

The Investigation of the Generation of Intangible Benefits through Project Management

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Abstract

With the focus of this research on intangible benefits, the resource based view was used as the lens through which project based organisations were considered. It was recognised that intangibles contributed to the competitiveness of project based organisations as the review of extant intellectual capital literature revealed that intangibles help organisations to be competitive evidenced in the changing value contribution of intangibles to tangibles and the gap between market and book value due to globalisation and its manifestations.

A theoretical and empirical approach combined with an interpretivist approach grounded the research in extant project management and project management practice and addressed some of the criticisms of the RPM, CPM, BOKs and BRM. Theoretically, content analysis was applied on extant project management literature and empirically, five organisations consisting of contracting and single project client organisations participated in multiple case studies in two phases using questionnaires that collected both qualitative and quantitative data combined with deductive and inductive analytical approach to data analysis.

Demonstrated that the theoretically derived intangible benefits of project management fit broadly into organisational capital, human capital and social capital and a theoretical framework was also developed. Empirically demonstrated that the intangible benefits from project management deployment are types of knowledge and capabilities. The drivers of and attributes of intangible benefits established that intangible benefits are generic and contextual with implications for the contracting and single project client organisation. By analytical triangulation, it was empirically demonstrated that intangible benefits derived from project management follow the mature groupings of contracting and single project client. The logic to the generation of intangible benefits was developed and the theoretical framework empirically validated. Mapping the logic model unto the project management activities identified from a combined version of the PMBOK and the APMBOK, the approach to the generation of intangible benefits was developed.

Preface

A journey of a thousand miles starts with a step. In many ways, my PhD journey is one of a thousand miles. My first step was borne out of a strong conviction that there was more to project management than meeting cost, time and quality targets; something more strategic that made organisations more competitive. At least that's how strongly I felt by the end of my Master's degree. This thesis is my journey of discovery of what more project management offers.

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Chapter 1

1.1 Research Background

The research seeks to investigate the intangible benefits accrued from deploying project management that contributes to the competitiveness and sustainability of project based organisations. This was based on the belief that in the light of the evidence of project performance on cost, quality and time, and the increasing use of project management even in non traditional industries, there was more to project management deployment than meeting cost, quality and time constraints. The review of extant project management literature revealed that the PMI and project management researchers recognised the link between the use of project management and competitiveness. The PMI's definition of project management was adopted for this research as project management was recognised as a strategic competency that helped organisations compete in their markets.

As part of the literature review, the project management bodies of knowledge were also discussed and whilst the shortcomings of the BOKs were highlighted, the Project Management Body of Knowledge (PMBOK) and Association of Project Management Body of Knowledge (APMBOK) were indicated to be the leading publications on what constitutes the knowledge base of the profession and therefore presented a frame of reference against which the intangible benefits derived from project management deployment could be investigated. Stakeholders' views of project management were also discussed and extant literature indicated that project management researchers had raised several issues with two leading streams identified as the Rethinking Project Management (RPM) and Critical Project Management (CPM). It was observed that there were similarities between the RPM and CPM around the role of BOKs, projectification and programmification, and implication for practitioner development and project management education. There were also differences as the RPM drew attention to project management value from different perspectives and reality of uncertainty whilst CPM focused on the social, ethical and political dimensions of project management.

In addition, with the focus of this research on the intangible benefits from project management deployment, it was also important to clearly articulate what was meant by project management deployment. Given the broad nature of project management, a theoretical lens "theory of the firm" was employed which referred to the way in which project management deployment was approached in the context of this research. The theory of the firm focused attention on the context in which project management was deployed and four theories of the firm were

considered. The resource based view of the firm was selected because it focused attention on resources that drive competitiveness whilst providing the opportunity to focus on knowledge or certain capabilities if extended to the knowledge based view or capabilities based view of the firm. Having established the theoretical approach to project management deployment in this thesis, project management deployment was defined as the outworking of decisions taken in delivering the project and therefore the observable actions and processes as a result. Consequently, with the theoretical lens of the resource based view, the focus was on the more intangible resources generated as a result of project management deployment that lead to competitiveness with competitiveness been understood in terms of the PMI's definition of project management and as the yardsticks of competitiveness indicated by project management researchers.

With this understanding, attention was drawn to the term intangible benefits and its relationship with extant benefit management literature. Intangible benefits in the context of project management was defined from the dictionary definition and that of other researchers. In addition, several themes were identified from the review of extant benefits management literature, however it became clear that there was limited consideration of the intangible dimension of benefit realisation management. Again, the theoretical lens of the resource based view was instrumental in identifying the gap of intangible dimension in extant benefits management literature. Consequently, the review of extant project management literature provided evidence that intangible benefits from project management deployment were important for competitiveness. However, it also became clear that there was the need to identify an approach that was appropriate for investigating the intangible benefits from project management deployment without the burden of satisfying the requirements of the resource based view.

Therefore, the intellectual capital approach was selected because it was focused on the intangible dimension but not burdened with satisfying the conditions of the resource based view and also offered flexibility for contextualisation. From the literature reviewed on intellectual capital, it was argued that intellectual capital was intangible and therefore hidden and required organisational effort to identify or exploit. Furthermore, intellectual capital was also indicated to be driven by economic forces and that the impact of IC was evidenced in the changing value contribution of tangible and intangible resources, gap between market value and book value, a trend way from product driven economy to knowledge economy. The review of IC literature also revealed that IC was considered from the point of view of permanent organisations and that the type of industry was general. It was also found that IC was often decomposed into components and that there was also no consensus of terminology. The IC

literature reviewed provided evidence that IC was about people- human capital and about organisational and innovation related capital. It also became clear that disbenefits also accrued and several issues were raised for the components of IC. Subsequently, using the established approach observed from the review of IC from the perspective of permanent organisations, extant project management literature was reviewed for IC. It was found that there was limited extant research in the area, with a few researchers recognising the potential of intangibles to project based organisation competitiveness. The review of extant IC literature provided evidence that the intangible benefits derived from project management deployment was critical because it was important for permanent organisations due to the gap between the market and book value of organisations and how organisations now create value due to the effects of globalisation and over-competition.

In the light of the review of existing literature on project management from an intangible benefits point of view, IC from the perspective of permanent organisation and project based organisations, it was evident that it was critical to investigate the generation of intangible benefits from project management deployment and that there was need for a coherent approach to the investigation of intangibles from project management deployment. A theoretical and empirical approach was therefore selected; whilst the theoretical approach grounded the investigation in extant project management literature, the empirical approach validated and grounded the research in project management practice. In addition, due to the nature of intangible benefits, the approach also required a more interpretivist approach addressing the criticism of project management research being too positivist or mechanistic. The empirical research was conducted in the construction industry because construction organisations manage by projects and researchers have also argued that project based organisations in the construction industry need to remain employable, recognise that delivery of projects is used as a means to achieve strategic goals and that competition exists across international markets. However, it was also recognised that this research was relevant to other sectors applying project management. Consequently, by understanding how intangible benefits derived from project management deployment add to the competitiveness of project based organisations, project based organisations can implement appropriate project management deployment strategies that support the generation, management and exploitation of intangible benefits.

1.2 Aim and Objectives

Aim: The investigation of the generation of intangible benefits through project management deployment

Objectives:

1. To identify the intangible benefits from project management deployment as captured in existing literature
2. To understand how organisational, human and social capital manifest in practice- their inter-relationship, link to project management deployment and to competitiveness
3. To explore to what extent intangible benefits are generic and specific across types of project based organisations
4. To develop an approach to facilitate managing and maximising intangible benefits derived from project management deployment

1.3 Outline of Methods Used

For objective one, content analysis was used to identify benefits from project management as captured in extant literature and the intangibility test was used to categorise the benefits into tangible and intangible benefits. For objective two, three and four, the multiple case study method was used in two phases; the first collected purely qualitative data and the second phase used a parallel convergent design and collected qualitative and quantitative data. Theoretical sampling was used in selecting the cases with specified conditions to be satisfied. The data in the second phase was analysed separately and interpreted together. For objective two and three, two analytical lenses were used to analyse the data, a deductive and inductive approach. The drivers of intangible benefits were employed for objective two and using argumentative interpretations findings were made and in addition, the logic of the generation of intangible benefits was also deduced. For objective three, using the generated data, the author inductively derived attributes of intangible benefits from project management deployment which were used to explore across the types of project based organisation using the logic of replication to determine to what extent intangible benefits were generic or contextual across types of project based organisations. For objective four, the two leading project management bodies of knowledge, the PMBOK and APMBOK were blended together to identify the project deployment activities and mapped to the logic model by specifying the drivers and attributes of intangible benefits derived from project management deployment to develop a strategic approach to the generation of intangible benefits derived from project management deployment.

1.4 Scope and Limitations of Study

Creswell (2003) identifies two parameters; delimitation and limitations that establish the boundaries, exceptions, reservations and qualifications reflected by every research study.

Putting this in context, one of the delimitations of this research study is the use of multiple case study design with two embedded units; the organisation and the individual. The research is limited to the investigation of how intangibles are generated based on the organisation context and values (shared beliefs) and the perception of the project actors interviewed. Whilst the link between the generation of intangible benefits from project management deployment and competitiveness was made theoretically, it was outside the scope of this research to investigate competitiveness empirically. The execution phase of the project lifecycle is the focus of this research, however there was overlap of information from other phases. Two types of organisations were considered, contracting organisations and the single project client organisation. The research was conducted in organisations who work in multiproject environments.

1.5 Structure of the Thesis

Chapter 2 discusses Project Management from the View Point of Intangible Benefits. Project management was defined and project management and competitiveness was then discussed. The theoretical lens was discussed and consequently project management deployment in the context of the firm was discussed. Project management deployment and competitiveness was also discussed and intangible benefits in the context of the firm was also discussed. The review of literature provided evidence for investigating the generation of intangible benefits from project management deployment and indication of how to go about it.

Chapter 3 discusses Intellectual Capital. Intellectual capital literature was reviewed and its importance discussed. The key intellectual capital components: organisational, human and social capital were also defined and discussed. In addition, the evidence of impact of intellectual capital, intellectual capital as also negative, measurement of intellectual capital and sound deployment was discussed. Project management literature was also reviewed in the light understanding derived from extant intellectual capital literature. Consequently, the case for investigating intangible benefits from project management deployment was made with evidence from extant literature reviewed.

Chapter 4 discusses the Research Methodology. Details potential research methodologies and research design used and the justification. The research design for objective 1, objective 2, objective 3 and objective 4 are put forward including data analysis, validity and reliability.

Chapter 5 discusses the Theoretical Approach to Intangible Benefits. Content analysis was used to systematically investigate the intangible benefits derived from project management deployment as captured in extant project management literature. Sixteen benefits were

categorised as intangible and thirteen as tangible and therefore established for the first time that sixteen intangibles were theoretically derived and the intangibles of project management fit broadly into organisational capital, human capital and social capital and consequently the theoretical framework was developed.

Chapter 6 discusses the Main Case Study Findings and Analysis. In line with the theoretical framework developed in the previous chapter, the data from the multi-case study with four participating organisations was presented. The generated data was organised under fourteen themes identified from the empirical data and consequently the corresponding intangible benefits were identified that fit into organisational, human and social capital. The initial discussion and analysis focused on the “generates intangible benefits” box of the theoretical framework.

Chapter 7 discusses how Intangible Benefits Manifests in Practice. Using a deductive analytical lens, a total of sixty-seven drivers of intangible benefits were empirically identified. It was found that corporate knowledge ownership intangibles and the human capital components were generic while other intangible benefits components were contextual to varying degrees. In addition, organisational change was found to be disruptive to the generation of intangible benefits from project management deployment. The findings focused on the “generates intangible benefits” box of the theoretical framework.

Chapter 8 Develops the Logic Model to the Generation of Intangible Benefits. Using the identified drivers and the better understanding of the relationship between the different components of intangible benefits, the logic to the generation of intangible benefits was developed consistent with the earlier developed theoretical framework. Furthermore, the variety of stakeholders and organisational changes established the need to consider multiples lens to intangible benefits and effects of changes. Consequently, the findings primarily enhanced the understanding of the “Link” but also enhanced the understanding of the “generates intangible benefits” box of the theoretical framework.

Chapter 9 Discusses Types of Organisations and the Relationship with Intangible Benefits. With the use of an inductive analytical lens, thirty eight attributes of intangible benefits were empirically derived. The comparison of the attributes of intangible benefits across the three project based organisations established that there was need to consider both the generic and contextual manifestations of project based organisations, thus validating the findings from using the deductive analytical lens and adding to the understanding of the “organisation” box in the theoretical framework.

Chapter 10 Develops the Approach to Generation of Intangible Benefits Derived from Project Management Deployment. The approach to the generation of intangible benefits from project management deployment was developed, by expanding on the theoretical framework developed earlier from addressing objective one, and building on the understanding of intangible benefits, the project based organisation and the Link from addressing objectives 2 and 3. The application of the approach was illustrated using the contracting organisation, single project client organisation and the contracting organisation in the supply side of the single project client organisation.

Chapter 11 the Conclusion. Discussed the conclusions drawn from the PhD research with the aim to investigate the generation of intangible benefits through project management deployment. Addressing objective 1 indicated that extant project management literature already captured certain aspects of intangible dimension of project management deployment. Addressing objective 2 empirically validated the theoretical findings from addressing objective 1 by identifying the intangible benefits in practice and their nature and validated the links between the deployment of project management, the generation of intangible benefits, the generation of intellectual capital and competitiveness. Similarly, addressing objective 3 whilst putting the spotlight on the type of project based organisation further validated the finding from addressing objective 2 and increased the understanding of the role of organisation context in generation of intangible benefits. Addressing objective 4 led to the development of a tool the Approach that helps practitioners to identify, manage and exploit the intangible benefits derived from project management deployment.

