes en tu cajón dentro del proyecto; saber cuánto tienes en la bodega, saber exactamente cuáles son los rendimientos, por eso digo que hay un gran tema de tecnología, porque de repente te llenan de papeles, y te vuelves loco, y son las 5 de la mañana y no has podido terminar de revisar el tema, estás desesperado, quieres dormir, te quieres ir a la casa, quieres ir a ver a los niños, pero no puedes porque no tienes la información. Si tuvieras la información constante, rápida y que tú fueras pidiéndola, se te haría fácil. Y lo otro es que te guste, que te apasione.

VL: Sin el interés de desviarnos en el tema, en el tema de la administración de la cadena de abastecimiento, y que tú crees que el administrador debiera invertir una determinada cantidad de tiempo en gestionar el abastecimiento ¿Crees tú que debiera hacerlo para todas las partidas? ¿Para algunas partidas? ¿Cómo distinguir?

CH-2: Este es el ideal, porque en la práctica no mucho se da. Lo ideal es que uno pudiera invertir ese tiempo en todas las partidas. 'los pesos los cuida uno' y un proyecto se te puede ir de las manos por esos pesitos que no los tomaste en consideración. Existen programas que te pueden ayudar mucho en el tema, pero yo creo que es fundamental la filosofía de este tema es que uno pueda tener ese control. Control absoluto es difícil, pero sí tenerlo súper claro, porque de ahí tú puedes empezar a ver rendimientos, mano de obra, cambios de producto, tiempo de cuándo tiene que entrar, entonces eso es fundamental. Porque cuando se comienzan las etapas de posventa empiezas a ocupar materiales que uno no tiene considerados dentro de su presupuesto, uno estima un 3% de posventa, pero uno siempre ocupa más de esas lucas. Son costos ocultos, que uno empieza a ver de dónde las saca, se las consigue de otras obras, etc. Si uno pudiera tener claro su cadena, uno podría saber cuánto es el costo de posventa real que yo estoy agregando aun edificio, y no el que aparece en el presupuesto que es una estimación que anda lejos de la realidad, a menos que tú tengas ese control absoluto. Si tú pudieras controlar en forma absoluta el día a día, ese costo lo conoces y te lo sabes.

VL: Dentro de las cosas que tu mencionaste, que definen a un administrado de proyecto ideal, tu hablaste que esa persona tenía que conocer el proyecto muy bien. El tiempo destinado a conocer o empaparse de ese proyecto es bastante limitado, por lo tanto, si yo quisiera elegir un administrador de proyecto para algo que yo quiero construir, y quiero estar segura de que va a ser capaz de conocer ese proyecto rápidamente y a cabalidad ¿Cómo se identifica esta persona?

CH-2: Fundamentalmente la experiencia, en proyectos parecidos. Yo puedo tener una experiencia larguísima en casas pero edificación en altura soy un desastre, porque no conozco el procedimiento, no conozco la forma de trabajar. La experiencia es fundamental a la hora de saber a quién estoy colocando a cargo. El administrador de edificios, que lleva años construyendo s proyecto grande como por ejemplo Costanera

Center, es una administrador ideal siempre y cuando sus resultados anteriores sean buenos. La construcción es reiterativa, te van a pasar siempre los mismos problemas, uno trata de minimizar la etapa del problema, pero el problema lo vas a tener igual. Entonces si yo tengo muchos años de experiencia en casas, no sé que en el tema de la grúa en edificación en altura, debo coordinarme con la gente de grúa ya que la grúa cada ciertos tramos hay que subirla y eso se demora por lo menos medio día, y eso implica que no voy a tener durante ese tiempo hormigón ni moldaje, entonces la tengo que hacer un día sábado, pero si la hago un día sábado me va a salir un costo extraordinario... una serie de cosas que en la construcción de casas o urbanizaciones no se ven. El hecho de que yo conozca el proyecto va relacionado a la experiencia que yo tenga en proyectos muy parecidos a ese. Obviamente hay que conocer el proyecto, pero voy a que hay que conocer las problemáticas que van relacionadas a ciertos tipos de edificio. Hay edificios más complicados que otros, en edificios emblemáticos grandes, hay un equipo de administradores y un coordinador general, un director de obra. De tal forma que cada uno se encargue de una determinada etapa de la obra.

VL: Cuando existe un equipo de administradores de proyecto ¿Quién administra el equipo?

CH-2: Siempre tiene que haber un coordinador, porque en algún sentido esto es como una guerra: cada uno dice '¡Yo voy a construir mi parte!', y entonces si el del lado no tiene recursos o se queda atrás, tiene que haber alguien que diga 'A ver, para. Esto es un equipo. Traslademos gente de un lado para otro, reestructuremos, etc.'. Que es lo que generalmente pasa en los mall, son tan grandes que o que generalmente se hace ahí es por zona, entonces ahí tiene que haber una persona que empiece a ver que esta zona no se arranque, porque si no queda la escoba. Pero yo diría que tiene que ver con saber y conocer las problemáticas que te puede traer más adelante, el cerrar a tiempo el tema de ascensores, el cerrar a tiempo el tema de las ventanas, el estar informado constantemente de qué es lo que pasa afuera, de cómo va el mercado: saber, por ejemplo, que va a subir el precio del cobre, entonces buscar una alternativa para las tuberías, como colocar PVC en vez de cobre. Estar siempre tomando información, ver si es cierta, analizar la situación y tomar la decisión de inmediato, porque sé que si no en 3 meses más voy a estar desesperado, como lo que pasó con las alzas del fierro. Entonces tienes que estar provisto, y tienes que estarlo en el sentido de tomar decisiones importantes. Si bien un administrador de obra tiene que tomar decisiones al nivel que le corresponde, un buen administrador de obra debiera ser capaz de informar más arriba y decir 'sabes que nos conviene ir a Argentina y comprar X toneladas de fierro, porque yo tengo información de que esto se viene complicado'. Muchas empresas lo hicieron, compraron en el norte, sabían que el tema del fierro iba a ser un desastre, y fue un desastre: precios de $350/kg llegaron a casi $600/kg. Entonces la cantidad de lucas de inversión... porque tu firmaste un contrato a Suma Alzada ¡Tienes que hacerlo! Entonces no es el día a día de venir a sentarse a trabajar, no. El administrador no puede venir a sentarse a trabajar, el administrador tiene que estar trabajando siempre. Él tiene que estar pensando siempre como mejorar el beneficio de su obra, cuál es el mejor beneficio para el equipo. Y si las decisiones las tiene que tomar y las tomó mal, bueno... Pero hay que arriesgarse. Uno a veces se pone gil porque uno empieza a pensar 'que me va a salir más caro, que el plazo, que me van a decir que no, etc.'. Tiene que haber una fuerte comunicación entre tu equipo de obra y el gerente de la empresa o los dueños de la empresa, que estemos todos alineados para la misma parte. En definitiva, si yo quiero que mi constructora queremos ser todos el número uno, tenemos que estar todos alineados hacia lo mismo.

VL: Cambiemos de tema, tú hablaste de la comunicación y de que esa debiera ser una de las fortalezas de un buen administrador de proyectos ¿Podrías elaborar un poquito más y contarme un poco acerca de los canales, las formas?
CH-2: Yo creo que la comunicación es para todo. El administrador tiene una debilidad, y es que cuesta mucho que salga a terreno, Por ejemplo, la cercanía que tienen los obreros con los capataces, por ejemplo, es distinta con el administrador de obra. Ahora en general el administrador está en la oficina en un 70% a 80% y el resto en terreno. Es fundamental la comunicación porque tus ojos son los profesionales de terreno, tus jefes de obra, tus supervisores, tus capataces, entonces tienes que estar muy claro en ese sentido. Cuando uno tiene un procedimiento que cumplir uno tiene que ser súper claro y preguntar muchas veces si se entendió lo que tú querías decir, y bajar a terreno y ver que sí se está haciendo lo que tú dijiste o no, y si no se está haciendo lo que tú dijiste, preguntar por qué no se está haciendo. La construcción el cambio es muy rápido, entonces decisiones que yo puedo tomar puede ser que no sean factibles en terreno, y eso es muy dinámico, y es importante que esa comunicación sea súper fluida para bien o para mal: porque te mandaste una cagada, o porque la estás cagando. Y una comunicación que es más difícil es con la parte gerencial, que esa es una forma complicada porque al gerente también lo está viendo el dueño de la empresa, y debe justificar la rentabilidad del proyecto; entonces va a ir a 'criticar la obra'. Cuando existe esa forma de ver las obras de distinta manera, cuando el administrador está administrando la obra y el gerente viene a criticar lo mal que lo está haciendo, las cosas fallan. Cuando el gerente se involucra en la obra y es el 'partner' del administrador, y dice 'la cagamos pero no importa, echémosle pa'delante... yo pondré la cara... te voy a putear, pero echémosle pa'delante' es distinta la situación. Cuando tú sientes que el que está por sobre ti, que quien controla tu trabajo y tu obra está contigo, que no parte criticando y diciendo 'pero puta los plazos, pero mira las lucas, pero por qué tomaste esa decisión...' Uno empieza a preguntarse qué mierda pasa. Y entonces esa comunicación hacia arriba es tanto o más importante que esa comunicación para abajo, y si tú eres una persona autista, es peor aún. Porque haces lo quieres y no pescas a nadie.