Chapter 2 Project Management- from the Viewpoint of Intangible Benefits

This chapter gives an overview of project management from the viewpoint of intangible benefits as context for this research. Project management was first defined and project management and competitiveness was then discussed. The theoretical lens was then discussed and consequently project management deployment in the context of the firm and project management deployment and competitiveness was also discussed. Lastly, intangible benefits in the context of the firm was also discussed and the chapter summarised.

2.1 What is Project Management

Project management has been defined by several authors over time (Winter et al., 2006), however the author highlights the Project Management Institute's (PMI) definition of project management as:

“The application of knowledge, skills and techniques to execute projects effectively and efficiently. It's a strategic competency for organizations, enabling them to tie project results to business goals — and thus, better compete in their markets.” (Project Management Institute, 2014)

The PMI's definition implies that project management can be deployed in different organisations- as context. It also implies that the organisational context and type of project influence how project management is deployed (combination of knowledge type, skills and techniques). The author adopts the PMI's definition as it draws attention to the more intangible aspects of project management deployment in line with the aim of this research. This is because the definition focuses on the outcome of project management as the ability to compete better in markets thus introducing the concept of competitiveness which will later be shown to require consideration of intangible aspects of project management deployment.

Extant literature has discussed project management, programme management, portfolio management (Laslo, 2010) however within this general area of discussion there have been discussions about the fact that there is no general agreement on the definition of any of the strategies whether project or programme or portfolio management (Crawford et al., 2006b); and also on whether they are different levels of project management or inherently different (Aritua et al., 2009, Aritua et al., 2011). The author is therefore aware that project management

can be deployed at a strategic level down to the individual project level; however, the author takes a general approach to project management and does not focus on a specific one.

The PMI also lists the recurring elements of project management as initiating, planning, executing, monitoring and control and closing. The handbook of project management considers the project lifecycle as definition, planning, organisation, control and close (Turner, 2007). A project is conceptualised as starting with the conceptual phase, progressing through the planning and execution phase and lastly the termination phase (Cleland and King, 1988). In addition, according to the project management handbook, one of the most important reasons for efficacy of project management is the changing mix of resources that is demanded over the life cycle of a project (Turner, 2007). Cleland and King (1988) also compare findings for each project lifecycle phase relative to each other with some resulting insights. According to Cleland and King (1988), the project size varies across the different phases whilst the planning and execution phases have by far the largest project teams, the conceptual phase the smallest and the termination phase has intermediate-sized teams. In addition, the level of bureaucracy increases with size of project and the organisational culture also changes markedly across phases as well as a slowly declining trend in conflict intensity across life cycle phases. Gardiner (2005) considers initiation and definition, planning, execution and control, and closure as the phases of a project. Gardiner (2005) lists five life cycle changes common to most projects as: resources, staffing, predictability of outcome, opportunity to influence and organisational needs. Therefore, the review of literature draws attention to the fact that project management can be considered as whole life or in phases, however the specifics of these processes will ultimately be dependent on the organisational context and type of project.

2.1.1 Project Management and Competitiveness

Organisations are turning to project management as a result of globalisation and the need to remain profitable to survive. More businesses are engaging in project based activities to improve their performance and adaptability to the ever-changing business environment (Leaseure and Brookes, 2004). One important reason organisations deploy project management is the ability of projects to accommodate complex business transactions especially with the realities of globalisation (Wikström et al., 2010). Thiry and Deguire (2007) opine that all types of organisations from different industries use project management as part of their operations while Gareis (1991) state that organisations in different industries including banking, tourism and even administration, manage part of their business by projects. According to Hyvari (2006) "there is a growing need for management of projects in business organisations". Hobbs and colleagues state that with increasing competition and increasing rates of product and service innovation, organisations are forced to employ project

management (Hobbs et al., 2008). With shorter delivery time for projects, more complex design and performance requirements, innovative ways of project delivery are required (Lam et al., 2004). Companies that sell products or services, including installation now sell solutions to the customer rather than just products and in today's business environment with shorter project delivery time, complete solutions can only be delivered with superior project management practices (Kerzner, 2006). There is a trend towards more service oriented offerings and life cycle solutions and this is leading to a fundamental change in business models of organisations (Wikström et al., 2010).

According to Cicmil (1997), organisations adopt specific patterns of coping behaviour in response to today's dynamic business environment. Cicmil gives the following reasons: the implementation of strategic management through projects; the expansion of human knowledge creates the need for an effective organizational design; and companies increasingly seeking ways of effective product development and market expansion (Cicmil, 1997). In the light of the understanding of the development of project management and how organisations implement it across their businesses, Canonico and Söderlund (2010) believe ongoing research is important as projects are getting more complex and being used even more broadly across industries as organisations struggle to remain competitive and profitable. From a different viewpoint, the use of project based approaches is also a consequence of contemporary management practices as organisations are becoming flatter and less hierarchical (Hazır, 2015).

2.1.2 Project Management Bodies of Knowledge

The project management bodies of knowledge have been discussed by several researchers and some of the key themes identified are discussed in the paragraphs below.

Types of Project management bodies of knowledge: Five types of project management bodies identified (Chin et al, 2010) and different BOKs draw on different conceptual and theoretical underpinnings with implication for perception and practice of project management and a mix of concepts being required for understanding projects or aspects of them (Morris et al 2000) with practitioners finding difficulty in assimilating and applying such diversity (Morris et al, 2000; Smyth and Morris, 2007).

The content of the body of project management knowledge: The body of knowledge identifies and defines the elements of project management in which competent project management professionals should be knowledgeable, reflecting the purpose of project management (Morris et al 2000). Though management of projects doesn't have its own theory as a discipline with methodological implications (Smyth and Morris, 2007), there is a generic discipline core to the

practice of project management across a very wide range of industries and applications, but a focus on what is the proper content of a project management body of knowledge is still required (Morris et al 2000).

Influence of BOKs on training and education: The BOKs influence project management education and certification (Crawford et al., 2006; Pant and Baroudi, 2008). There is an issue of credibility with professionalism in project management (Morris et al 2000). There is also no evidence to support the reasoning that certification results in improved project outcomes (Morris et al, 2006). There is a danger that various BOKs can create self-fulfilling perceptions and self-serving reinforcement amongst practitioners as to what constitutes appropriate knowledge (Smyth and Morris, 2007).

Regardless of the concerns raised by researchers in the subject, the APMBOK and PMBOK are the leading publications on what constitutes the knowledge base of the profession (Smyth and Morris, 2007; Morris et al, 2006). The input of research into the PMBOK and APMBOK and the implications have been discussed (Morris et al 2000; Morris et al, 2006). Researchers argue that the APMBOK takes a management of project perspective considering the total project lifecycle with broader implications whilst the PMBOK essentially focuses on execution delivery (Morris et al, 2006; Shepherd and Atkinson, 2011). In addition, the APMBOK has also tended to a more discursive and less methods-oriented approach compared to the PMBOK. (Shepherd and Atkinson, 2011). The PMBOK uses a positivist approach (Smyth and Morris, 2007) and promotes a more mechanistic model emphasising job fragmentation and bureaucratisation control (Morris et al, 2006). Morris and colleagues argue that project management as a subject requires a more interpretivist approach with implications for the BOKs (Morris et al, 2006)

With particular emphasis on the construction industry, Aritua et al. (2009) observed that most of the widely used sources of project management guidance, bodies of knowledge and tools/techniques in project delivery in the construction industry were generally focused on achieving single project objectives. However, it was found by examining the construction activities that many projects were increasingly undertaken in a multi-project environment and therefore there was the need for a shift from single project to multi project in conceptualising project management deployment in practice (Aritua et al., 2009).

Notwithstanding the shortcomings of the BOKs discussed above, the author focuses on the Project Management Body of Knowledge (PMBOK), Association of Project Management Body of Knowledge (APMBOK) as they both present the opportunity to investigate the intangible benefits derived from project management deployment against their knowledge areas or management processes. This is because the BOKs currently articulate the prevailing

understanding of hard and soft aspects of best practices, standards and principles implying that they capture organisational and individual competences required for project management deployment. The BOKs influence how practitioners conceptualise project management and therefore how organisations organise their resources and generate and capture knowledge with implications for the generation of intangible benefits. The views of stakeholders of project management are now discussed below.

2.1.3 Stakeholders Views of Project Management

The stakeholders' views consider the viewpoints of different stakeholders about project management even as stakeholders influence both the internal and external project environment and consequently influence the way the organisation's resources are organised. In view of the research objectives, two groupings of stakeholders have been identified, that of the project stakeholders, and that of practitioners and researchers of project management and discussed in turn.

Considering project stakeholders, there are two main ways of looking at project management deployment; from the perspective of the customer or sponsor and from the perspective of the contractor (in-house or external) (Morris, 2009). Therefore, considering the external perspective from the contractor's point of view, one also considers the supply side primarily the tier one contractors of the main contractor, or several contracting organisations (contractors) in the case of a SPV. This stakeholder view has important implications as what may be critical to the customer or sponsor may not be for a contractor and vice versa.

The views of researchers and practitioner are equally important as it influences the development of theory and practice of project management. Some researchers have highlighted that the definition of "a project" had changed (Geraldi et al., 2008); there were traditional projects and internal projects with implications (Gareis,1991); the need for re-evaluation of value from project management deployment (Thomas and Mullaly, 2007); the approaches to project management was inherently influenced by researchers' background (Alojairi, 2010); the implications of hard and soft aspects of project execution (Cooke-Davies and Arzymariow, 2003; Larson and Gray, 2011; Albert; 2007; Gardiner, 2005) and project management deployment methodologies and their implications in practice (Kononenko et al., 2013; Cheema and Shahid, 2005; Hofler, 2010). However, the work of project management researchers and practitioners fit into two main streams of project management research: the rethinking project management body of work and the critical project management body of work and play a big role in how project management is perceived and how project management evolves in theory and practice. This also means that the two streams have an influence on

how project based organisations organise their resources with implications for how knowledge is generated and captured. Consequently, the two streams are discussed in turn below as they are relevant to positioning this research.

2.1.3.1 Rethinking Project Management Body of Work (RPM)

The research network- Rethinking Project Management (Network) was funded by the UK's Engineering and Physical Sciences Research Council (EPSRC) in 2003 and the Network was motivated by the growing critique of project management theory and the gap to project management practice (Winter et al., 2006a). Some of the findings of the Network are discussed below.

1. Project management thinking: there are various theoretical approaches to project management both for the individual aspects of project management and for the discipline as a whole (Winter et al., 2006a). The most dominant strand of project management thinking is the 'hard systems model' (Winter et al., 2006a) but there is a shift from the traditional view of project management to one that emphasises that projects create value and benefits (Winter et al., 2006a).
2. The implication of the pervasiveness of the PMBOK and other BOKs: on project management knowledge and their application in practice and implication for project management education (Winter et al., 2006a). Need for more interpretivist approach with implications for positioning of project management profession and the BOKs (Winter et al., 2006).
3. The project reality of uncertainty: Artkinson and colleagues argue that there is the need to recognise that many project contexts are characterised by uncertainty with implications for types of project whether soft or hard (Artkinson et al., 2006).
4. Projectification: Increasing use of projects even beyond traditional industries of engineering and construction termed projectification and consistent with the evidence of increasing organisational reliance on projects, is the increasing number of people whose working roles are being redefined as project (Maylor et al., 2006).
5. Actuality of project management: Argued that to improve project management practice there was a need to focus on the "actuality" of project based working and management requiring the voices of practitioners and their interpretation of their own experiences and actions (Cicmil et al., 2006).

Outside of the Network, Whitty (2005) advocated for a memetic approach to project management arguing that memetic theory suggests that project behaviour is driven by our interpretation of reality, making sense of the world through mental modes and languages. According to Pollack (2007) a wider variety of paradigms employed within the project

management increases the ways in which existing techniques are understood, allowing familiar techniques to be applied to new situations in novel ways (Pollack, 2007).

More recently, a structured review on existing Rethinking Project Management (RPM) literature by Svejvig and Andersen (2015) revealed that the RPM literature still suffers from the positivist approach, insufficient evidence of impact of RPM in practice and education and therefore more need for practice oriented studies. In summary, in view of the extant literature reviewed in this section, the author identifies that issues raised by the RPM Network published in 2006 are still valid in the light of the findings published in 2015 by Svejvig and Andersen (2015).

2.1.3.2 Critical Project Management body of Work (CPM)

Hodgson and Cicmil (2008) identified a hidden side of project management as the “the other side” or (the “dark side”) of the discipline, in terms of both what is overlooked and in terms of what is often ignored as regards the more dysfunctional aspects and consequences of project management practice. Hodgson and Cicmil (2008) also stated that there is an important dimension which is by and large neglected by the majority of work in project management: the political, social and ethical dimension of project management in both theory and practice. Hodgson and Cicmil (2008) also draw attention to the implications for project success and failure highlighting that social context is often neglected and project management training with implication recruitment and practice. Sage et al (2010) recount the evolution of critical project management movement and identifies two main concerns of the CPM. The first aspect largely concerns a social, political and ethical dimension of project based work and the second concerns the training and practice of project management that considers the social complexity including power relations and tacit knowledges and self-reflexive practices. Cicmil et al. (2009) argue that CPM highlights the inherent problem associated with the fundamental principle upon which the field of project management has been established.

In summary, the key critical project management themes of interest from literature reviewed are:

1. Fundamental issue is with the theoretical foundation of project management embedded in functionalist, rationalist worldview. Hodgson and Cicmil (2009), Sage et al (2010), Breese (2015)
2. As a consequence of the issue with the theoretical foundation of project management, there is a neglect of the political, social and ethical dimensions of project management with implications discussed below:
 - a. Project actor wellbeing: Pinto and colleagues (Pinto et al. 2013) highlight stressful work environments, stress can cause burnout (Aitken, 2003) or under stimulation (Aitken

and Crawford, 2007), costs associated with stress (Richmond and Skitmore, 2006a). Also see Sage et al (2010) who point directions to work by Hodgson and Cicmil (2006b:34) that highlight “job fragmentation, managerial control and surveillance”, implications for practitioner reflexivity (Cicmil et al, 2006) and work life balance (Styhre, 2006) etc.

- b. Project success/failure and Organisational success/failure: Critical project studies have evidenced that the unequivocality of failure, judged against of cost, time and quality target with implications for project actors (Sage et al, 2014). Interpretive studies of failures in management and organisation suggest that “failure” should not merely be understood as an objective reality but rather as a socially constructed narrative with implications for organisations, social groups and individuals (Sage et al, 2014).
- c. Power: According to Sage and Dainty (2012), there is a tendency to view power as negative, however there is need to the specific socio-material relations including organisational practices,
- d. Implication for training/professionalization project: Consideration of the theoretical foundation of project management and its consequences have implications for training of stakeholders of project management (Sage et al., 2010; Hodgson and Cicmil, 2009),

In the light of the discussion above, the author is of the view that the reasoning of the RPM Network and the CPM movement is still relevant today as more research is required to address the challenges highlighted. In the view of Svejvig and Anderson (2015), the overall challenge is the diffusion of the RPM and acceptance as a useful enhancement of CPM (Svejvig and Andersen, 2015). The author is of the view that both the RPM and CPM are important lens through which the agenda to address the underdeveloped aspects of project management can be propagated. In addition, there is an overlap of the challenges highlighted by the RPM and CPM movement with regards to the role of the BOKs and projectification and programmification, implication for practitioner development and project management education. However, there are also differences as the RPM draws attention to project management value from different perspectives and reality of uncertainty whilst CPM focuses on the social, ethical and political dimensions of project management. The preliminary arguments have now been articulated, however there is the need to set out how project management will be approached in the context of this research in order to investigate the intangible benefits from project management deployment and this is discussed in the next section.

2.2 Theoretical Lens

As the intangible benefits derived from project management deployment was the focus of this research, it was important to clearly articulate what was meant by project management deployment. Given the broad nature of project management, the theoretical lens is therefore the way in which project management deployment and the generation of intangible benefits is approached in the context of this research. One such theoretical lens is the theory of the firm and according to Grant (1996), theories of the firm are conceptualizations and models of business enterprises which explain and predict their structure and behaviours. Although economists use the term 'theory of the firm' in its singular form, there is no single, multipurpose theory of the firm. According to Machlup (1967) as cited in Grant (1996) every theory of the firm is an abstraction of the real-world business enterprise which is designed to address a particular set of its characteristics and behaviours. Grant alludes that there are many theories of the firm which both compete in offering rival explanations of the same phenomena, and complement one another in explaining different phenomena. Similarly, according to Nonaka et al (2000) various theories currently exist to understand a firm and its activities. However, Nonaka and her colleagues state that these theories such as neoclassical economics, transaction-cost theory, principal-agent theory and the resource-based view of a firm are not enough to understand a firm in today's economy, in which knowledge is considered as "the only meaningful resource" (Drucker (1993) as cited in Nonaka et al. (2000)).

Therefore, the author argues that the theory of the firm can give insight into the most appropriate approach to investigating the intangible benefits derived from project management deployment by organisations that deploy project management. The theory of the firm is used because it focuses attention on the context in which project management is deployed i.e. the base organisation. The detailed understanding of all aspects of a firm is beyond the scope of this thesis; however, the author takes the position of Teece and Pisano (1994) who state that firms are domains for organizing activity in a non-market-like fashion. The position of Teece and Pisano (1994) is similar to the position of Corner and Prahalad (1996) who state that firms are distinguished from markets based on an authority (employer-employee) relationship in the former, as compared to autonomous parties contracting in the latter and that of Nonaka et al (2000) who state that a firm can create knowledge more effectively and efficiently than the market can.

2.2.1 Theories of the Firm Considered

According to Teece and Pisano (1994), different approaches to strategy view sources of wealth creation and the essence of the strategic problem faced by firms differently. The

competitive forces framework sees the strategic problem in terms of market entry, entry deterrence, and positioning; game-theoretic models view the strategic problem as one of interaction between rivals with certain expectations about how each other will behave; resource-based perspectives have focused on the exploitation of firm-specific assets. Each approach asks different, often complementary, questions.

The theory of the firm that is suitable for investigating the intangible benefits should therefore address the issues of interest and considering that the interest is in the “intangible benefits” derived from project management, theories of the firm which highlight intangible or non-financial aspects would be suitable. Based on this understanding, the author considered four views/theory of the firm: the activity based view (Porter, 1998), the resource based view (Barney, 2002), the dynamic capability based view (Prencipe and Tell, 2001) and the knowledge based view of the firm (Vargas-Hernández and Noruzi, 2010) as potential lens through which intangible benefits derived from project management deployment in major organisations are considered. The four views considered draw attention to intangible or non-financial dimensions of the firm to varying degrees and therefore gives the author the opportunity to address the issue of interest. These are discussed below.

2.2.1.1 Activity Based View (ABV)

Porter (1998) states that activities are the basic unit of competitive advantage as to compete in any industry, companies perform a wide array of discrete activities. Porter also introduces the concept of the value chain which is a general framework for thinking strategically about the activities involved in any business and assessing their relative cost and role in differentiation. According to Sheehan and Foss (2009), the starting point is the argument that it may be more useful to think of firms as being paid, not for their outputs per se, but rather for the “discreet, yet interdependent” activities it performs to produce the output, that is, for the things firms actually do to create value. Porter (1998) argues that the difference between value, that is, what buyers are willing to pay for a product or service and the cost of performing the activities involved in creating it determines profits. The value chain provides a rigorous way to understand the sources of buyer value that will command a premium price, and why one product or service substitutes for another. The most robust competitive positions often cumulate from many activities. The activities and the value chain provide a view of the firm as an interdependent system in which individual parts must be internally consistent. Differences among competitors’ value chain are a key source of competitive advantage. The value chain displays total value, and consists of value activities and margin. The value chain considers four dimensions: activities, support activities, linkages and Drivers/buyer’s value chain. Activities are what firms do, they are observable tangible, and can be managed and they are

directly involved in producing, delivering, marketing or servicing a firm's product. Support activities involve activities by functions that are normally thought of as organisational such as compensational systems, training and even over all decision-making architecture, are also activities- they are called support activities to distinguish them from activities. Value activities are related by linkages within the value chain. Linkages are relationships between the way one value activity is performed and the cost of performance of another. A firm's product represents a purchased input to the buyer's chain as the buyer also has a value chain. Therefore, the buyer (s) drives the value chain of the firm by influencing how activities and linkages are set up. Porter (1998) also states that a firm is both a collection of activities and a collection of resources and capabilities. In the view of Porter (1998) activities are what firms do and they define the resources and capabilities that are relevant.

Sheehan and Foss (2009) draw attention to the intellectual antecedents of the activity-based view, and by association, the value chain. Johnson et al (2003) draw attention to micro and macro activities that organisations perform and their implications for competitive advantage highlighting that the macro and micro perspectives also have implications for the impact of research on practitioners.

2.2.1.2 Resource Based View (RBV)

The resource based view examines competitive advantage in terms of a company's resource or assets. Barney's VRIO framework helps to allocate the different strategic assets into Valuable (provide economic value), Rare (unique), Inimitable (difficult to copy) and involve Organisational Support (management support, processes, and systems) (Barney, 2002). In this framework, competitive advantage is conceptualised to have several levels. A company achieves competitive parity when its resources are invaluable. When it has resources that are both valuable and rare, it achieves temporary competitive advantage (CA). When it has resources that are valuable, rare and inimitable, it achieves sustained competitive advantage, and there is increasing evidence of organisational support in relation to these resources. According to Barney (1991), the resource-based view argues that because some resources and capabilities can only be developed over extended periods of time (i.e. path dependence), because it may not always be clear how to develop these capabilities in the short to medium term (i.e., causal ambiguity), and because some resources and capabilities cannot be bought and sold (i.e., social complexity), at least some factors of production may be inelastic in supply (Barney, 1991).

According to Eisenhardt and Martin (2000) resources are at the heart of the resource-based view (RBV). According to Wernerfelt (1984), for the firm, resources and products are two sides

of the same coin. Wenderfelt (1995) reflects on his paper 'A Resource based View of the Firm' (Wernerfelt, 1984), and is of the view that the Resource based view has branched in different directions with implications for theory, practice and the future. Similarly, Barney (2001) highlights that the resource-based view has been developed in three main branches: relative to SCP-based theories, relative to neo-classical microeconomics and relative to evolutionary economics and that these three branches can help organize the growing literature and can help explain differences among different resource-based scholars. According to Mahoney and Pandian (1992), the resource-based view incorporates the insights of the early seminal contributions to strategic management in order to explain how firms generate rents.

In the view of Priem and Butler (2001), Wernerfelt's (Wernerfelt, 1984) and Barney's (Barney, 1991) articles are seminal works in the RBV stream stating that Wernerfelt emphasises resources and diversification, while Barney provides what is arguably the most detailed and formalized depiction of the business-level resource-based perspective. According to Helfat and Peteraf (2003), the resource-based view provides an explanation of competitive heterogeneity based on the premise that close competitors differ in their resources and capabilities in important and durable ways. These differences in turn affect competitive advantage and disadvantage.

Priem and Butler (2001) highlight issues with the RBV to do with the boundaries of the RBV, the fact that RBV tends towards resource classifications that are all inclusive which can make it more difficult to establish contextual boundaries. Priem and Butler (2001) also draw attention to the fact that in the early days of the RBV, researchers used a dynamic approach with consideration for change over time but that much of subsequent literature have been static. Furthermore, Priem and Butler (2001) also highlight that the RBV concentrates on identifying resources at one point in time, and does not address how these resources may have been created. Wade and Hulland (2004) also identified that one of the key challenges that RBV theorists have faced was the definition of a resource and argued that the proliferation of definitions and classifications have been problematic for research using the RBV. In addition, according to Eisenhardt and Martin (2000) several researchers have criticised the resource based view for being conceptually vague and tautological, without emphasis on the mechanisms by which resources actually contribute to competitive advantage, criticized for lack of empirical grounding and unlikely to create sustained competitive advantage in dynamic markets.

2.2.1.3 Dynamic Capabilities Based View (DCV)

Teece and Pisano (1994) state that winners in the global marketplace have been firms demonstrating timely responsiveness and rapid and flexible product innovation, along with the

management capability to effectively coordinate and redeploy internal and external competences. According to Teece and Pisano (1994), this source of competitive advantage, 'dynamic capabilities', emphasizes two aspects dynamic and capabilities, which were not the main focus of attention in previous strategy perspectives. The term 'dynamic' referred to the shifting character of the environment; certain strategic responses were required when time-to-market and timing was critical, the pace of innovation was accelerating, and the nature of future competition and markets was difficult to determine. The firm according to Kylaheiko et al (2002) is viewed as a value chain consisting of many transactions (activities), based on partly tacit and partly generic path dependent routines/capabilities. Some internal and external capabilities are static and ready for exploiting, whereas some have to be explored to generate new knowledge, i.e. they are dynamic. Some activities can be bought from other firms (i.e. they are based on acquired external capabilities), whereas the others are based upon firm internal capabilities. Acquisition costs are called transaction costs and the "in house" costs are called management costs. Teece and Pisano (1994) are of the view that the dynamic capabilities approach provides a coherent framework which can both integrate existing conceptual and empirical knowledge, and facilitate prescription

The term 'capabilities' emphasized the key role of strategic management in appropriately adapting, integrating, and re-configuring internal and external organizational skills, resources, and functional competences toward the changing environment. Teece and Pisano (1994) also opine that competences/capabilities are ways of organizing and getting things done which cannot be accomplished by using the price system to coordinate activity.

Researchers have also identified the characteristics of dynamic capabilities. For example, according to Eisenhardt and Martin (2000) dynamic capabilities consist of specific strategic and organizational processes, exhibit commonalities across effective firms or what can be termed 'best practice, effective patterns of dynamic capabilities vary with market dynamism and well-known learning mechanisms guide the evolution of dynamic capabilities and underlie path dependence. Eisenhardt and Martin (2000) argue that, since the functionality of dynamic capabilities can be duplicated across firms, their value for competitive advantage lies in the resource configurations that they create, not in the capabilities themselves. Dynamic capabilities are necessary, but not sufficient, conditions for competitive advantage. Eisenhardt and Martin (2000) also argue that dynamic capabilities can be used to enhance existing resource configurations in the pursuit of long-term competitive advantage (RBV's logic of leverage). They are, however, also very frequently used to build new resource configurations in the pursuit of temporary advantages (logic of opportunity). Teece and Pisano (1994) identify several classes of factors that will help determine a firm's dynamic capabilities and organize these into three categories: processes, positions, and paths.

Eisenhardt and Martin (2000) suggest a boundary condition as RBV breaks down in high velocity markets. This is because the strategic challenge is maintaining competitive advantage when the duration of that advantage is inherently unpredictable, where time is an essential aspect of strategy, and the dynamic capabilities that drive competitive advantage are themselves unstable processes that are challenging to sustain. According to Kylaheiko et al (2002), one of the most crucial strategic questions relate to the issue of where the boundaries of the firm should be.