VL: Y esa comunicación que tu definiste, con alguien para quien tu serías un subalterno ¿Por qué no se traspasa a los otros niveles de la administración? Porque por ejemplo cuando tú hablabas de cómo funciona un centro comercial, donde existen administradores de área ¿Por qué en vez de trabajar en equipo, que exista un respaldo y una cooperación, eso no se da cuando existe un centro comercial? ¿Por qué se plantea como una competencia entre iguales?
CH-2: Yo creo que ahí hay un tema de poca o mala comunicación entre el coordinador y las partes. Cuando la 'guerra' por terminar una obra por plazos genera una competencia –en el buen sentido- con los otros miembros del equipo, y tú te empiezas a quedar más atrás, se empieza a crear una especie de conflicto, porque yo necesito, para poder avanzar con mi parte, que el antecesor avance con su parte. Y se da porque somos seres humanos, por un tema de intereses personales. Cuando uno trabaja en equipo lo primero que hay que dejar de lado son los intereses personales de lo contrario esto se transforma en un desastre, porque cada uno va a querer ser la 'cara bonita' del tema

VL: ¿A qué crees tú que se debe eso? ¿Hay algún elemento cultural?
CH-2: Son dos cosas: hay un tema cultural importante, hay un tema incluso profesional. O sea, si somos todos de la Católica, lo más probable es que todo vaya bien; si somos todos de la Chile, lo más probable es que sea todo más o menos parecido, sobre todo si el administrador es de una universidad tradicional. Hay un tema

de experiencia, hay obras en que la experiencia de las personas que están ahí, buena o mala, no es la que se necesita. Una persona que viene recién saliendo de la universidad, o que ha tenido dos o tres obras, no está preparado para una obra emblemática como la que estamos hablando, porque para administrar un edificio de 4 pisos es buenísimo, pero para hacer un edificio como el Costanera Center, como el Territoria, se va a perder, porque las condiciones son distintas. Entonces a veces los equipos se complican por ese tipo de cosas: por un tema cultural, de discriminación, por un tema social también.

VL: ¿Podrías definir el aspecto social y el aspecto cultural?
CH-2: El tema social es la condición socioeconómica, se da que la persona tú la ves y es igual como el jornal que está al lado. Entonces para el resto es 'este huevón es...'
Y el tema cultural es por un tema de la universidad. Porque si porque yo soy de la Católica y creo que por eso soy mejor que los de la Chile, vale; y vale en empresas grandes. Mena y Ovalle tiene puros ingenieros civiles de la Chile, porque ellos son de la Chile. Entonces ellos son ingenieros, no puede haber un constructor en cargo de Gerencia, porque es constructor

VL: ¿Y eso es permeable a las relaciones de un equipo?
CH-2: Yo creo que sí.

VL: Si pudiéramos hacerla distinción entre equipos que son grupos de personas trabajando individualmente y equipos que funcionan como una máquina bien lubricada ¿Dónde dirías tú que están los equipos en el tema de la construcción? De un 0% a un 100%
CH-2: Yo te diría que estamos en el 60%-70%.

VL: ¿Es mejorable?
CH-2: Sí, hoy está mejorando por el tema de los sistemas de calidad, que hace que los sistemas funcionen y funcionen bien. Y cuando uno se cree el cuento y uno entiendo los sistemas de calidad, entiende cómo funcionan la metodología y los procedimientos, hace que esto funcione bien. Yo creo que hoy en día, como constructores hemos tratado de trabajar en equipo porque sabemos que si trabajamos en equipo, con la incorporación de sistemas de calidad, y estamos en una empresa que quiere ser la número uno. Si la empresa tiene claro cuáles son sus valores fundamentales, tiene súper claro cuál es su misión, y eso se lo transmite a los equipos de trabajo... O sea yo diría que la gran mayoría está en esa, uno lo ve y lo percibe porque la gente quiere hacer las cosas bien. Porque entendemos que el último eslabón de la cadena es el usuario final, es uno mismo que se va a comprar la casa; y uno ya conoce, uno ya entiende algo o más de construcción, entiende cuando una cosa esta bien hecha o está mal hecha, uno se da cuenta cuando le meten el dedo en la boca. Hoy en día el cliente exige, tiene un fiscal, tiene como hacerse valer.

VL: ¿Y esa visión del usuario final es un incentivo a trabajar en equipo?
CH-2: Sí, claro.

VL: ¿En la realidad, qué tan bien o mal preparados estamos –profesionalmente- para trabajar en equipo?
CH-2: Hay un problema de saber trabajar en equipo, yo creo que todos entendemos de que si trabajamos en equipo la cosa debería andar bien. El problema es cuando uno empieza a meter los problemas particulares dentro del equipo: que quiere ser el más destacado, que quiere ser el figurín de la película... No, el equipo no es eso.

VL: Otra característica que tú mencionaste es cómo relacionarte con tu gente, específicamente que existe entre el administrador del proyecto con el resto del equipo ¿Qué características tiene que tener para tener un proyecto exitoso?
CH-2: En cuanto al tema de comunicación... yo soy medio esquemático, pero uno debería programar las reuniones de tal forma que uno tenga súper claro lo que quiere transmitir y a dónde quiere llegar con el tema, y no ir programándose en el momento de la reunión 'y ahí veo lo que hago'. Y eso implica que haya ciertas tareas determinadas que uno sepa que las tiene que cumplir. Ser súper claro de tal forma que uno pueda responder ante esas tareas, y en esa medida ayudar al resto, de tal forma que se siga viendo siempre como equipo. Fundamentales son las reuniones de pauta semanales, de saber qué es lo que estamos haciendo, qué vamos a hacer y qué no hicimos; y en breves minutos saber que pasó, porque falló tal cosa y ver cómo la vamos a arreglar la semana que viene, porque se arrastra a la semana siguiente; e ir sabiendo día a día qué es lo que está pasando, porque te encuentras que al final de la semana o al final del mes, si no hay buena comunicación te das cuenta que no hiciste nada de lo que tenías que hacer, que la obra anda en un despelote. Es súper importante las reuniones en que uno ha programado en donde uno tiene claro cuáles son las cosas específicas, cuáles son los pro y los contra, y una vez que ya se ha decidido qué se va a hacer y de qué manera, se hace. Siempre tiene que haber un cuento de los intereses del equipo, porque el tema si es sólo personal no funciona.

VL: Tú mencionaste dentro de las características que era importante que conociera el proyecto, planificar al detalle, evaluar costos en forma clara, apasionado por lo que hacía, buen comunicador, el tema de innovaciones tecnológicas, recién cubrimos el tema de la relación con el resto del equipo y después hablamos del tema de la cadena de abastecimiento. Sucintamente ¿Cómo cada una de esas cosas influye en el éxito del proyecto?
CH-2: En el caso puntual de la cadena de abastecimiento, en la medida que uno pueda tener clara la cadena, que productos tiene, y cómo los va a conseguir, en una obra determinada puede planificar su pega de modo que los rendimientos sean los que estas esperando, que no hayan tiempos ociosos, o que estemos haciendo otras que las deberíamos estar haciendo porque no teníamos el producto, o porque no llegó en la fecha, porque el hormigón que había que colocar tuvo problemas de despacho, retrasos con el hormigón, cuál es el colchón que vamos a tener en la obra para que si eso pasa podamos ocupar la gente de manera inteligente. Y eso a la larga te lleva a lo que se plantea que son los dos grandes ítem: plazo y los costos. Si uno controla esos ítems fundamentales o importantes, la obra te va a salir mucho más fácil; teniendo siempre en cuenta que la construcción es muy cambiante. Entonces, el tema de planificar al detalle apunta a lo mismo, pero teniendo en cuenta que las planificaciones hay que hacerlas porque no sirven, pero hay que hacerlas; porque uno planifica la obra pero nunca se te cumple. Porque las cosas fallan, y tengo que estar siempre pensando cómo lo arreglo, cómo lo cambio, cómo llego al plazo que necesito, como me ordeno, cómo lo hago para que el ítem entre cuando tiene que entrar, como incremento la cantidad de gente, como saco gente, como coloco otro tipo de elemento, etc.

VL: Evaluar costos en forma clara, como una característica del administrador ¿Cómo eso influye en el éxito del proyecto?
CH-2: Por lo menos en mi caso, cuando a uno le pasan los presupuestos, si uno se rige por lo que está ahí, te puede crear un problema no menor, en el sentido de que a veces están mal hechos, a veces hay problemas de abastecimiento, hay que buscar

alternativas. Conocer esos costos, saber exactamente si son o no son, te va a llevar a ver cómo vas a programar tu obra, como vas a poder determinar tiempos de trabajo

VL: Y la vanguardia en innovaciones tecnológicas en el área...
CH-2: Fundamental. Si antiguamente se ocupaba moldajes de madera, y ahora usamos moldaje metálico; siempre hay que estar innovando porque aun cuando el costo inicial puede ser alto, a la larga el costo va a ser mucho menor. Entonces hay que estar siempre buscando alternativas de solución. Y eso quizás son estos famosos costos ocultos o ganancias ocultas... quizás la obra termine en el mismo plazo, o disminuir el atraso, quizás el costo será un poco mayor. Pero la experiencia de haber innovado con un producto, que tu sabes que ese producto dio buenos resultados, es para que tu en la próxima obra, lo apliques en forma inmediata. Porque en este cuento uno tiene que probar, no existen las magias como recetas de cocina, en la construcción el problema es que dependemos mucho de la obra, y nuestra mano de obra no es especializada; caemos en la etapa en que tenemos que implementar un tema nuevo, pero tenemos que capacitar, y te van a decir 'es vas a tener que gastar plata', pero tú tienes que saber que eso es bueno, ahí no está el problema, tienes que saber que la gente tiene que estar a la vanguardia, para que ese producto sea efectivamente bueno, y no quede más o menos. Un ejemplo súper típico y antiguo: antiguamente las losas se regaban con manguera, y a medida que ibas creciendo con los pisos no tenias mucha presión de agua, y los obreros armaban un cuento con unos tambores, etc. Bueno, a alguien se le ocurrió usar una hidrolavadora, súper simple; entonces en menos cantidad de tiempo, con mayor facilidad se lograba lo mismo. Después a alguien se le ocurrió utilizar un compresor, y fue mucho más fácil. Entonces: gastaste lucas que no estaban dentro del presupuesto, pero te ahorraste un monton de problemas y te quedaste con la hidrolavadora, que también sirve para limpiar las losas por abajo. Las tecnologías hay que saberlas ocupar bien, y está en que uno tenga esa mentalidad de decir: 'esta incorporación que ahora va a ser difícil nos va a dar buenos resultados'

VL: Para ti el éxito se mide en plazo, presupuesto y rentabilidad. De acuerdo a ese criterio de medición para el éxito de un proyecto de construcción, desde el punto de vista del administrador y los otro intereses involucrados... Un proyecto será existe si cumple con el criterio y ¿Será un fracaso si no cumple con los tres? ¿Ves una línea divisoria clara entre éxito y fracaso?
CH-2: Yo creo que los proyectos son exitosos en la medida en que la concepción del proyecto o l término del proyecto tenga un fin, me explico: si el proyectos son 300 casas y yo no llegó en el plazo, ni en los costos, ni en la rentabilidad, pero el proyecto en sí se vendió completo durante el proceso de construcción y la gente está feliz con sus casas porque son espectaculares, se da la paradoja que no se cumplió lo que yo pensaba para mi proyecto, pero sí para el proyecto de la inmobiliaria se cumplió espectacular; depende del cristal con que se mire si es un proyecto bueno o un proyecto malo.

VL: De acuerdo a ese ejemplo ¿El cliente es parte de la ecuación?
CH-2: Es que tiene que ser parte.

VL: Entonces no son solamente los tres criterios...
CH-2: Esos tres son para el administrador de la obra. Si yo cumplo como administrador con esas tres cosas, mi proyecto salió adelante.

VL: Supongamos que llegaste en el plazo, pero el presupuesto y rentabilidad salieron bien... ¿Qué opinarías tú como administrador de obra?
CH-2: Dependiendo de cuál fue el problema del plazo, si es un problema de proyectos... Generalmente cuando uno no cumple con el plazo es porque tuvo un problema de costos, de rentabilidad, etc. Depende con el cristal que se mira, porque si yo cumplo con esos criterios puedo decir que mi obra fue súper buena, pero para la inmobiliaria fue un desastre (porque lo ubicó mal, porque hubo una crisis económica, porque nadie pescó el proyecto), entonces no es un éxito. Ahora perdón, sí tienen que estar los tres: la inmobiliaria, la constructora y el cliente sí tiene que estar alineados. Para un cliente el proyecto puede ser súper bueno, y otro cliente con la misma constructora y con la misma inmobiliaria en el mismo sector no esta contento. Porque su proyecto de vida es distinto.
Cuando uno hace desarrollo uno debe escuchar estos tres grandes actores: porque en la inmobiliaria todos quieren rentar del producto, el único que 'no renta' es el cliente final, porque es el que invierte en un bien raíz. Es súper importante ver cómo el cliente (el que va a poner las lucas) está contento, porque me puedo demorar mucho más en terminar la obra, pero el edificio es lo mejor que hay, y el cliente está feliz con su edificio... esa 'pérdida de tiempo' quedó en el olvido, y lo ms probable es que la inmobiliaria siga invitando a esa constructora porque trabajan la raja, se demoró un tiempo, sí se demoró, pero para la constructora no fue un buen proyecto contablemente. Puede ser que haya sido un muy proyecto de término, porque quedó muy bien con la inmobiliaria, la gente está muy contenta porque el edificio quedó muy bien, porque la gente no sabe si demoraron 4 meses más o no, a él le entregaron su casa no más.

VL: Dentro de ese caso, el proyecto es un fracaso, un éxito o está en un terreno intermedio.
CH-2: todos los proyectos tienen un punto de vista inteligente, sobre todo hoy en día (antes era más al lote), los proyectos tienen una finalidad distinta; ya no se busca sólo aumentar el metro cuadrado de construcción, sino que también tienen un tema de crear un espacio, de crear un ambiente, de crear confortabilidad, etc. Por lo tanto creo que los proyectos no fracasan a menos que no tengas las lucas o que la constructora quebró, o que lo estás haciendo súper mal. Pero el proyecto como proyecto, como identidad, sí tiene algo; ya el hecho de que alguien lo pensó, ya tiene algo inteligente. Si de estas 3 ó 4 cosas una de ellas falla, yo creo que el proyecto puede ser igual de interesante. Por ponerte un caso, Mall de Calama: se pasaron en todos los plazos, se gastaron todas las lucas que se podían gastar, pero fue un buen proyecto. SIGRO hoy día está haciendo el Mall de Estación Central porque hizo el Mall de Calama, SIGRO es conocido bien en cuanto a los Mall porque hizo ese Mall, porque se sacaron la cresta todos los huevones que estaban trabajando ahí. Fue una experiencia única para SIGRO, hubo un afiatamiento de equipo muy grande. Se gastaron más lucas, se invirtió más tiempo, pero el equipo salió adelante por las personas, el proyecto se terminó, aunque tenía cualquier problema, pero lo huevones lo sacaron. Desde el punto de vista económico no fue un buen proyecto, pero nunca un fracaso, al contrario, el equipo que se armó fue espectacular, entonces definir si un proyecto fracasa por una serie de ítem que uno considera, es complicado. Para mí un proyecto va a ser bueno cuando se cumple esta serie de cosas, como administrador de la obra cumpliste con los plazos, los costos y tuviste una buena rentabilidad, tu obra no tuvo accidentabilidad... 'redondita' como digo yo: los proyectos estaban súper bien armados, tuviste tiempo de armar todo, de poder entender el proyecto en sí, de poder hacer coordinación, entonces para el administrador fue muy buen proyecto. Capaz que esté ubicado en Punta de Tralca, un resort de 7 estrellas... no va a ir nadie, pero el

proyecto para ti fue 'redondito'. Por eso que es bueno mezclar a estos 3 integrantes porque por ejemplo, el edificio Territoria que es un edificio emblemático, es un proyecto súper complicado: estructuralmente súper complicado, por los plazos súper complicado, capaz que no salga en los plazos, pero para Echeverría Izquierdo es un excelente proyecto. El más grande que vamos a tener en Sudamérica, entonces el concepto es distinto.