2.2.1.4 Knowledge Based View (KBV)

According to Grant (1996), the knowledge based view is an extension of the RBV; however, it focuses upon knowledge as the most strategically important of the firm's resource. Grant highlights different types of knowledge recognising that there are many types of knowledge relevant to the firm (see Machlup, 1980). Kylaheiko et al (2002) regard firms primarily as knowledge repositories, where the evolution of knowledge can be analysed in terms of knowledge creating, transferring and integrating processes (as cited in Blomqvist and Kylaheiko, 2000). According to Nonaka et al (2000), the knowledge based view of the firm views a firm as a knowledge-creating entity, and argues that knowledge and the capability to create and utilise such knowledge are the most important source of a firm's sustainable competitive advantage. Nonaka et al (2000) go on to state that knowledge and skills give a firm a competitive advantage because it is through this set of knowledge and skills that a firm is able to innovate new products/processes/services, or improve existing ones more efficiently and/or effectively. The *raison d'être* of a firm is to continuously create knowledge. According to Spender (1996) since the origin of all tangible resources lies outside the firm, it flows that competitive advantage is more likely to arise from intangible firm specific knowledge which enables it to add value to the incoming factors of production in a relatively unique way.

Grant (1996) identifies characteristics of knowledge such as transferability, the capacity to aggregate, appropriability and specialisation in knowledge acquisition, with fundamental implications for competitive advantage. Other factors considered by Grant (1996) include the knowledge requirements of production with the rationale that fundamental to a knowledge-based theory of the firm is the assumption that the critical input in production and primary source of value is knowledge. Grant (1996) also highlights the implications for hierarchy especially as there is a trend in organisational design (For example, team working, and flatter organisations) with attempts to access and integrate the tacit knowledge of organizational members while recognizing the barriers to the transfer of such knowledge.

In contrast, Nonaka et al (2000) do not view knowledge as something absolute or static, as in the case with traditional western theory of knowledge. Nonaka et al (2000) view knowledge

as context-specific, relational, dynamic and humanistic. Knowledge is essentially related to human action. Nonaka et al (2000) argue that without understanding the nature of human beings and the complex nature of human interactions, there cannot be understanding of the theory of organisational knowledge creation. Nonaka et al (2000) argue that the theory of organisational knowledge creation is based on the assumption that individuals and organisations have a potential to grow together through the process of knowledge creation. Nonaka et al (2000) go on to state that creating knowledge organisationally does not just mean organisational members supplementing each other to overcome an individual's bounded rationality, as is the case in the division of labour in production. In organisational knowledge creation, one plus one could be more than two. It can be also zero, if iterations among individuals work negatively.

Sveiby (2001) is of the view that an organisation can be seen as a group of individuals who have created an emergent common frame of reference. Knowledge transfer between individuals tends to improve competence of both individuals and team work tends to be a team co-creation of knowledge. According to Grant (1998) if firms exist to integrate the specialized knowledge possessed by a number of individuals because such integration cannot be performed efficiently across markets, the boundaries of the firm become uncertain. Similar to RBV, the boundary of the firm is highlighted as problematic.

2.2.2 Discussion of Theoretical Lens Considered

In view of the understanding of ABV, RBV, DCB and the KBV, the author developed a table (Table 2.1) to identify the most suitable lens for investigating the intangible benefits derived from project management deployment in its context of the firm.

Table 2.1: Comparison ABV, RBV, DCV and KBV

	Theory/View	ABV	RBV	DBV	KBV
1.	Proliferation in research	Less popular (harder to operationalise)	More popular (more widely used and extended)	Extension of RBV (as a result of boundary condition of RBV)	Extension of RBV (as a result of knowledge economy and global market)
2.	In relation to organisation	External	Internal	Internal	Internal
3.	Strategic focus	Financial (Cost and Differentiation)	Non- Financial (VRIO)	Non-financial (Dynamic Capabilities)	Non-financial Knowledge (Static and Dynamic)
4.	Unit of analysis	Activities	Resources	Resources-dynamic capabilities	Resources-knowledge

5.	Approach	Dynamic	Static (started dynamic but now static- now considered at a point in time	Dynamic (in line with changes internal and externally)	Static/dynamic (western and Japanese perspectives respectively)
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From Table 2.1, the activity based view and the resource based view put emphasis on the external and internal perspective of the firm respectively. Even though the activity based view considers the activities, support activities/function, the linkages and the drivers which will also take consideration of resources, the primary consideration is in regard to positioning to the industry/market and competitors with an external focus. This is also similar to the resource based view which also considers activities that these resources (people based) are involved in or contribute to (processes) with an internal focus. Furthermore, as the dynamic and knowledge based view of the firm are extensions of the resource based view, the dynamic and knowledge based view also lay emphasis on the internal view by paying attention to resources or subset of resources and the implications for organisational performance. Furthermore, there is also a clear difference in strategic focus as the activity based view focuses more on financial implications while the resource based view focuses more on non-financial value. The activity based view considers activities as the basic unit of competitive advantage and considers value in financial terms while the resource based view is based on resources and an organisation's application of those resources to create value and more importantly value is considered in more intangible terms i.e. difficult to measure or value. The activity based view is also considered a dynamic approach as it considers changes in the external environment and adapts its activities to achieve competitive advantage. However, the resource based view in its current form of usage has been criticised for being static, only taking a shot in time even though it started as a dynamic approach. In contrast, the extension of the resource based view i.e. the dynamic capabilities based view and the knowledge based view address the issue of dynamism however with different focuses.

Considering the four views discussed, the resource based view is more suitable for the purpose of this research as it focuses attention on resources generated within the organisation. In addition, as researchers have argued the knowledge based view and the dynamic capability view are extensions of the resource based view, the author argues that the rationale of the resource based view is sufficient as it focuses attention on resources that drive competitiveness whilst providing the opportunity to focus on knowledge or certain capabilities if extended to the knowledge based view or capabilities based view of the firm. The next

section discusses how project management deployment is conceptualised in the context of this research and the implication of the theoretical lens.

2.3 Project Management Deployment in the Context of the Firm

In view of the discussion in section 2.1, project management deployment is the outworking of decisions taken in delivering the project and therefore the observable actions and processes as a result. The leading project management bodies of knowledge, the Project Management Institute and the Association of Project Management have identified the project management knowledge areas and sections and topics respectively as the key project management activities and processes that may be involved in delivering a project. Consequently, it can be argued that project management deployment is the consideration of the observable project management activities and processes evidenced in practice. Bearing in mind the theoretical lens through which project management deployment is considered, the resource based view helps to focus on the more intangible resources generated as a result of project management deployment.

In view of the theoretical lens the resource based view of the firm, a grouping of organisational focus factor and people focused factor have been identified that will influence project management deployment as it influences decisions taken with consequences of path dependence, casual ambiguity and social complexity (Barney, 1991). The first factor involves how the organisation organises itself and its projects that is the organisational form (Shtub et al., 2005; Hobday, 2000), type of organisation (Albert, 2007), single or multiple project working (Aritua et al., 2009) and project categorisation such as type of project (Whitty and Maylor, 2009; Ozorhon et al., 2007; Adenfelt, 2010), size of the implementing organisation (Hobday, 2000; Turner et al., 2010; Murphy and Ledwith, 2007) and the industry that the project is being carried out in (Müller and Turner, 2007). The second factor considers how project actors are selected and allocated and the attitude to knowledge and learning specifically with respect to project success or failure of the project individuals. This is because project failure is viewed differently over time and space (Sage et al., 2013). Consequently, the influence of project success or failure on project management deployment is multifaceted especially because project success and failure are perceived differently by different stakeholders with implications for decision making with regards to delivering projects and the generation of intangible benefits. Project management deployment has now been defined, the relationship between project management deployment and competitiveness is discussed below.

2.3.1 Project Management Deployment and Competitiveness

Competitiveness in terms of project management deployment in view of the discussions in section 2.1.1 is therefore to comparatively do better than the competition with regards to adaptability; ability to accommodate complex business transactions; ability to accommodate complex designs and performance requirements with regards to product and service innovation, shorter lead times and time to market; and to provide solutions rather than just products, and service oriented offerings and lifecycle solution. This will have implications for how an organisation deploys project management on a project by project basis and generally as an organisation.

According to Porter (1998), competition is the core of the success or failure of firms. This also applies to organisations that deploy project management. But it is important to state that the success or failure of a firm is not the same as the success or failure of a project or projects. Project success and failure have been debated in extant literature (Vandonk and Molloy, 2008; Eve, 2007; Kerzner, 2006 and Sage et al., 2013) and the author recognises that regardless of whether projects succeed or fail, they inadvertently contribute to the success or failure of the firm. Porter (1998) argues that a competitive strategy involves the search for a favourable competitive position in an industry, the fundamental arena where competition occurs. Therefore, for organisations that deploy project management, the projects that are undertaken and how project management is deployed fundamentally defines the competitive strategy that the organisation pursues. Porter (1998) states that competitive advantage grows fundamentally out of the value a firm is able to create for its buyers that exceeds the firm's cost of creating it. Value is what buyers are willing to pay, and superior value stems from offering lower prices than the competitor for equivalent benefits or providing unique benefits that more than offset a higher price. Therefore, if the business environment is changing and organisations are turning to project management and intangibles are the new value drivers; how does this impact on the intangible benefits derived from deploying project management and what are the implications for project based organisations. According to Porter (1998), there are two basic types of competitive advantage: cost leadership and differentiation. The author argues that different intangible benefits or combination of intangible benefits derived from project management deployment should contribute to competitiveness in project management terms and therefore will contribute directly or indirectly to cost leadership or differentiation.

The focus of this thesis is on the intangible benefits derived from project management deployment due to the linkage between project management deployment and the generation of intangible benefits and the linkages between intangible benefits and competitiveness. The

definition of project management adopted has been indicated, project management and competitiveness has also been discussed, project management deployment has been discussed and the relationship with competitiveness also discussed. The next section discusses the intangible benefits derived from project management deployment which is the expected outcome from project management deployment.

2.4 Intangible Benefits

In view of the research aim, understanding of what an intangible benefit is also required. However, in order to discuss what intangible benefits are, an understanding of what a benefit is and what it means to be intangible is first required. Therefore, the term benefit is first considered from its dictionary meaning and then how it has been captured in extant literature. The term intangible is then considered both from the dictionary definition and how it has been captured in extant literature and intangible benefits is then defined in the context of this research. Lastly intangible benefits are discussed in the light of extant benefit management with some of the criticism and implications highlighted.

2.4.1 What is a Benefit

According to the free dictionary online (The Free Dictionary, 2011a), benefit can be defined as 'something that promotes or enhance well-being' while the Merriam Webster dictionary online (Merriam-Webster Dictionary, 2011b) defines it as 'something that promotes wellbeing' and the Oxford dictionary online defines it as 'an advantage or profit gained from something' (Oxford Dictionary, 2011b). Bradley (2010) states that in relation to change, a benefit is an outcome of change perceived as positive by a stakeholder while if the outcomes are seen as negative they are referred to as dis-benefits. Bradley (2010) emphasises that the benefit is not the activity which requires the resource, which needs to be scheduled into projects and programmes. APM define a benefit as a positive and measurable impact of change and points out that in some cases there may be unavoidable negative impacts of change that are acceptable in the context of greater benefits which are referred to as disbenefits (APM, 2016). Using the review of the dictionary meanings and the work of other researchers, the author therefore defines a benefit as 'an outcome of change that is perceived as positive that enhances and promotes the wellbeing of an organisation'.

In addition, extant literature indicates that there are several types or groupings of benefits. According to Melton and colleagues (Melton et al., 2008), there are financial and non-financial benefits of project management implementation where the financial benefits include sustainable financial benefits, one-off financial benefits, financial cost avoidance or increase in performance of sales. Melton and colleagues also categorise benefits into hard and soft

benefits where hard benefits are tangible, relatively easy to measure and have a cost associated with them and soft benefits are intangible, cannot easily be measured and are difficult to put a cost or value to. Becerik (2006) categorises benefits into cost savings, cost avoidance, generation of new revenue and intangibles which is similar to that of Melton and colleagues. In addition, Becerik (2006) also categorises benefits into three types:

1. **Tangible benefits:** The rate at which inputs are converted to outputs. These are quantifiable and measurable in monetary terms
2. **Quasi-Tangible benefits:** The rate of actual outputs compared to planned output. The focus is most often in improving the efficiency of an existing organisation and processes that are quantifiable but difficult to measure. They are the ability of a program, project or work task to produce specific desired effect or result that can be measured. The quasi-tangible benefit group has some measurable elements, but not in monetary terms. Some examples of quasi-tangible benefits are: improved resources control, improved information availability, enhanced decision making etc.
3. **Intangible benefits:** The level of new outputs enabled: the focus is most often on improving the effectiveness and performance of the organisation. Intangible benefits are neither quantifiable nor easy to measure but are the most important benefits for the investor in the long term. Intangible benefits are the reasons for doing things measurable benefits cannot justify. Intangible benefits include: better risk management, gained market access, improved competitive advantage etc.

Similarly, Bradley (2010) also gives five common ways of classifying benefits:

1. **By Beneficiary:** How the beneficiaries perceive the distribution of benefits and dis-benefits help to highlight potential problem areas
2. **By Business Impact:** According to Bradley (2010), there are two ways to categorise by business impact: the first categorises based on their contribution to internal improvement for example efficiency benefits; the organisations' growth and risk reduction for the organisation. The second is based on the Cranfield Grid and illustrated in Table 2.4

Table 2.2: Programme Categorisation by Business Impact (The Cranfield Grid)

Strategic	Speculative
Programmes which primarily support future business opportunities- e.g. business development, growth	Programmes with a high achievement risk but often high reward e.g. arising from experimenting with the way we do things

Programmes which will deliver critical improvements to today's operations	'Nice to have' programmes, in the sense that the organisation's growth or survival will not depend on them. Usually related to improvements to non-critical activities. Often quick wins
Key operational	Support

Source: Bradley (2010)

As shown in Table 2.4, benefits can be strategic and have an impact on the long-term survival of the organisation, or key operational i.e. have an impact on the short-term survival of the organisation. Others fall into speculative which are high risk with high return potential or support which are nice to have and related to non-critical activities. Therefore, intangible benefits can fall into any of the four possibilities; however, the strategic and operational groups have the highest impact and should be the focus.