VL: Entonces existe la posibilidad de que un proyecto sea un éxito aún cuando no se cumplan los tres criterios que tú me mencionaste...
CH-2: Claro, porque para Paulman, que el Costanera Center se demore tres meses más, le da lo mismo: igual tiene inversión, igual va aganar las lucas, es un megaproyecto a nivel sudamericano. Si la constructora sale para atrás... pero 'lo construí yo!'
Definir un proyecto por estos tres puntos va netamente relacionado al diario vivir, a lograr lo que yo me propuse, sin perjuicio de que existen una serie de elementos que pueden no tener el efecto deseado. Vamos a poner un ejemplo: cumpliste con todo pero en la obra tuviste cinco muertos... Entonces el ideal es que se cumplan estas tres o cuatro cosas y que efectivamente en la obra todo salió 'redondito' y me están llamando para otra obra, pero no necesariamente tiene que ser tan tajante, porque la obra puede haber tenido millones de problemas, pudo haber terminado súper mal porque el proyecto está mal hecho, porque te diste cuenta al andar que las cosas estaban mal diseñadas, le tuviste que dedicar más tiempo y te demoraste más de lo que estaba contemplado, gastaste más lucas, el mandante tuvo que poner más plata, porque hubo más obras extraordinarias, pero el proyecto es una maravilla. El hotel de Isla de Pascua: se demoraron mucho tiempo, pero es 'el hotel de Isla de Pascua' y es espectacular, y los gallos ganan plata como chinos. Entonces evaluar el fracaso un proyecto por una serie factores... depende del cristal con que se mire. Pero si creo para un tema de desarrollo profesional y personal, cumpliéndose esas tres cosas no tendría que irte mal... tuviste dentro del plazo, sacaste buena rentabilidad...

VL: Ahora tienes la oportunidad de agregar que tú consideres relevante de lo que hemos conversado, algo que te gustaría enfatizar, o algo que te gustaría preguntar.
CH-2: Tomando la idea final, es súper difícil poder decir esto es un éxito o un fracaso. Hay que situarse en un contexto, y decir a qué le vamos a llamar fracaso y a que le vamos a llamar bueno... lo vamos a medir por costo, lo vamos a medir por tiempo, por venta. Pero considero que uno como administrador tiene que de alguna manera cumplir con esos puntos que te nombraba, saber transmitir el pensamiento o la forma o el trabajo o la planificación a su gente. Es fundamental la buena comunicación, creo que uno tiene que cumplir con ciertas normas de honestidad, tener claro cuáles son tus valores y saber con cuáles uno no puede transar...

VL: ¿Como cuáles?
CH-2: Tratar de engañar, colocar menos cosas o elementos que no son. Ser honesto con las personas que estás trabajando. Si el gallo trabajo horas extraordinarias, hay que pagar las obras extraordinarias, y el gallo hizo más fletes, hay que pagárselos. Cometemos esos errores por un tema de lucas, porque no me alcanza para terminar el proyecto y entonces vamos cortando, y no le pago a nadie las retenciones. A veces uno comete errores, porque el responsable es uno mismo, no el contratista. Uno tiene que ser honesto con uno mismo y decir 'en realidad el que la cagó no fue el contratista, fui yo'... fui yo el que no tenía el piso listo, no le tenía los tabiques listos, le autoricé a pintar donde no debía, etc. Yo creo que eso es fundamental, más allá de que los contratistas son seres humanos, que también se equivocan, que vas a tener

los problemas, de que van a haber una serie de inconvenientes. Pero si uno es honesto te debería funcionar mejor el tema. Los grandes dolores de cabeza que tiene uno en la obra son por plazo y por plata. Uno no mira un poco la parte humana, pero esa es la parte que le da el gustito al tema. Yo siempre pienso: va a haber alguien que va a vivir acá. Si es una mediagua, que te quede bien la mediagua, que te quede como te tiene que quedar, no dos palos parados y porque es una mediagua no le vas a poner más pino, o vas a colocar lo peor. Si estás haciendo una casa de UF28,000 y te demoraste y te preocupaste ¿Y por qué no lo hiciste si era una mediagua? Es incluso más fácil y más sencillo. Eso a nosotros nos falta, cuando uno le pone 'el cariño', la cosa anda como avión. Y tú te das cuenta por la gente...

Tienes que sentarte también en el otro lado, tampoco que seas un pan de Dios, tener claro el tema de los valores, tener claro tus valores, como profesional. Eso juega a favor tuyo: los viejos no te cagan, las cosas están cuando tienen que estar, hay un compromiso de por medio. Y eso a la larga, me he dado cuenta, que cuando tú pones de tu parte y les preguntas y te preocupes más de lo que debes preocuparte, ellos no están acostumbrados. Si eso lo llevas a costo, cuando tú eres pesado siempre te van a hacer mal las cosas. Cuando tienes otra perspectiva, cuando le preguntas por la señora y los niños, aunque no tenga niños, te va a hacer la pega la raja. No tan solo el preocuparse de las lucas, los plazos, la programación, de que te tengan al día la bodega, no tan solo eso es importante. Es salida a caminar que uno se da, y preguntarles cómo están, o decirles que tengan un feliz día, o llamarlos por teléfono el día del cumpleaños hace que tu obra a las finales salga bien. Y si tenías contemplado gastarte 300 en reparación, te vas a gastar 200. Si eres una persona terca, míralo por el lado de las lucas.

Yo tenía un viejo que me hacia flete, y trabajaba conmigo y con otras obras. En una no le pagaron, yo hablé con las personas y les dije que si no le pagaban yo iba a hablar con la gerencia. Cuento corto: le pagaron. Después de eso, a la hora que yo le pidiera un camión, el viejo estaba parado afuera, y aunque lo llamaran de cualquier parte, el seguía ahí. Y si yo me atraso con la factura no importa, porque sabe que le voy a pagar. Si en este cuento también hay que ser humano. Tú tienes el poder, manejas la obra, pero también tienes que ser humano, por último míralo por el tema de las lucas. Son cinco segundos, un apretón de manos, etc. Eso te va a costar que el viejo no te cague, porque si eres maricón te va a cagar. Uno tiene que saber en qué momento hacerlo, y cómo hacerlo, a mi me ha dado muy buenos resultados.

Uno tiene que confiar en las personas, si la persona es mala, es mala con o sin palabras. Y eso no te lo enseñan en la universidad, en ninguna parte. Lo aprende uno afuera.

Lo mismo con la inmobiliaria, empiezas a buscar la forma de ayudar también.

Appendix E.10: Participant CH-3 Interview Transcript

VL: ¿Cómo se mide el éxito de un proyecto?
CH-3: Primero hay que definir desde qué punto de vista se mira...

VL: Desde el punto de vista del administrador de la constructora.
CH-3: Es aquel que cumple en lo inmediato con un resultado económico, o sea, ese contrato tiene para esa constructora una utilidad que está dentro de los márgenes esperados. Pero como también existen normas que obligan al constructor a responder por el funcionamiento de la calidad del edificio, entonces también hay un parámetro que es considerar la calidad de la construcción. Podría ser que un contrato tenga un resultado muy bueno en lo inmediato, pero podría ser que los vicios ocultos de la construcción sean tales que a través del tiempo de garantía se consuman esos beneficios. Entonces yo creo básicamente que hay un resultado económico y una calidad de la construcción tal que no incremente el costo de construcción por concepto de cumplir las garantías. En Chile las garantías son por 3 ó 5 años, entonces un edificio construido con muchas fallas puede tener un final desastroso. Bueno, eso en lo inmediato. Ahora en mi opinión también existe otro elemento importante del éxito de un contrato que es en qué medida en ese contrato se aplican o se han aplicado innovaciones que permitan proyectarlas a otros contratos. Porque de repente es como demasiado pobre que en un contrato se emplea una técnica para resolver un problema, se gana una buena experiencia, pero no se puede volver a repetir; se produce algo trunco.
Resumiendo, resultado económico, una calidad que sea compatible con las responsabilidades posteriores y métodos o sistemas que permitan proyectar una buena experiencia. Y eso pasa también por afiatar un equipo de construcción, de profesionales y gente en general.

VL: Y un buen administrador de proyecto ¿Qué características tiene?
CH-3: Tiene que ser tremendamente reflexiva y visionaria. Cuando yo empecé a trabajar el administrador de proyecto tenía que ser muy activo, tenía que moverse mucho. Con el tiempo me he convencido de que esa persona tiene que ser tremendamente planificadora. En otras palabras, para que un proyecto se concrete se requiere un 'trabajo sucio' y un 'trabajo inteligente'. El 'trabajo sucio' es el esfuerzo diario que hay que hacer, y el 'trabajo inteligente' es la administración o la gestión. Entendido como aquella acción que implica conseguirse los recursos más eficientes (máquinas, personas, materiales más idóneos, métodos de construcción más expeditos y apropiados). Es mejor cuando el administrador hace muy bien el 'trabajo inteligente', no solamente un buen planificador, sino que tenga mucha imaginación para ir resolviendo cómo se solucionan los problemas. A mí no me preocupa que el administrador hoy en día esté en el aire, porque si el administrador no pensó, no consiguió lo recursos para lo que pasa hoy, ya se le pasó el minuto. Él tiene que estar viendo que pasa mañana, en dos semanas y en dos meses más. Se supone que el administrador no resuelve el día a día, eso ya lo resolvió, y si no lo resolvió, entonces se acabó! A mí me da lo mismo que el administrador esté filosofando, leyendo el diario, porque es una persona que está pensando para mañana. Está pensando en qué los demás van a hacer mañana.

Ahora, hay ciertas características que debe tener, debe ser una persona de fácil entendimiento con todo el mundo, que tenga una sagacidad para poder acomodarse con sus diferentes interlocutores. Pero en esencia debe ser una persona muy reflexiva, muy pausada y muy metódica.
CH-3 Amendments: RESUMEN; ENTENDIENDO QUE LA FUNCION DEL ADMINISTRADOR ES CUMPLIR EL OBJETIVO DE UN PROYECTO, IMPLICA QUE UN BUEN ADMINISTRADOR ES AQUEL QUE: LOGRA EL OBJETIVO AL MINIMO COSTO, OSEA, DEBE POSEER HABILIDADES PARA EMPLEAR LOS RECURSOS EFICAZMENTE.

VL: ¿Podrías definir la característica de ser 'visionario'?
CH-3: Es casi un adivinador, es una mezcla de experiencia e imaginación. Por ejemplo: en un mes más es necesario desarrollar tal actividad o tal proceso, entonces la diferencia entre el visionario y el no visionario, es que el no visionario no es capaz de percibir la dificultad especial que tiene hacer eso. Por lo tanto, no va a estar preparado, no va a dotar de los recursos necesarios para solucionar esa situación. En cambio el que es visionario, porque tiene imaginación, porque tiene experiencia, porque es capaz de ponerse en el lugar preciso de lo que va a pasar en dos meses más, es una persona que va a anticipar los problemas que van a haber. Se va a anticipar a las dificultades, entonces va a poder visualizar qué es lo que se debe conseguir, qué es lo que necesita, cuáles son los medios apropiados. Tarta de resolver los problemas que visualiza en el futuro.
CH-3 Amendments: PARTAMOS DE LA BASE QUE TODO CAMBIA MAS VELOZMENTE DE LO QUE ESPERAMOS, LUEGO, VISIONARIO ES AQUEL QUE PUEDE PREVEER LA DIRECCION DEL CAMBIO, PARA ANTICIPARSE EN TOMAR LAS MEDIDAS EN DICHA DIRECCION.
TAMBIEN PODEMOS DECIR, QUE ESTA PREPARADO PARA SABER EN QUE O COMO DEBE ADAPTARSEA UN ESCENARIO PROXIMO

VL: Estas características: reflexivo, visionario, pausado, metódico, planificador, saber hacer el trabajo inteligente, facilitador de un buen entendimiento, ser sagaz y ser capaz de usar su imaginación y su experiencia ¿Es esa la definición de un buen administrador de proyecto?
CH-3: No tiene por qué ser un especialista, en nada preciso, pero tiene que tener un barniz general. No tiene porqué ser un estructural, pero tiene que tener clarísimo cómo funciona la estructura y qué papel desempeñan en el trabajo de una estructura los elementos que esa estructura tiene. No tiene porqué ser experto en cañerías, pero tiene que tener claro lo que es la hidráulica, y cómo funciona la hidráulica, y las características principales de una cañería; porque de esa manera va a tener mucho respecto por la especificaciones por lo que los especialistas han proyectado.
Lo que necesita es tener una cultura respecto de lo que va a construir, no tiene porqué ser una especialista.
CH-3 Amendments: ESAS CARACTERISTICAS SON HERRAMIENTAS QUE EN MI OPINION DEBE POSEER UN BUEN ADMINISTRADOR. HAY QUE AGREGAR HONESTIDAD.

VL: ¿Cuántos proyectos –dentro de tu experiencia profesional- cumplen con tu definición de éxito?
CH-3: Muy pocos.

VL: ¿Los que no cumplen, son un fracaso?

CH-3: No un fracaso con todas sus letras, pero son mediocres, porque nadie queda conforme. Tal vez el dueño pagó más, el que construyó perdió (a pesar de que aparentemente pagó más) y quizás las soluciones a las que hubo que llegar no fueron las más felices. Cuando un proyecto es desafortunado o no exitoso, es porque confluyen una serie de elementos que se dan al mismo tiempo. Un proyecto malo, en el sentido que el proyecto no está definido cómo la arquitectura no está coordinado con la estructura, y hay veces que a mí me ha tocado un proyecto con un plazo irreal. Entonces se conjuga un plazo irreal con un proyecto malo, lo que sucede es que todo tiene que ser con una rapidez tal que no es aplicable. Por ejemplo: en la cárcel de Puerto Montt (sistema prefabricado mixto), el proyecto fue un desastre porque el prefabricado no funcionó en Chile, y en lugar de analizar lo que estaba pasando, cada vez iban incorporando más recursos; entonces se dio lo que en la primera clase de planificación le dicen a uno: donde tu deberías tener 5 trabajando, tienes 25. Con 25 no hacen el rendimiento de 10. Hay 15 que no hacen nada y les tienes que pagar, lo que aumenta los costos y genera desesperación, generando una situación caótica: cuando el barco se empieza a hundir te dicen 'Por acá es la salida', pero cuando el problema es muy grande, se produce un desbande tal que hay caos, entonces la gente se lanza pensando que hay un bote abajo, pero se lanzaron al vacío. Yo he visto muchas situaciones caóticas. En el proyecto de la cárcel, yo tenía 60 a 80 hombres, y cada vez que yo iba me entregaban un informe en que decía que yo debería tener 200, y yo no quería tener 200, nunca me salí de eso. Los franceses llegaron a tener 2000 personas en tres hectáreas, era un caos impresionante, ya no tenían herramientas para trabajar. Trajeron un francés de la empresa en Francia. Y ese hombre se paseó una semana por la obra, mientras nadie sabía qué hacía. De repente aparece un comunicado que dice que a partir de mañana, él se hace cargo de la obra. En el primer día se deshizo de 1000 personas, y se quedó con 1000; ese mes la obra produjo lo mismo con 1000 que lo que producía con 2000. Se cayó en una situación en que nada funciona. La experiencia que es desastrosa es terrible.
CH-3 Amendments: LOS PROYECTOS QUE NO CUMPLEN, EL O LOS OBJETIVOS PRINCIPALES, SON UN FRACASO, AUNQUE AL FINAL SE OBTENGA ALGUN BENEFICIO SECUNDARIO.

VL: Entonces ¿Los proyectos que no cumplen con las tres variables no son un fracaso?
CH-3: Yo no creo que a rio revuelto, ganancia de pescadores. Cuando un proyecto es un fracaso, no gana nadie. Si es un fracaso, es porque algo sucede. Es como la ley de Lavoisier, la energía no se pierde, se transforma: si algo anduvo mal, alguien lo absorbe. Si en la casa se quema la comida se la dan al perro, si esa comida no se pudiera desechar, alguien se la tiene que comer.
CH-3 Amendments: EL OBJETIVO BASICO DE UN CONSTRUCTOR ES OBTENER UNA RENTABILIDAD DE UN CONTRATO; EN GENERAL, ESE ES SU OBJETIVO BÁSICO.
TAMBIÉN PODRIA SERLO, GANAR 0 $ Y OBTENER UN CLIENTE. SI LOGRA ESO ES UN ÉXITO. AL FINAL, EL ÉXITO O FRACASO, ES ABSOLUTAMENTE PROPORCIONAL AL LOGRO DEL OBJETIVO.

VL: Éxito v/s fracaso ¿Hay un terreno medio?
CH-3: Hay una mezcla de factores que se dan simultáneamente. Cuando uno tiene la cabeza clara, es muy fácil saber cuál es la causa. Por ejemplo: en un auto viejo el problema es el radiador, pero es que también es el motor, pero es que también es el embriague, pero es que también es... ¿Por dónde empiezo? Es como una pérdida total: se pierde todo, se pierde el control de la obra, hay desaliento. El desaliento es

tremendo. Cuando te das cuenta que estás tan mal que no vas a poder arreglar la situación, es terrible; porque lo que tienes por delante es un esfuerzo que no tiene sentido... En la cárcel de Puerto Montt, ellos creían que al duplicar la gente (y sacrificar el costo), y no pasaba nada, ellos creían que ya no quedaba nada más por hacer. Entonces dejas de creer en tu capacidad de diagnóstico. Hay un dicho que dice *'El éxito es exitoso, el desastre es desastroso'*. El éxito te potencia, es como una espiral beneficioso, en cambio con el desastre te desesperas, te aferras de donde no corresponde, y sigues tomando malas decisiones.
CH-3 Amendments: SEGURO; NADA PUEDE SER ABSOLUTO. UNA PARTE ES MENOR QUE EL TODO, PERO MEJOR QUE MENOS

VL: Si yo quiero construir un edificio ¿Cómo elijo un buen administrador de proyecto si es que no tengo mucho tiempo para ello?
CH-3: En forma práctica haría lo siguiente: entrevistaría al candidato para conocerlo, cómo es. Segundo, me interiorizaría muy sanamente y con mucho detalle de cómo esa persona tiene su vida organizada, de cómo resuelve los problemas de la vida diaria que todos tenemos. Trataría de profundizar y poder dirimir si definitivamente es lo que dice O PARECE SER... Ver cómo esa persona resuelve las situaciones de la vida diaria. Si una persona dice ser brillante y no resuelve atinadamente las situaciones de la vida diaria, esa persona tiene un problema; porque esto no es nada del otro mundo.