3. **By Sigma Value:** "Benefits are often referred to as tangible and intangible, hard or soft, quantifiable or qualitative- yet there seems no uniform understanding of what these words actually mean". Furthermore, the language implies that in each instance there are only two states, however there is a spectrum of benefit value types and using just two words ignores useful distinguishing information.
4. **By Family Grouping:** This is based on the characteristics of the benefit: reduced cost, increased revenue, reduced risks, increased staff motivation, better customer service, improved image and strategic positioning. Many organisations have their own defined categories which all projects and programmes have to use.
5. **By Change Type:** A further classification, which is used to assess whether a programme or project is likely to deliver the required degree of transformation, considers whether the benefits arise from: doing current activities a little better; undertaking new activities and stopping activities

Bradley (2010) also states that there are several reasons why it is useful to classify benefits including: communicating and managing expectations; analysing the impact of a programme or project; simplifying the identification of duplicate benefits; checking for balance and alignment; assessing the degree of transformation and facilitating portfolio management. In the view of the author, classifying benefits or disbenefits are a good indication of where to look for intangibles. Bradley's classification and Becerik's categorisation are both useful, however of utmost importance is the answer to the question which approach best serves the research aim. The author is therefore interested in what Bradley considers intangible in the sigma category and what Becerik considers quasi and benefits of project management deployment.

There is a common reasoning that the degree of tangibility or intangibility falls within a spectrum (Bradley, 2010; Becerik, 2006). The author agrees with this position but argues that certain benefits or liabilities may exhibit both tangible and intangible characteristics. What the author hopes to achieve is to be able to shed more light on what these intangible benefits are along this spectrum for project based organisations.

2.4.1.1 Defining Intangible Benefits in the Context of this Research

The Free dictionary online defines tangible as '*discernible by touch; palpable, possible to touch; possible to be treated as fact; real or concrete*', '*possible to understand or realise*' and '*that can be valued monetarily*' (The Free Dictionary, 2011). According to the Merriam Webster dictionary online (Merriam-Webster Dictionary, 2011) tangible refers to something '*capable of being perceived especially by the sense of touch: palpable; substantially real: material; capable of being precisely identified or realised by the mind; capable of being appraised at an actual or approximate value*'. According to the Oxford online dictionary, tangible is defined as a noun '*a thing that is perceptible by touch*' and as an adjective '*clear and definite; real*' (Oxford Dictionary, 2011)

According to the Free Online dictionary, intangible can be defined as '*incapable of being perceived by senses; incapable of being realised or defined; incorporeal*' (The Free Dictionary, 2011b). The Merriam Webster dictionary online (Merriam-Webster Dictionary, 2011a) defines intangible as '*an asset (as goodwill) that is not corporeal; an abstract quality or attribute (as loyalty or creativity)*'. The Oxford online dictionary defines intangible as '*unable to be touched; not having a physical presence; difficult or impossible to define or understand; vague and abstract, (of an asset or benefit) not constituting or represented by a physical object and of value not precisely measurable*' (Oxford Dictionary Online, 2011)

In addition, according to Yang (1978) the criteria for intangibility are:

- **Immateriality:** Intangible assets are those items of property whose value do not exist, or are not represented by, things capable of being touched, weighed, handled and measured in terms of physical units. Goodwill, trade-marks, patents, copy-rights, franchises etc. are included
- **Realisation of value:** Is determined by two main factors; the quickness with which the property can be disposed of i.e. liquidity, and the degree to which the asset can be sold without loss of value. From the point of view of liquidity or certainty of value, even typical material (tangible assets) would only be partially tangible. For example, tangible items such as machinery, equipment and buildings cannot be readily turned to cash and neither can their value be certain due to fluctuation in market prices.

According to Reilly and Schweih's (1997) the criteria for intangibility are:

- It should be subject to specific identification and recognisable description
- It should be subject to legal existence and protection
- It should be subject to the right of private ownership and the private ownership should be legally transferable
- There should be some tangible evidence of the intangible asset (e.g. a contract, a license, a registration document, a computer diskette, a listing of customers, a set of financial statement etc.)
- It should have been created or have come into existence at an identifiable time or at the result of an identifiable event
- It should be subject to being destroyed or to termination of existence at an identifiable time or as the result of an identifiable event.

In the opinion of the author, Reilly and Schweih's criteria are similar to that of Yang but are more detailed. The several points raised are steps that will be taken in an attempt to shed more light on the immaterial and attempt to place a value on it. Based on the review of the dictionary meanings, the work of Yang (1978) and that of Reilly and Schweih's (1997), the author defines intangible as 'having a high degree of immateriality and difficult to measure or value'. Consequently, to determine if a benefit from project management deployment is tangible or intangible it would need to satisfy the two conditions of immateriality and difficulty of measurement which have been established from extant literature as critical. The author also recognises that the intangible benefits and quasi-tangible benefits discussed by (Bradley 2010; Becerik 2006) satisfy the two conditions. Therefore, the author defines the intangible benefit of project management implementation as:

"The outcome accrued from deploying project management that is perceived as positive that enhances and promotes the wellbeing (the ability to remain competitive and sustainable) of the project stakeholders, the base organisation and the society and it is not the project objective(s) itself. The reverse is true for disbenefits. These benefits show a high degree of immateriality and are difficult to measure or value"

Mathematically, this is expressed as the business problem summed up with the project management methodology employed should generate the actual project outcome and the project management benefits/disbenefits.

***Business Problem +
Project Management Deployment***



***Actual Project Outcome + Project
Management Benefits/Disbenefits***

The benefits or disbenefits have effects on the organisation or project stakeholders during or after the completion of the project and can occur whether or not the actual outcome of the project is achieved. These effects cause change, whether positive or negative. These benefits are therefore time dependent as it could be some considerable time after the project has been closed their effect are felt. However, whilst this research focuses on the intangible benefits from project management deployment, it is important to highlight the benefit management body of work which is relevant to further investigate the intangible benefits from project management deployment. The expectation is that relevant gaps can be identified and useful insights garnered to further investigate the intangible benefits from project management deployment and this is discussed below.

2.4.2 Extant Literature on Benefits Management and Intangible Benefits

The APM defines benefit management as the identification, definition, planning, tracking and realisation of business benefits and states that delivering benefits is the primary reason why organisations undertake change (APM, 2016). In addition, benefit realisation illustrates and measures precisely how projects and programmes add true value (Marcher, 2012). Benefit realisation management bridges the gap between strategy and project implementation (Breese, 2012; Serra and Kunc, 2015), however, argue that there is no empirical evidence of its effectiveness (Serra and Kunc, 2015). Benefit realisation management as an aspect of project management has its beginnings in IT where due to IT project failure there was need to deliver on expected benefits (Breese, 2012). Marchand and Peppard (2008) in Coombs (2015) draw attention to the fact that in the context of IT projects, how business is conducted is more important than the new technology itself with regards to benefit management. The author also recognises that the process of project management deployment is critical as the research is focused on intangible benefits within the context of construction industry.

Several other themes were identified from review of extant benefit realisation management literature discussed below:

1. Flaws: benefit management is embedded in the rationalistic, mechanistic, positivist, technical perspectives similar to traditional views of project management (Breese, 2012). There is a need for theories about BRM to be developed which are based on in-depth analysis of practice, that acknowledge and incorporate ambiguity and uncertainty (Breese, 2012)

2. Distinction/relationship between benefits, success, value? The nature of BM may therefore lead to ambiguity on the scope and role of BM, which is not helped by the multiple meanings of the terms 'benefit' and 'value' (Breese et al, 2015). In Serra and Kunc (2015), Camilleri (2011) divides benefit between 'project success' – outcomes and benefits and 'Project Corporate Success' – the achievement of strategic objectives. Zwikael and Smyrk (2011) also separates it into 'Ownership Success' – benefits less dis-benefits and costs – and 'Investment Success' – financial return to the organisation. Project been successful is different to projects bringing real organisational value (Marcher, 2012)
3. Impact and adoption? Issues around impact and adoption despite evidence that a focus on benefits improves the success rates of projects and programmes (Breese, 2015). BRM practices being much more associated to the creation of value to the business than to project management performance (Serra and Kunc, 2015).
4. Levels/Sub levels: BM operates at different levels, as a way of thinking which needs to be reflected in the mindset and behaviours of an organisation and also as a set of management practices and techniques (Breese et al, 2015). Other issues raised include technical specifications with defined roles, responsibilities and outcomes; contextualisation of BM; levels of implementation; demonstrating the value and cost implications (Breese et al, 2015)
5. When it is done: Raised the issue about when BM is considered before project execution, for example, pre- appraisal and post implementation and that more research has been done pre than post (Coombs, 2015; Chih and Zwikael, 2015)
6. Paradigm shift: Make the distinction between benefit oriented project management and output focused paradigms of project management
7. Development of the subject: The literature on benefit management (BM) compared to many other aspects of project management is poorly developed, however there is limited evidence of its adoption (Breese et al, 2015). In addition, Breese et al (2015) highlight that in Turner et al (2011) analysis of the evolution of project management research, BM was not an identified category. Similarly, extant BM literature fell into categories and sub categories; 'how to do it' guides, analysis of BM processes or practices and transfer of BM ideas or practices (Breese et al, 2015)

Given the themes on benefit realisation management identified from extant literature as discussed above, it is clear that there has been limited consideration of the intangible dimension of benefit realisation management. However, the author identified the work of few researchers from extant literature that considered benefits derived from project management

deployment from an intangible perspective. The work by Jugdev and Mathur (2006) demonstrated that project management creates value and competitive advantage, Mathur and colleagues were of the view that intangible benefits of project management are undervalued (Mathur et al., 2007) and Zaric and Tampieri (2007) considered the implication of duration on intangible benefits generated by project management. The work by these researchers draw attention to the contribution of project management intangible benefits to competitiveness and the implication of project lifecycle on the generation of intangible benefits. Therefore, the resource based view of the firm as a theoretical lens highlights the intangible dimension gap in extant benefits management literature. Subsequently, the intangible benefits of project management still need to be better understand.

However, the author also recognises that in order to clearly articulate the delimitations of this research there is the need to distinguish between benefits/disbenefits accrued from deploying project management itself and the benefits which are part of the expected project outcome - the project objectives stated in the business. Consequently, this research focuses on the intangible benefits derived from the process of deploying project with the principal focus from the perspective of the executing or base organisation. The rationale being that in the process of deploying project management itself, tangible and intangible benefits accrue in the interest of the base organisation. The themes on benefit realisation therefore highlight the fact that with this research focusing on the intangible benefits derived from project management, some of the concerns raised under some of the themes are addressed. The focus of this research addresses theme 1 discussing “flaws” and this is because the focus on intangible benefits requires a more constructivist approach. In addition, by clearly stating the type of benefits of interest and from whose perspective, the author address concerns raised in theme 2 as discussed above as it contributes to showing clearly the relationship between the terminologies used and how they are construed in this research. In addition, in line with theme 2, it is important to define the other keys terms in this research so that their meanings are not misconstrued and can be consistent throughout. The author established the definition of these key words by reviewing their dictionary meanings and the works of other authors. In addition, investigating intangible benefits also highlights the issue of impact or adoption of benefit management as it contributes to the argument for the link between benefits and organisational competitiveness. Lastly, this research contributes to the development of the subject of benefit management highlighted in theme 7.

2.5 Summary

The PMI’s 2014 definition of project management was adopted for this research and it was demonstrated that several researchers had drawn attention to the link between project management deployment and competitiveness. It was also highlighted that the views of

stakeholders influenced the internal and external project environment with implications for how the project based organisation resources were organised. Two groupings of stakeholders were identified, that of the project stakeholders and that of practitioners and researchers of project management. The RPM and CPM research streams were indicated to still be relevant today highlighting similar issues related to the role of the BOKs proliferation of project management and implication for practitioner development and project management education. In addition, the RPM drew attention to project management value from different perspectives and reality of uncertainty whilst the CPM focused on the social, ethical and political dimensions of project management.

Given the broad nature of project management, relevant extant literature was reviewed to establish the theoretical lens which informed the way project management deployment would be approached in this research. The theory of the firm was selected as it focused attention on the project based organisation as the context within which project management was deployed. The resource based view of the firm was considered the most suitable view of the firm as it drew attention to resources that contribute to competitiveness of the project base organisation whilst providing the opportunity to focus on knowledge or certain capabilities if extended to the knowledge based view or capabilities based view of the firm. Subsequently project management deployment in the context of the firm was defined with organisational and people focused factors identified to have implications for how the resources of the project based organisation were organised and generated. In addition, project management deployment and competitiveness were also discussed indicating the yardsticks for measurement of competitiveness. Intangible benefits in the context of the firm was also defined and discussed in the light of extant benefit management literature. It was brought to light that investigating the intangible benefits of project management deployment addressed some of the issues highlighted from extant benefit management literature.

Consequently, the background has been set for investigating the intangible benefits from project management deployment. This is because going forward, project management is considered a strategic competency and envisioned as helping organisations compete in their markets, with extant project management literature supporting the link between project management and competitiveness. In addition, it is understood that project stakeholders, project management practitioners and researchers also influence project management deployment directly or indirectly by informing the practice or the development of theory and practice of project management. Likewise, more light has been shed on project management deployment in the context of the firm and intangible benefits in the context of the firm. In view of the insight gained, it has therefore been established that to investigate the intangible benefits derived from project management deployment, an approach that is appropriate for the intangible dimension of project management is required. The author reasons that going

forward, there are two logical lines of enquiry for investigating the intangible benefits and naturally the first would be to investigate intangible benefits as captured in extant project management. However, from the arguments put forward in section 2.4.2, there is insufficient extant literature to support this approach. The second line of enquiry is to identify an approach that is appropriate for investigating the intangible benefits from project management deployment as discussed in section 2.4.2 without the burden of satisfying the requirements of the resource based view. In the next chapter, extant intellectual capital literature is reviewed as it is argued to be an appropriate approach.

Chapter 3 Intellectual Capital

Intellectual capital (IC) approach is investigated as it focuses on the more intangible assets of organisations bearing in mind that this research is concerned with the intangible benefits derived from the application of project based organisations assets. This chapter discusses intellectual capital from the perspectives of organisations that do not manage by projects. Intellectual capital is defined and its importance discussed. The key intellectual capital components: organisational, human and social capital are also defined and discussed. In addition, the evidence of impact of intellectual capital, intellectual capital as negative, measurement of intellectual capital and sound deployment and the rationale for the research and discussed and the chapter summarised.

3.1 What is Intellectual Capital and why is it Important

Intellectual capital is defined differently by several authors and some of the definitions are discussed below:

Brooking (1996) defines Intellectual capital as:

“The term given to the combined intangible assets which enable the company to function.”

Roos et al., (1997) define intellectual capital as:

“All the processes and the assets which are not normally shown on the balance sheet, as well as all the intangible assets which modern accounting methods consider (mainly trademark, patents and brands).”

Ulrich (1998) defines intellectual capital as:

“What represents the hidden value of a firm, shareholder value not delivered by the financial results.”

Lev (2001) gives his definition of intellectual capital as:

“The nonphysical sources of value (claims to future benefits) generated by innovation (discovery), unique organisational designs, or human resources practices.”

Bradley (1997a) also defines intellectual capital as:

“The ability to transform knowledge and intangible assets into wealth creating resources both for companies and nations”

Lonnqvist (2002) intellectual capital as:

“Consisting of the immaterial sources of value related to employee’s capabilities, organisations’ resources and way of operating and the relationships with its stakeholders.”

By combining the definitions of the above and deconstructing, intellectual capital is first *“intangible”* (difficult to measure and value) and *“hidden”*. This is consistent with the conditions of intangibility discussed in chapter 2 (see section 2.5.1.1). This implies that organisations have to make an effort to identify it. It is *“ability”* implying effort on the part of the organisation to transform knowledge and other assets. *“Ability”* is experienced in forms such as innovation, unique organisational designs, resources the organisation has access to, ways of operating, employees’ capabilities and relationship with stakeholders. Furthermore, the issues of opportunity cost or trade-offs are introduced. Claims to *“future benefits”* imply that it has a long-term effect and therefore introduces the issue of competitiveness and sustainability. Therefore, intellectual capital is intangible and hidden in organisations; it is embedded in the organisation’s ability and is claim to future benefits.

Lev (2001) argues that wealth and growth in today’s economy are driven primarily by intangible assets where physical and financial assets are rapidly becoming commodities, yielding at best an average return on investment. New drivers of intangibles opine Lev (2001) is the unique combination of two related economic forces over-competition and information technologies. While according to Edvinsson (1997) the current business environment is described as the knowledge era characterised by a knowledge economy evidenced by how organisations now invest. Edvinsson (1997) states that in the industrial era, organisations invested more in capital goods but in today’s economy, a major proportion of their investment goes into knowledge upgrading or competence development and the development of information technologies. According to Bontis et al. (1999) knowledge is invisible and intangible. Brooking (1996) makes the case that in today’s business world, new skills have been developed as a result of information technology, telecommunications technology and the requirement for a more sophisticated work-force which relies on expertise and technology more than manual labour. Brooking (1996) states that organisations are more dependent on intangible assets for their competitiveness and points to the fact that new types of companies are born every day which

have only intangible assets and their products are intangible and can be distributed electronically on the 'market space' via the internet. Teece (2002) states that as a result of globalisation, organisations have a diminishing subset of strategies for creating attractive profits therefore there is the need for the development and utilisation of intangible assets of which knowledge, competence and intellectual property are the most significant. Also, Bassi (1997) opines that knowledge management and the intellectual capital it creates are the primary sources of competitive advantage in a growing number of industries. Welzl (2011) summarises the effect of globalisation as new forms of division of labour, competitive products based on more complex scientific knowledge and more demanding customers. Welzl (2011) opines that the growing interest in intellectual capital measurement is rooted in two causes: the changing ratio of value contribution by intangibles rather than tangibles which asks for better management of intangibles, enabling technologies allows to keep track of the knowledge immanent to operations within the tangible value chain in a way that was not possible two decades ago. Therefore, intangibles are being driven by economic forces: over-competition and information technology; evidenced by how organisations now invest in knowledge upgrade and competence development (new skills), new forms of division of labour, competitive products and demanding customers.

3.2 How Intellectual Capital is Conceptualised

The author reviews six extant intellectual capital approaches that were developed over a span of eight years from 1996 to 2004 in order to have a better understanding of intellectual capital over time.

3.2.1 Brooking's Decomposition of Intellectual Capital (1996)

Brooking decomposes an organisation into:

Enterprise = Tangible Assets + Intellectual Capital

I.e. intangible assets = intellectual capital

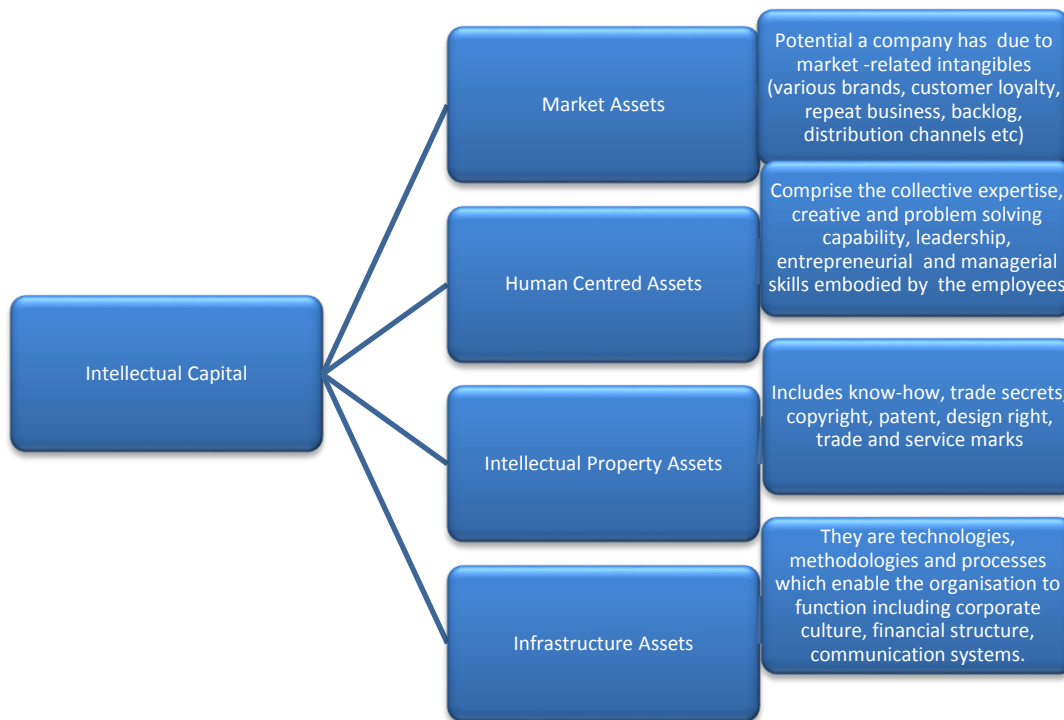


Figure 3.1: Brooking’s Decomposition of Intellectual Capital

Source: Adapted (Brooking, 1996)

This is shown diagrammatically in Figure 3.1. According to Brooking (1996), unlike market, intellectual and infrastructure assets, human-centred assets cannot be owned by the company. Brooking opines that the optimal position for the organisation is to be able to derive maximum benefit from an individual in employment with the company as the knowledge in the head of the individual belongs to the person. This suggests that human centred assets should be converted into the other three components highlighted by Brooking. Brooking (1996) gives examples of the different components that make up the assets

3.2.2 Edvinsson Skandia’s Model (1997)

According to Edvinsson, one of the reasons Skandia started to focus on intellectual capital was the need for a new logic regarding the long-term sustainability of the organisation based on the very simple metaphor of a tree with fruit as well as roots focusing more on the roots than on the fruits (Edvinsson, 1997). Edvinsson mentions the following paradoxes:

- That the more invested in knowledge upgrading and IT, the less is the value of the organisation in the short term, also reiterated by Brynjolfsson et al., (2002)
- From an accounting point of view, goodwill is an intangible item, a trash item that should be deducted as quickly as possible, thereby actually reducing the value of the

balance sheet. But from a knowledge value viewpoint, it could be considered to reflect the intellectual value which should appreciate over time.

Furthermore, Edvinsson (1997) states that there is a need to balance financial and non-financial issues where for example, on a balance sheet, on the asset side is the financial capital, on the debt side the non-financial capital (intellectual capital) regarded in the same way as equity, based on the principle that IC is borrowed from stakeholders such as customers and employees.

According to Edvinsson,

$$\text{Market Value} = \text{Financial Capital} + \text{Intellectual Capital}$$

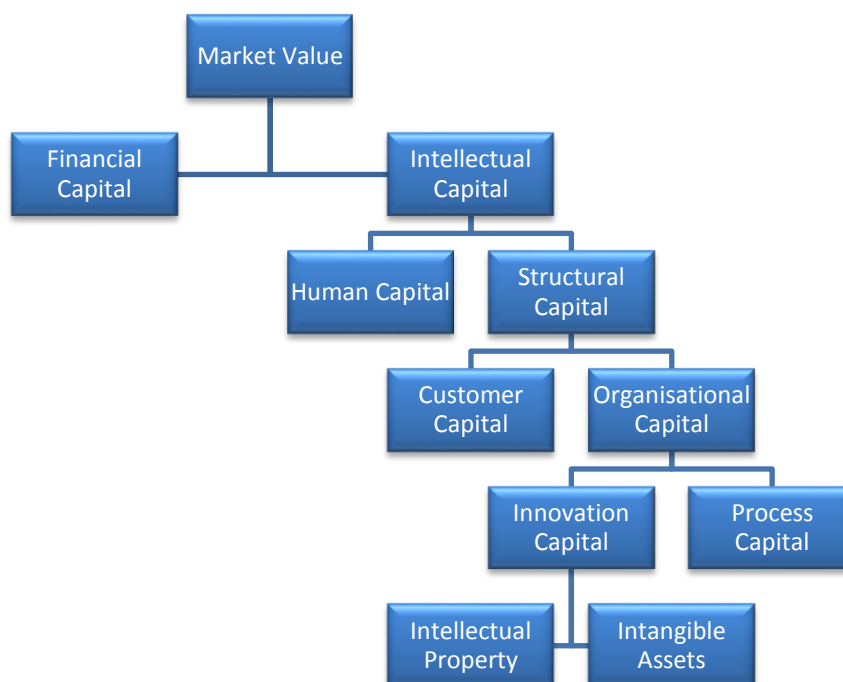


Figure 3.2: Skandia Value Scheme

Source: Adapted (Edvinsson, 1997)

The process of evaluating intellectual capital in Skandia is shown in the Figure 3.2 above. The model illustrates the major building block of intellectual capital and builds on a reduction approach where it is decomposed over four levels. The Skandia Value Scheme, suggest that intangible assets are a subset of Intellectual capital. From the scheme, several questions arise about intangible assets as to whether the intangible benefits of project management are a subset of an organisation's intellectual capital or a subset of the intangible assets components of an organisations intellectual capital. Also, which components of IC are the most important to contributing to competitive advantage? In beginning to answer this question, the author uses a statement by Edvinsson which states that

'It has become evident that there are a number of building blocks adding to the non-financial value of a corporation, or the gap between book value and market value.'

This suggests that the components of intellectual capital are an attempt in identifying these non-financial values. By exploring the benefits of project management, the author contributes to the discussion around value creation for the organisation. According to Edvinsson, an interesting ratio emerging from evaluation of intellectual capital using the 'Skandia's Value Scheme' in established units is that, usually human capital is smaller than the structural capital but human capital is more volatile and dynamic compared to structural asset. Edvinsson further states that IC management is leveraging human capital and structural capital; that is multiplying the interaction between human capital and structural capital. He opines that the goal of IC management is to improve the company's value generating capabilities through identifying, capturing, leveraging and recycling intellectual capital. This includes both value creation and value extraction. He concludes that intellectual capital is:

- supplementary information to financial information
- Non-financial capital
- A debt issue, not an asset item

Edvinsson is of the opinion that a focus on intellectual capital provides the following:

- An effective instrument to manage and develop the company
- Serves as a useful indicator when benchmarking the company against other companies
- Stimulate renewal and development
- Also, a better tool for evaluating the soft aspects of the organisation

3.2.3 Roos, Dragonetti and Edvinsson's Intellectual Capital Model (1997)

According to Roos and colleagues, intellectual capital is not information-based but knowledge based (Roos et al., 1997). They opine that knowledge is a personal and subjective process emerging from previous experiences and current events, while information is objective data about the environment. They argue that knowledge takes time to build, and so do knowledge-based assets in comparison to information-based assets. Knowledge also has the unique quality of increasing returns with use i.e. the more knowledge you use, the more knowledge is created and the benefits ever increasing.