VL: ¿Y esto ha funcionado para ti?
CH-3: Sí, me ha funcionado.

VL: ¿Hay alguna otra cosa que te gustaría decir?
CH-3: Sí, lo que también me ha funcionado muy bien, y que me ha generado mucha satisfacciones personales, es poder armar equipos de trabajo. Porque cuando tu armas un equipo de gente, los conoces tanto, que puedes lograr que esas personas se adhieran a tu objetivo, y esa es una experiencia muy rica. Yo he trabajado con personas jóvenes, a quienes he traspasado mucho conocimiento, mucha experiencia. Si el administrador logra que las personas se adhieran a sus objetivos, se puede echar a dormir si quiere, porque esas personas hacen suyo ese objetivo. Cuando tu trabajas con personas que son trabajadoras, que son esforzadas, que tienen la camiseta puesta, y tu logras que ellos hagan suyo el objetivo tuyo, ellos ponen sobre la mesa toda su potencialidad para lograrlo, y eso es muchísimo más que lo que uno puede poner. Mis proyectos más exitosos han sido porque he podido lograr un equipo en QUE ellos tienen la meta mía y a esa meta mía concurre una potencialidad de mente, de voluntad, de deseo que es muchísimo más que si yo no lograra la adhesión de ellos. Yo soy mucho menos que la suma de ellos, por lo tanto es mucho más inteligente que yo trate de que ellos se adhieran a mi objetivo, y si quiero después de eso no hago nada, porque ellos están banderizados con ese objetivo.
CH-3 Amendments: HAY QUE SUMAR VOLUNTADES Y ADHESIONES LIBRES E INTELIGENTES AL OBJETIVO.

VL: ¿Cómo se logra eso?
CH-3: Yo no sé dónde se aprende, pero de partida debes ser muy ecuánime, muy justo, muy correcto, y tratar a la gente con mucha justicia (no blandamente). Por ejemplo: si viene alguien y te dice 'por favor deme dos horas para ir al médico, y se las pago el sábado', si tú quieres perder a esa persona, dile 'Conforme ¿A qué hora va a venir?'. No, 'no te preocupes', porque esa persona se ha quedado trabajando muchas veces hasta tarde, entonces tú solamente le estás devolviendo la mano. Uno tiene que tratar de ser entre padre y amigo. A mí me ha pasado que gente con la que he

trabajado me llaman para saber cómo estaba (empleado, topógrafo, etc.). Tu sabes cuando alguien es seguro, qué le puedes pedir; cuando alguien sea inseguro tu le puedes pedir a esa persona que haga otra cosa en la que es muy bueno.
Ese equipo complementario, es como un suelo bien graduado, es compacto e indeformable, como el suelo de Santiago, que tiene una materia arcillosa que le da la ligazón. El jefe es esa materia arcillosa. Que sabe conseguir un suelo bien graduado, sabe cómo se complementan y sabe crear una unión en ese equipo. Eso no es fácil de aprender, uno lo aprende porque lo va viviendo. Nada más lejano que el jefe que es gritón, etc.
Tu trabajo tiene que ser sicológico, que todo el equipo sea afiatado, que se complemente, y que tiendan a tu objetivo, y eso tienes que ganártelo, y es muy difícil.
CH-3 Amendments: CON SUERTE, EJEMPLO Y LIDERAZGO.

VL: ¿Algo más?
CH-3: Yo creo que eso es lo más importante.

Appendix E.11: Participant PB-3 Interview Transcript

TRANSCRIPT: PB-3

VL: Could you tell me what, how do you understand the role that you have within the Construction Manager of the Year Awards?
PB-3: Well my role is the consultant representing the Chartered Institute of Building and my role is to ensure that the judging process is carried out to standards set and accepted by the Chartered Institute and to ensure that all people within the award competition get a fair and recognised judging process. I also have to organise the judges, appoint them, and ensure that they too comply with the requisite regulations set down with the award. The award itself, the closing date is late spring, and the judging process takes place over the summer period, with the award itself being recognised and given in October. Now the award is open to anybody who is responsible for the construction of a project and actually is resident on site. That person may or may not be a member of Chartered Institute of Building. We in fact encourage people to enter who aren't members of the Chartered Institute of Building, and they all have a fair and equal chance.

VL: Could you explain to me how do they apply and what is considered?
PB-3: They apply on the standard form that I've given you a copy of this morning. That form lays out exactly the criteria of the award, the categories of the award, and there are ten categories. They choose which one they wish to enter. It also lays down the format of the entry and the way we'd like you to submit it, and the reason for that is so we have a uniform entry into the award.

VL: You mentioned that the CIOB encourages the application of people that are not necessarily members, is that for any particular reason?
PB-3: When I say we encourage, what I mean is that we don't necessarily go out and say ... we look to you to award, we are open to every person, so that you may find a project manager, or construction manager shall I say, who may be in the twilight of his career, has never had, as one might say as you know, because what you're doing now, a university or accepted qualification. They've come up either through a trade background or they've come through an HND/HNC and they've come to the top of their profession within the company. And many of the ones we've had over the last fifteen years have not had a qualification at all; they have been superb construction managers looking after projects ranging up to say £60m. So they've had a trade background or another background that does not necessarily have a profession qualification, therefore we recognise that and we try to encourage people who don't have a professional qualification to enter.

VL: In that way you probably have people from different background, not only members, and maybe people that have ...
PB-3: Exactly, exactly. Now you might actually find that construction managers may be chartered engineers or architects, so they are also not precluded. So what we are saying, so the industry is, we will accept nominations and entries from any type of person, including females. We do get ladies entering, which is good. We don't

necessarily go out to find them because we like people to be nominated rather than us go and search for them, so they're voluntarily entered. So we do have ladies who quite correctly are now coming to the forefront in construction who enter the award as well.

VL: Do you have female applicants every year?
PB-3: We've had a few applications over the last years.

VL: Have you ever had a female applicant actually getting an award?
PB-3: Not to date.

VL: Once they have applied, what happens then with the applications?
PB-3: Once the applications arrive here we ensure that they are a complete application and there's nothing missing from it, and they are given to the Chairman of each category and ... for what we call a paper sift, to ensure that within the entries there is the required standard and that if in the event of producing the final list to go forward, then that list takes place. When the paper sift is complete, which is done by the Chairman in each category - there are ten categories, which you'll see later on the train. They are then put into the strict order of visiting and interviewing the applicant. The award we give is the one for the person, it's not for the project or the architect or the client, it's the person, this is why the award is unique, which you will find when you read it. So we then don't do what some awards do, sit in a hotel room, lots of sandwiches and read them there. We agree a time and date and each tour consists of a judge, or judges, there's a Chairman, three supporting judges and an administrator, and they visit the project and they visit the site. And the initial situation is an interview, and that takes place with the candidate put forward and either his client or nominator. So he has two other people supporting him, just to help the person at the interview because it's so often the case they forget to sort of promote themselves, and you'll find an occasion whereby during the interview process, which takes up to an hour, there are several 'John, don't you remember you did this?', try and encourage them. Because these people, some of these people have never been interviewed like that before, it is a pretty gruelling experience to be interviewed. Once that interview has taken place the judging team then go round the project for about half an hour, they actually go round the project with the client or the nominators and the candidate, and in many cases the judging team learn more about the person walking round. It's very casual that part of the situation, although the interview is kept almost formal. So to summarise, the project's visited, the interview takes place, the walk about takes place, and then the judges leave. There's no communication between the judges and the nominee at all at that stage. So then the judges disappear and they go round the other project within the category throughout the country, the same team see each job, and they come to a decision. That decision is who to get the Gold award and who to get highly commended within each category. I'm going to now jump further because you're going to ask me a question I'm sure, how do you ever come to the Gold-Gold, I'm going to do that now. So once all the projects have been visited throughout the country, the ten categories, the Chairman of each category, so you've got ten Chairman, meets with what we call the Chair of Chairs, and that's a structured meeting, and at that meeting it is confirmed who the Gold winner is in each category. And then from the Gold winners is Construction Manager of the Year Award for the whole competition, so one of those people not only gets the Gold within the category, that person is chosen for Gold-Gold.

VL: The judges, I mean the team that visit the project managers, are they appointed for a specific category or are they appointed by a specific region?

PB-3: They, there's no regionalisation at all. They are appointed to carry out the task of judging. We do not necessarily put each judge each year to the same category; they are all the same standard. The judges are all Chartered Members of the Chartered Institute of Building, that is the one area that we must insist on because we sponsor it, so all the judges are either Fellows or Members, corporate member. We have a pool of judges who have been doing the job for some of them for fifteen years, so they know the process. Now those judges come from the industry and within the judges now at least fifty per cent are either managing directors or chief executive officers of construction groups, so they know the business. And we also have on board divisional directors of major contractors, and minor contractors, and also we have people who may have retired from the construction industry but have a wealth of experience and know the industry, they've all been within construction groups so they all are accepted as peers in their own right. We also now, some of our judges are past winners, past Gold medal winners, past Silver medal winners, and I would feel that at this stage that fifteen per cent of the judges are past Gold medal winners. So they've been in the hot seat, they know what to look for, and in many in the interview process they help the candidate. Because we want to get the most out of these guys, you know we want to get out of them the best. They are the best in the industry, we don't want them to fail. We want to them to tell us exactly what they've done, how they've done it. And in many cases projects may have gone wrong; that doesn't worry us because we look to these guys to tell us how they got out of the mess, what did they do, is the actual process of the management of the project they've working for. And in many cases the project may have overrun, they may well go over budget, but there are probably very valid reasons what's happened there, how was it interfaced with the client, how was interfaced with the contract, and how the final outcomes happen. But what we don't look for is the return or the margin on the contract, that is not of any interest to us at all. We are looking for the excellence of the construction manager.

VL: So for a specific category there's one Chairman that that will attend to every single interview.
PB-3: And all the judges attend the interview within that category as well.

VL: Within the same?
PB-3: The same team.

VL: So for each category all applicants are assessed by the same team
PB-3: Correct. So you get uniformity of the judgement process and the QA, we have a query system, it is all about track, so you get transparency in the judging process.

VL: Okay. So effectively if an applicant wanted to know why they didn't get the Gold medal for example, you would be able to go and say, well, you have been assessed in this and this and that sense, is that what you mean by the quality assurance or it only works ...
PB-3: Internal QA, not external. We have never had an occasion of anybody questioning the judging process and we've been going thirty years this year. Perhaps then, just so we can put this in the transcript, perhaps then that that record demonstrates that the process that we do is accepted by the nominees and their companies.

VL: Do people have to put up their own application?
PB-3: It comes from all sources. At the end of the day the applicant's name and his details have to be on the application. He may choose to put himself forward and get

some nominators, referees, you may get nominators putting people forward, you may get their employers putting themselves forward, you may get the client putting forward, or you may get the consultants associated with the project putting them forward. Whoever does that, at the end of the day the process is the same.

VL: After the judges for each category meet and decide who will be getting the Gold and the Silver medal and who will be highly commended did you say, then as you explained to me there is a Chair of Chairs and they will decide who will be the overall winner of the year. How does that process take place?
PB-3: Every Gold medal winner... there is a scoring system. When the Chairmen meet, one will find that there will be a number of candidates come out at the top of the pack. At that stage an in depth discussion is presented to the team of the Chairmen by each category Chairman who feels that their person is the best. And the way the system works that over the years there has not been much dissent at all in choosing the Gold, the Gold winner. It happens, I can't tell you how it happens, not because I don't want to but it just does. Each year there is always one person who comes to the top of the pack, it is extraordinary, it really is. And if you look at the past winners, which you can do as we say, they come from all types of category. The one last year came from a restoration project, £50m in Edinburgh. It wasn't a brand new £200m pound project in the City of London. And previous years we have had a major project, £100 in the City of London, or we have had a PFI project. The type of category is irrelevant at the end of the day, it's the person. And just to sum up, the discussion does take place, it's an in depth discussion, it really is, but you find that someone does come out at the top of the pack.

VL: So the overall winner is actually outstanding in terms of excellence?
PB-3: Yes, entirely. It does come out. It does happen.

VL: When people are nominated, they are nominated in relation to a project.
PB-3: They are indeed.

VL: But the award goes to the project manager?
PB-3: Construction manager.

VL: So in terms of the process that you go through to choose the construction manager, how does it relate this project or why does this project come into the equation when looking at the project manager - sorry, the construction manager, in its own right if you like, his own characteristics, how does it relate?
PB-3: You've got to have a project that can demonstrate the qualities that we expect of a construction manager, it is not in theory, it is practice. So that we have a schedule, a checklist, of those requirements that we expect a construction manager to have. You said there, and I said earlier, it is the candidate, not the project, but you need a project on which the candidate can demonstrate his ability. And in the management process of a construction manager there are many facets to the ability of what he can demonstrate, and it can go from programming, it can go through to financial, it can go through to health and safety, it can go through to changes within the process, there's a whole raft of areas that we look at. I will not give you specifically today each of those because those have to stay within the domain of the Chartered Institute of Building, but you in what you're doing will probably identify at least eight or ten areas that a construction manager will be required... So they have to demonstrate within the project that that is the case, and at the interview stage we address that and we discuss it with the candidate, and in many cases the supporter of the candidate will assist him, or her,

in putting forward the strengths that they demonstrated when the project was carried out. So to summarise, we need a project but the candidate has to express his or her ability to manage it to excellence, and what we're looking for is excellence.

VL: So the project basically is providing evidence of the...
PB-3: It is a, it is a vehicle. It is a vehicle. And perhaps that is why it does not matter the size of the nature of the building, because a building or enclosure - because sometimes we have buildings, you have to think are they a building or an enclosure - it is irrelevant, totally irrelevant, because it's the person, we're looking for quality of construction manager, the vehicle was the building.

VL: So dividing it into ten categories in terms of choosing the most outstanding examples in terms of practice, what does it allow? Because if you're looking at the project manager and the project is the means by which they provide evidence of their abilities, if you like, or skills, then how does this dividing it into categories work?
PB-3: You've got to judge lemons with lemons; you can't judge a lemon with an orange. And if I could say if you have a construction manager doing a housing project of say twenty houses, the ability and skills he's got are totally different to a construction manager doing a £100m office building in the City of London. I would doubt whether a £100m project manager in the City of London could build thirty houses in the country, it's a different process, absolutely different management process. And one would doubt whether the housing guy could build a £100 project in the City of London. But the same criteria apply to each person, therefore we distinguish the categories so we get like for like. Now you might then say to me, well how do you choose the Gold, the Gold at the end of the day? Once all those categories are assessed and we have a Gold in each one, you still go back to what we discussed ten minutes ago, that someone or two come to the top of the pack and you can distinguish from them. But you have to initially do like for like.

VL: So is it in a way that these categories acknowledge the expertise of the project manager? In terms of project managers tend to develop an expertise into a certain type of project and they usually in time grow in size of the project or in budget for the project, would those categories acknowledge the uniqueness of what they do or the specific challenges and skills that they need?
PB-3: It could do. I won't say in all cases it does. You'll see that on the new build/refurbishments there are about six or categories of a value. You will find project, construction managers moving around within value, one year they may be doing a £6m project, next year they may be doing a £100m. May, but you won't, you'll find those people who do a £100m traditionally do a £100m. But you'll find project managers, construction managers, and we've seen this in the commencement of their career doing a project of say £10m. Three years later we get the same guys entering for a £100m, so they've progressed through their own company. Therefore we established those category divisions from experience. Now one year to the next they will vary because the market varies. If this interview took place a year ago you may have more people doing housing because the housing market was buoyant; the housing market today isn't buoyant, nor is restoration. So that perhaps we try to establish a format to hold the market to what's going on and to distinguish between them and to allow people to enter this year, two years from now, three years from now, so they are not singularly kept to a level.

VL: Do all applicants go through the interview?

PB-3: Those who are chosen to the finals, yes. There is no difference at all in how they are judged. Every single person from the moment the judges walk into the room to when the judges walk out of the room is conducted in the same manner, to the same timetable, to the same questions.

VL: I know that you cannot provide me with the specific criteria that is being used, but can I ask you some characteristics about those scales that you use for scoring?
PB-3: We have developed over thirty years a system of scoring and that is the privy of the Institute.

VL: Is that an appreciation scale? In terms of you, in terms of agreement with a certain statement, or does it work as a basically marking in a certain specific area?
PB-3: There are marking schedules.

VL: Are those marking schedules defined specifically or is it just arranged from say zero to ...?
PB-3: There's a spreadsheet.

VL: I'm not trying to ask for information that you shouldn't give me, it's just to give me more information about how ...
PB-3: In any, in any domain, whether what you're talking to us today about construction managers or you're talking about sales managers, whatever you do there has to be an assessment on gauging the person you're interviewing. We do have a system, it's a transparent system that is the privy of Chartered Institute of Building.

VL: When someone they have to send all their information probably, that as you said was specific in this brochure that you gave me. Do all of them necessarily go into the interview or is there some interim?
PB-3: If it is felt by the Chairman that the standard of the candidate does not measure up they will to be seen at an interview.