The figure below shows how Roos and colleagues decompose the total value of the organisation. They define the total value of the company as:

$$\text{Total Value} = \text{Financial Capital} + \text{Intellectual Capital}$$

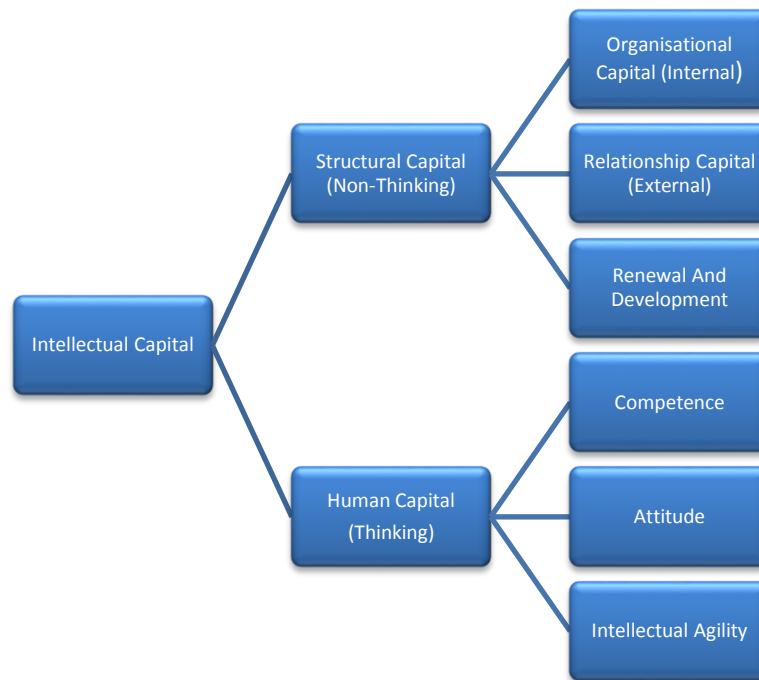


Figure 3.3: Decomposition of Intellectual Capital

Source: Adapted (Roos et al., 1997)

Roos and colleagues further decompose intellectual capital into human capital and structural capital as up to this point, it is the same as the Skandia's Value Scheme model (Roos et al., 1997). But Roos and colleagues make a distinction between 'thinking' and non-thinking intellectual capital as people (i.e. human capital) need totally different management methods from structural capital. They opine that structural capital comes from the relationship and organisational value, reflecting the external and internal foci of the organisation, plus renewal and development value which is creating the capacity to adapt to the future. They state that human capital cannot be owned by the organisation while structural capital can but only in varying degrees and it is not self-renewing as human capital.

Human capital is created as people generate capital for the company through their competence, their attitude and their intellectual agility. Competence includes skills and education, while attitude covers the behavioural component of the employees' work. According to Roos and colleagues, knowledge and core competence are not IC but are part of IC as IC considers both core and non-core competencies and the application of these competencies (Roos et al., 1997). In addition, according to Roos and colleagues, the distinction of intellectual agility from competence and behaviour is justified by the fact that it is neither a skill nor a behaviour, but a mix of both (Roos et al., 1997). That is the ability to

transfer knowledge from one context to another e.g. source of diversification and this is tightly linked to competence. The Roos et al. (1997)' model is very detailed and by exploring how project management deployment allows an organisation to engage with the components of intellectual capital, insights may be gained into how intangible benefits of project management are generated and how to manage and measure it.

3.2.4 Ulrich's Perspective on Intellectual Capital (1998)

Ulrich's approach is different from that of the other five researchers whose works have been discussed (Ulrich, 1998). Ulrich does not use a model like approach but identifies reasons why organisations must be concerned about intellectual capital. According to the Ulrich (1998), a focus on IC is critical for six reasons:

1. Intellectual Capital is a firm's only appreciable asset i.e. to turn IC to customer value
2. Knowledge work is increasing not decreasing more as the service economy grows, the importance of intellectual capital increases
3. Employees with the most IC have essentially become volunteers with work opportunities in other organizations and volunteers are committed because of their emotional bond to a firm; they are less interested in economic return than in the meaning of their work.
4. Many managers ignore or depreciate IC
5. Employees with the most IC are often least appreciated. At a time when companies are investing millions to train executives to think strategically and act globally, one's impression of the organisation are likely to come from employees on the front line.
6. Current investments in IC are misfocused. IC is the most important business issue i.e. people

Ulrich (1998) defines intellectual capital as:

Intellectual Capital = Competence X Commitment

Where within a unit of measurement, employee's overall competence should rise but only with a rise in employee commitment as competence alone does not secure IC. Furthermore, since the equation multiplies rather than adds, a low score on either competence or commitment significantly reduces overall IC.

3.2.5 Lev's Intellectual Capital Model (2001)

Lev (2001) uses the terms intangibles, knowledge assets and intellectual capital interchangeably. Lev states that all three are widely used-intangibles in the accounting

literature, knowledge assets by economists, and intellectual capital in the management and legal literature but essentially the same thing; a non-physical claim to future benefits. Lev goes on to say that when the claim is legally secured such as in the case of patents, trademarks, or copyrights, the asset is generally referred to as intellectual property.

According to Lev (Lev, 2001) intangibles are usually embedded in physical assets (for example, the technology and knowledge contained in an airplane) and in labour (the tacit knowledge of employees), leading to a considerable interaction between tangible and intangible assets in the creation of value. Lev (Lev, 2001) decomposes intangible assets into Innovation Related Capital, Customer Related Capital, Human Resource Capital and Organisational Capital as shown in Figure 3.4.

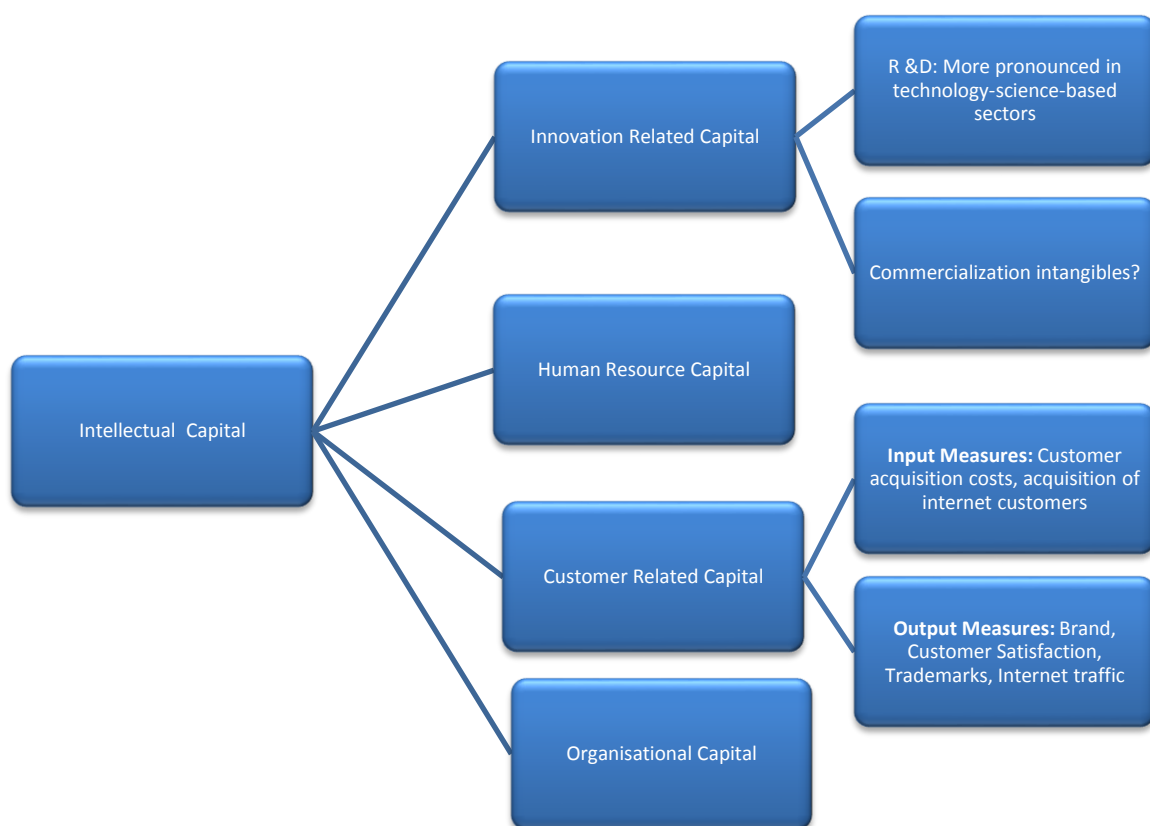


Figure 3.4: Lev’s Decomposition of Intellectual Capital

Source: Adapted (Lev, 2001)

Lev (2001) states that R&D is one component of a firm’s intangible assets, more pronounced in the technology-science-based sectors. He opines that other components of the intangible assets including human and organisational capital have received substantially less research attention than R&D.

- 1) Innovation Related Capital: According to Lev, Innovation-related intangible can be measured by input indicators for R&D such as acquired technology, adaptive capacity and output indicators such as number of patents and their attributes (citations) and number of innovations generated by the R&D process. He states that there is more information about the R&D related activities but not a lot of information about the commercialization process referring to Commercialization-related intangibles
- 2) Organisational Related Capital: Lev opines that since the mid-1980s, corporate restructuring which is a prime creator of organisational capital- became a managerial activity. Lev makes mention of two components for organisational capital i.e. Computer related organisational capital and diversification. Lev also opines that extant research show that diversification across unrelated operations often detracts from enterprise value, but states that when the diversification is aimed at scaling intangibles it results in considerable value added as it enhances the value creation potential of intangibles.
- 3) Brands, Franchises and Customer-Related Capital: Lev states that customer related intangibles can be measured by input indicator such as customer acquisition costs-an asset expected to generate future benefits if based on the past experience of the industry and the specific company and current outlook, customers can be expected to stay with the company well beyond the current year and contribute to revenues. Output indicators include Brand, Customer satisfaction, Trademarks, Internet traffic. He gives the example of Cellular phone operators who pay substantial commissions (\$250-\$350 per customer) to retailers for linking them up as these are seen as investments by the investors.
- 4) Human Resource Capital: Lev states that organisations invest substantially in their employees to increase their knowledge and their skills. For example, human resource policies and practices, such as total quality management programs, team work training, pay-for-skill and profit sharing systems, can create intangible assets, providing that they generate sustained benefits that exceed the costs of such programs. But Lev opines that of the various intangible assets considered, human resources has the least systematic information as it is unclear at this stage which expenditures on human resources creates intangible assets.

Lev's decomposition of organisations intellectual assets seems to have a bias to research and development based organisations as opposed to all types (generally) organisations. But his decomposition has similar elements to that of the other researchers whose works are also been reviewed in this section.

3.2.6 Kaplan and Norton's Perspective on Intellectual Capital (2004)

According to the Kaplan and Norton (2004) all organisations today create sustainable value from leveraging their intangible assets-human capital; databases and information systems; responsive high-quality processes; customer relationships and brands; innovative capabilities; and culture. This is similar to Brooking's categorisation of human centred capital, infrastructural capital, Market Asset capital and Intellectual Property capital.

They have identified three main assets that are essential for implementing any strategy but state that none of these intangible assets can be measured separately or independently. This suggest that there are other intangibles but these three are the key ones. These intangible assets are:

- Human capital: Employees skills, talents and knowledge
- Information capital: Databases, information system, networks and technology infrastructure
- Organisation capital: Culture, leadership, employee alignment, team work and knowledge management

The author observed that intellectual capital was decomposed into components by several researchers. There was however no consensus on the components that made up intellectual capital (Martínez-Torres, 2006; Bradley, 1997a; Bassi, 1997; Lonqvist, 2002) in organisations. The definitions and components were arrived at based on the originating discipline (e.g. accounting, strategy etc.) and the experience of the authors. The author also observed terms were used interchangeably. For example, Lev (2001) used intangibles, intellectual capital and knowledge capital interchangeably. Lev was of the view that all three were widely used-intangibles in the accounting literature, knowledge assets by economists, and intellectual capital in the management and legal literature. Other authors refer to intangibles and intellectual capital as the same (Erickson and Rothberg, 2009) while Striukova (2008) refers to intellectual capital as the same as intellectual resources. In addition, some researchers say that intellectual capital is a subset of intangible asset (Hussi and Ahonen, 2002) while some say that intangible asset is a subset of intellectual capital (Sveiby, 2001; Edvinsson, 1997) and others argue that intangible asset is intellectual capital (Brooking, 1996; Lev, 2001). Martinez-Torres (2006) opines that knowledge and Intellectual capital are components of intangible resources of organisations. Bradley (1997a) implies that intellectual capital is knowledge and intangible assets while Bassi (1997) opines that intellectual capital is a subset of knowledge. Lonqvist (2002) presented a summary of the work of other researchers shown in Table 3.1.

Table 3.1: Different Perspectives on and Concepts related to Organisation

View of intangible assets and/or intellectual capital	Researcher (s)
1. Intellectual assets/intellectual capital can be divided into different components	<ul style="list-style-type: none"> ▪ Brooking (Market, intellectual property, human-centred and infrastructure assets) ▪ Edvisson and Malone (Human, structural, customer, organisational, innovation and process capital) ▪ Lev (Innovation-related, human resource and organisational intangibles) ▪ Marr et al. (Stakeholder and structural knowledge assets) ▪ OECD (Organisational and human capital) ▪ Sveiby (Competence of employees, external and internal structure)
2. Intangible assets/intellectual capital can be divided into different levels	<ul style="list-style-type: none"> ▪ Ahonen (Generative and commercially exploitable intangibles) ▪ Stahle and Gronroos (Potential and realised intellectual capital)
3. Intangible assets and intellectual capital are seen as synonyms	<ul style="list-style-type: none"> ▪ Brooking ▪ Lev ▪ Marr et al. ▪ Mayo
4. Intellectual capital is a subset of intangible assets	<ul style="list-style-type: none"> ▪ Bontis ▪ Hussi and Ahonen ▪ OECD
5. Intangible assets are a subset of intellectual capital	<ul style="list-style-type: none"> ▪ Stahle and Gronroos
6. Intellectual capital is a debt issue, not an asset issue	<ul style="list-style-type: none"> ▪ Edvisson and Malone
7. Intellectual capital is the economic value of certain intangible assets	<ul style="list-style-type: none"> ▪ OECD

Source: Lonnqvist, 2002

In addition, the author observed that from all the papers and books reviewed, the researchers looked at the issue of intangibility from an accounting or management perspective with fundamental assumptions that the organisations are permanent and the organisation or industry type used were general but in some cases particular emphasis was put on knowledge intensive organisations/industries which suggested that the industry did not matter since accounting practices were standardised and management theories were globally accepted globally. There was also no reference to project context, it therefore seemed implied that intellectual capital and its decomposition were generic to all industries and organisations. The author reasoned that this would be important in the context of project working.