VL: So that means that each category has, may have different numbers of people to interview, so the applicants for each category may vary from one to another.
PB-3: But I can assure you that we try to ensure that there's an evening out of the numbers so that it gives a fair competition.

VL: I think I have covered in terms of the methods and the process that you use everything that I require. Is there anything you would like to ask me or anything else that you would like to say that you consider relevant about this process?
PB-3: When we had the first introductory few minutes which was great, I think that this award will still be going in thirty years from now, we're fairly sure about that. I think that what you're looking at, and you'll be speaking to other people in the industry, other awards, there is no monetary value in this award at all, it is a sheer excellence award. And the main thing of this award, as we said before but I think should be emphasised, is that it is open to anybody whatever educational standards they've come to, whatever stage they are within the company, and it does look extremely good on someone's CV that they have entered the award and they have become a winner. At the end of the day, at the award ceremony it can be said that everybody there is a winner, because they put themselves up to be judged and they are all winners. And you find some people interview well, some people don't interview well. The way we conduct it gives those people who may not interview well the opportunity, we bend over backwards, and that is why it's important that the judges we have have done it for a considerable period

of time, also that they are in their career most likely still involved at a very high level within the industry and have been in the industry and they know what we're looking for, and I think that is one of the reasons why this award is so well recognised. And it is sponsored by some major companies in the country. Okay?

VL: Okay. The reason why I chose to interview somebody from the CIOB is specifically because this award focuses on the project manager, as different from all the other awards and because that is the view that I'm taking from my research then it becomes relevant. In terms of the transcript that goes on to my thesis, the transcript is anonymised. In this specific case it can be anonymised up to a certain level, and this is something that I wanted to discuss with you. You will get, if you want, the transcript...
PB-3: We would like it, yes.

VL: The original one so that you can say these are the aspects that I would like for it to be anonymised, and also the final version that will go as an appendix on the thesis.
PB-3: Yes.

VL: However, it will be very difficult to include a transcript that will not have in terms of the content references to this specific award and this specific process, and it's because of the same reason that you were saying earlier, you're the only organisation that looks into the project manager. So whoever reads my thesis, even though I may not mention your name or this institution or anything or those lines, may think that I am talking about the Construction Manager of the Year Awards and CIOB. So I would like to discuss this with you
PB-3: I, I don't feel, I don't feel actually what we've discussed today that we'd be particularly worried about anonymity, I don't think we will. I think we ... I think that when we get the transcript through I don't think there's anything we've discussed today, I've tried to open it into an area that gives you the opportunity to put ... I don't feel there'll be any areas we would not mind being said, well this took place at Chartered Institute of Building between the people who run the CMYA and yourself. I don't think that'll happen. You can use it.

VL: Yes, thank you very much. So can you provide me with some email or postal address where to send the transcript?
PB-3: Yes, what I can do is ... Judy Parker is my Administrative Executive, Judy Parker. Now if you could liaise with Judy and get her email, her telephone number ... if you pass me, pass me that form there. Judy's telephone number is 01344 630796. Now we have various emails flying round this organisation, if you give her a ring then she'll give you her specific email, because we have one for ... so if you get that, that'll be fantastic. Just to give you an idea of ... the guy who won last year, that's a restoration project in Edinburgh, only about twelve, £15m. The year before was the brand new Assembly for Wales, that wasn't a major, major project, that was about £20m. University of Newcastle, that wasn't a major project, was about £20m. Paternoster Square, Paul Sims, that was a major, major project in the City of London, £15m, brand new. So you'll see here that they don't ... I mean, go down to *[TEXT DELETED BY REQUEST OF CIOB]*. That wasn't a major project, it was a prestige, prestige project. And *[TEXT DELETED BY REQUEST OF CIOB]*. I don't want those names by the way put into the transcript, so can you ... there's a handful of projects there. But we are not, not worried about letting people see who has won, okay?

VL: Yes.
PB-3: But don't mention those guys are ...

VL: No problem.
PB-3: You can say in the beginning, as we said before, you can say yes, certain of the judges have been previous Gold medal winners, something like that, you can say that.

VL: Excellent.
PB-3: But you don't have to say names of people, you can say quite clearly that up to fifteen per cent of the judges have been previous Gold medal winners.

VL: Excellent. Is there anything else that you'd like ...
PB-3: No, glad to see you today.

VL: Thank you very much.

Appendix F: Pilot Interview Schedule

PILOT INTERVIEW – CONSTRUCTION MANAGER

1. Explanation of the research and purpose of Pilot Interview + sign consent form ☐
2. Personal Information:
   - Name ☐
   - Experience (years) ☐
   - Member of professional body/chartered? ☐
3. **Questions**
   - How do you determine if a project has been successful?
   - (Are there any other factors?)
   - How do construction managers impact on the outcome of the project?
   - Are there any personal traits that might be better suited for delivering successful construction projects?
   - What role does the team have in delivering successful projects?
   - Is there something else you would like to add or to mention that we have not covered yet?
   - **THANK YOU**

Appendix G: Description of Research Project

This research project looks into the relation between construction management and construction project success, particularly focusing on the influence that the construction manager has on the successful outcome of a construction project.

This study adopts the view of the construction manager, and therefore, your views will allow this research to take place. I am interested in knowing your views on what makes a project successful, what you think should be considered to make it successful, and how construction managers influence that success.

Your participation in this study is appreciated and all your opinion will be taken into account.

Appendix H: Mail from CIOB about First Interview Transcript

From: Saleem Akram [sakram@ciob.org.uk]
Sent: 12 March 2008 17:45
To: Veronica Latorre
Subject: RE: Interview Transcript - PhD Research on Project Success

Dear Veronica

I am in receipt of your email dated 1 March 2008 together with your undated transcript between yourself and Rosemary Elder/Anthony Brundrett of the CIOB. Sorry for the delay in getting back to you.

These two managers are no longer in the employment of the Chartered Institute of Building. The content of the transcript and the discussion are not correct and it is with regret that the CIOB cannot proceed.

Best regards

Saleem Akram
Director
Professional and Technical Development
The Chartered Institute of Building
Englemere, Kings Ride, Ascot, Berkshire SL5 7TB
t: + 44 (0) 1344 630 736 **f:** + 44 (0) 1344 630 713
e: sakram@ciob.org.uk **w:** www.ciob.org.uk

Appendix I: Interview Schedule

INTERVIEW – CONSTRUCTION MANAGERS

Number: _____

1. Explanation of the research - sign consent form ☐

2. Personal Information:
   - Name ☐
   - Experience (years) ☐
   - Member of professional body/chartered? ☐
   - Contact for sending scripts & results Yes ☐ No ☐

3. **Areas to cover**
   - What makes a project successful? ☐
   - What characteristics of a Project manager will ensure a successful outcome? ☐
   - What makes a 'good' project manager? ☐
   - Is there something else you would like to add or to mention that we have not covered?
   - **THANK YOU**

4. Other info *(Sampling: Snowball)*
   Do you know any other CM, that have more than 2 projects' experience, who I could contact for my research? ☐

Appendix J: Interview Consent Form

Number: _____

Project Title:

Influence of Project Management in Construction Project Success

I agree to take part in the research project. I have had the project explained to me. I understand that agreeing to take part means that I am willing to:

- be interviewed by the researcher
- allow the interview to be audiotaped

This information will be held and processed for further analysis by the researcher only.

I understand that any information I provide is confidential, and that no information that could lead to the identification of any individual will be disclosed in any reports on the project, or to any other party. No identifiable personal data will be published. The identifiable data will not be shared with any other organisation.

I understand that I will be given a transcript of data concerning me for my approval before it is included in the write up of the research.

I understand that my participation is voluntary, that I can choose not to participate in part or all of the project, and that I can withdraw at any stage of the project without further explanation, by sending an e-mail to: veronica.latorre@plymouth.ac.uk

Name (please print):.....

Signature: .....Date: .....

Appendix K: Pilot Interview Consent Form

Project Title: Influence of Project Management in Construction Project Success

I agree to take part in this pilot interview. I have had the project explained to me. I understand that agreeing to take part means that I am willing to:

- be interviewed by the researcher
- allow the interview to be audiotaped

This information will be held and processed for further analysis by the researcher only.

I understand that any information I provide is confidential, and that no information that could lead to the identification of any individual will be disclosed in any reports on the project, or to any other party. No identifiable personal data will be published. The identifiable data will not be shared with any other organisation.

I understand that this interview will be used in order to further develop the structure of the interview for this research project.

I understand that my participation is voluntary, that I can choose not to participate in part or all of the project, and that I can withdraw at any stage of the project without further explanation, by sending an e-mail to: veronica.latorre@plymouth.ac.uk

Name (please print):.....

Signature: .....Date: .....