Furthermore, from the studies on intangibility in Information technology (IT) projects, it was observed that during the period that the investment was being made to create intellectual

capital, the book value of the organisation was reduced but over time, the benefits became visible and disproportionate to the initial investment. So, will this be the case with projects where the start and finish are largely predetermined, how is intangibility measured or even managed over time? The author reasons that the time lag between when investment is made in intangible benefits and when it accrues is critical in the context of project working. Furthermore, there has also been argument for the complementarities of computerisation and organisational change. This has also been observed with the use of project management and the author reasons that It will have implication in the context of project management deployment and therefore impact on the generation of intangible benefits

More importantly, based on the common themes from the work of the researchers reviewed in this section, intellectual capital was broadly categorised under organisational capital (processes information systems, culture, relationships with clients/contractors/suppliers/ etc.), innovation related capital (copyrights, patents, trade secrets etc.) and human capital (employee skills, knowledge, competence etc.). Organisational capital can further be decomposed into relational and non-relational aspects where the non-relational is considered as organisational capital and the relational considered as social capital. The rationale for not considering innovation related capital is based on the fact that the primary aim of this research is the investigation of the intangible benefits from project management deployment and in the execution phase of the project lifecycle, innovation is captured in knowledge management and practices. Innovation related capital by itself will be more appropriate in the conceptual or planning phase prior to execution which may be related to an organisation in the supply network of the base organisation or in manufacturing for example, where new product development is routine. Therefore organisational, human and social capital will be discussed in the next section.

3.3 Key Intellectual Capital Components Identified

From the discussion in section 3.2, the author has made a case for considering organisational, human and social capital as components of intellectual capital and the review of extant literature for organisational, human and social capital is discussed in turn below.

3.3.1 Organisational Capital

Several definitions of organisational capital are put forward and then discussed based on the insight garnered.

Agglomeration of technologies- business practices; processes and designs- that enable firms to gain a sustainable competitive advantage (Sadowski and Ludewig, 2003)

Capability to organise-unique systems and processes, incentives and compensation systems governing its human capital (Lev, 2004)

Organisational capital is divided into three broad components- workforce training, employee voice and work design (including the use of cross-functional production processes) (Black and Lynch, 2005)

As the accumulated stock of organisation 'know-how', a collection of production and sales processes that are unique to the firm (Eisfeldt and Papanikolaou, 2010)

Putting the definitions together, organisational capital is collective knowledge, is a capability dependent on technologies, includes organisational designs including work design, systems including that to incentivise and compensate employees, training provision and employee voice. All these can be contextual to organisations and the extent to which they cause differentiation or monopolistic tendencies determine the contribution to competitiveness. This is in line with Lev and Radhakrishnan (2004) who state that some organisations outperform their competitors in different industries and economic sectors, for example Wal-Mart in retail and Dell in PCs. They attribute this to the competitive advantage conferred on firms by organisational capital as the resource cannot be completely codified and hence transferred to other organisations or imitated by them. This suggests that if project deployment generates organisational capital, it contributes directly to the competitiveness of the organisation. Sadowski and Ludewig (2003) opine that there are at least two schools of thoughts with respect to organisational capital; one that considers organisational capital similar to human and social capital as interconnected with the individual and the second that views organisational capital as part of and linked to the organisation rather than to the individual. Sadowski and Ludewig (2003) argue that while other factors of production can be freely traded in the open market and are accessible to all firms at the same price, the capability to organise is specific to a particular firm. They opine that organisational capital is inseparably linked to the organisation hence its difference to other types of capital as it is predominantly non-tangible and idiosyncratic and difficult to measure. Lev and Radhakrishnan (2004) opine that organisational capital is the major factor of production that is unique to the firm and thus

capable of yielding abnormal above cost of capital-returns, thereby generating enterprise growth. The author is more inclined to the first school of thought that organisational capital is similar to human and social capital as it is people who design and develop this 'organisational capital'; the processes, practices etc.; talented and knowledgeable people put these things in place.

From the definitions of the above, it can be deduced that there is no one agreed definition of organisational capital as these definitions depends on the perspective and experiences of the researchers involved, however they are similar. But some key themes have emerged from literature reviewed on some of the peculiarities of organisational capital and these are discussed below.

3.3.1.1 Knowledge Management as Organisational Capital

Longo and Mura (2011) describe organisational capital as knowledge that resides in and is utilised through databases, patents, routines, structures, systems and processes. They opine that it consists of two dimensions: objectified (the shared knowledge in the organisation that requires the effective use of institutional mechanisms, such as databases, patents, process manuals and information systems) and collective knowledge (embedded in the form social practice and residing in the tacit experience of the everyone produced internally by individual employees and dwelling in an organisation's norms, culture and processes). They state that the collective knowledge dimension of organisational capital reflects three constructs: the employees ability to work in a group (exchange and sharing of information among employees, the transfer of knowledge, and the development of innovative ideas), contribution (understanding that the work carried out is part of the whole organisational process and thus, effect the entire organisation), and trust (which encourages collaboration between employees and the organisation and increases the sharing of knowledge and best practice).

3.3.1.2 Owning Organisational Capital

Eisfedlt and Papanikolaou (2010) argue that part of organisational capital is embodied in highly specialised labour inputs for example in management or in other key personnel. As a result, rents from organisational capital must be shared between this key talent and shareholders. Part of the knowledge that organisational capital represents is embodied in workers who can transfer their knowledge when they leave the firm. As a result, these workers effectively own some of the organisational capital. This suggests that the part of organisational capital that is owned by employees is actually human capital. However, the specificity of organisational capital implies that shareholders can capture some but not all the rents it accrues. An organisation cannot capture all the organisational capital but there is a possible maximum that

can be attained and what is this threshold? Researchers have argued that the greater the capability of an organisation to convert other capitals to organisational capital, the more intangible benefits enjoyed by that organisation.

3.3.1.3 Measurement of Organisational Capital

According to Lev and Radhakrishnan (2004) the intangible nature of organisational capital makes it difficult to measure at the input and output points. Furthermore, they opine that the valuation of organisational capital requires an estimate of the rate of obsolescence. This suggests that organisational capital not only has to be constantly generated but it must fit with the business requirements of the organisations as the business environment changes. This then suggests that not all parts of organisational capital may contribute to an organisation's competitiveness as part of it may become obsolete with time. Lev and Radhakrishnan (2004) highlight three main reasons why operational measure of organisational capital is useful:

- Managers can track size and growth of the organisation capital; the major source of CA to benchmark against past performance and competitors
- Managers can assess the return on investments in creating this resource
- Investors can better incorporate the value in their corporate valuation models- important during mergers and acquisition as organisational capital is predominantly tacit and difficult to transfer across firms

According to Black and Lynch (2005) there has been an increasing number of researchers who have attempted to measure different dimensions of organisational capital for the purpose of documenting its impact on the organisations, but that these efforts have been uncoordinated and sporadic. Part of the reason they give is that there has been no systematic attempt to measure workplace practices over time and there has been the lack of consensus on what to measure, along with concerns over the cost of measurement.

3.3.1.4 Costs of Organisational Capital

Sadowski and Ludewig (2003) argue that there is cost associated with the formation of organisational capital. This could be as a result of changing the existing practices or the implementation of new organisational practices. They opine that these costs are paid upfront and could involve planning, adjustments and launching costs using the internal and external resources (e.g. management consultancy). As the formation of organisational capital is an investment, this is compensated by future income. The author opines that this seems to be based on the assumption that all investments generate positive intangibles (benefits) but Harvey and Lusch (1999) have argued that there also exist intangible liabilities (dis-benefits). This suggests that the cost of generating intangibles by project management deployment may contribute to either benefits or dis-benefits within the context of different organisations.

3.3.1.5 Company's Reputation (Internal and External)

According to Sadowski and Ludewig (2003), a large part of organisational capital is generated by the reduction of opportunistic behaviour and increased credibility within its internal and external relationships. Such credibility and good reputation facilitates action through the reduction of employee, supplier and customer resistance to changes in these relationships; hence, negotiation time and compensation payments are reduced, and productivity is increased. This implies that a company has both an inward and outward looking reputation to manage. The author reasons that project management deployment contributes to a company's reputation but to what extent will be further investigated within this research. Sadowski and Ludewig (2003) opine that in order to secure long term benefits, the organisation have to forgo short-term chances for profit in order to demonstrate and signal reliability and produce predictability. They opine that organisations gain from organisational capital by facilitating the actions of the organisational members and stakeholders, and by directing these actions towards the organisational goal through investment in organisational practices.

3.3.2 Human Capital

Several definitions of human capital are put forward and then discussed based on the insight garnered.

Human capital is employee knowledge, skills, talents, competence, attitude and intellectual agility. (Sadowski and Ludewig, 2003)

Knowledge, skills, competences and attributes embodied in individuals that facilitate the creation of personal, social and economic wellbeing (OECD, 2007)

Know-how, information, relationships, and general relationships, and general capabilities that individuals bring to bear on behalf of the firm through the employment relation (Galunic & Anderson, 2000)

In the light of the definitions, human capital has to do with 'people', what they know, their skills and their willingness to use them to create value. It is also about their relationship but this has been categorised as social capital within this thesis. Stiles and Kulvisaechana (2003) argue

that there is a large and growing body of evidence that demonstrates a positive linkage between the development of human capital and organisational performance. They opine that the emphasis on human capital in organisations reflects the view that market depends less on tangible resources and more on intangible ones, particularly human resources. They argue that organisations have to leverage the skills and capabilities of the employees by encouraging individual and organisational learning and creating a supportive environment in which knowledge can be created, shared and applied. Stiles and Kulvisaechana (2003) suggest that it is the interaction of the human resources practices combined with the idiosyncratic context of particular companies that creates high barriers to imitation. This suggests that if an organisation understands its external environment and where it fits in the value chain, it can equip itself with the right human capital to create competitive advantage.

Collings and Mellahi (2009) argue that the challenge of maximising the competitive advantage of an organisation's human capital is even more significant in the recessionary climate of today's business reality. Colucci et al. (2011) opine that knowledge intensive companies have their most promising source of competitive advantage in human resources. Kunjiapu and Yasin (2010) opine that continuous education and learning can make a workforce more competent and this is because human capital or more specifically workers competence is a key to firm's survival and success today. They also show that continuous education and learning can increase human capital. Colucci et al. (2011) opine that human resources are an important source of competitive advantage. Cardy and colleagues opine that recognising employees as human capital with worth that goes beyond performance and immediate tasks is a longer-run perspective that would shift the focus to attracting and keeping employees who provide the best long-term value for the organisation (Cardy et al., 2007). This suggest that a better understanding of how team members are selected, how they carry out their work and are disbanded may play an important role in the value that human capital contributes to the organisation's competitiveness.

According to Sanders (2008) regardless of their role within an organisation, employees accumulate a career worth of knowledge: knowledge about the industry, their role, the company, its products, employees and customers. Given that companies are increasingly gaining competitive advantage from intellectual assets rather than physical assets, Sanders (2008) state that there is trouble ahead for any organisation that does not implement effective knowledge management strategies. One major consequence of the new performance demands that organizations face and the idea of organizational capabilities as a basis for competition concerns the role of individuals and it directly affects the kind and amount of value that they are expected to add. Knowledge and knowledge sharing mechanisms require

enabling and supportive environments and trust and motivation are necessary for effective knowledge transfer. Gao et al. (2011) state that trust is necessary to ensure employees can develop risk taking behaviour in the organisation. The extent to which trust can influence how employees behave is also contextual. Motivation and trust are important for knowledge sharing because if employees do not trust, they are unlikely to be motivated to share what they know and the converse is will be true. The author opines that knowledge, motivation and trust are intricately connected to ensure effective knowledge sharing.

From the literature reviewed on human capital, employee knowledge plays a major role which is closely linked to 'knowledge as organisational capital'. The author reasons that knowledge then exists on two levels, organisational and individual. Furthermore, the author discusses some key themes that emerged and they include organisational level issues-changing employee-organisational relationships, changing job roles, employee retention and measurement of human capital; individual level issues- employee knowledge, skills, talent and career aspirations.

3.3.2.1 Employee Knowledge, Skills and Talent

Extant literature makes the distinction between general human capital and firm-specific human capital (Kulvisaechana, 2005, Schulz et al., 2013). The key concept of human capital theory is the categorisation of general human capital, which is applicable in multiple organisational settings, and firm-specific human capital, which has value for only one firm (Schulz et al., 2013). General human capital can be deployed across different organisations resulting in similar benefits (Finegold et al., 2002). Firm specific human capital is different as it is conceptualised as an individual's productive capabilities resulting from the skills and abilities accumulated over the course of employment in a specific firm (Schulz et al, 2013). According to Kalvisaechana (2005), specific human capital is acquired through formal and informal on-the-job training and includes firm specific and job specific skills that enable people to perform more productively at a firm providing training than at a firm that does not. The rationale is that firm specific skills are tied to organisational contexts- internal politics, corporate culture, communications channel, customer requirements of the firm and the interpersonal network within a particular organisational context (Nordhaug, 1998).

However, Schulz et al (2013) distinguish between task- specific and non-task specific human capital stating that employees gain task-specific experiences in the current position over time. Conversely, non-task specific human capital is accumulated by an employees' experience in prior jobs within the firm (Schulz et al, 2013). Task specific human capital is of unique value to the current job because part of the skilled set may not be transferable when the employee

changes job within the firm. Schulz and colleague explain that some of an employee's human capital attained from a former job within the same firm will be lost when that employee is promoted or transferred to a new job and acquires new tasks to conduct. Non-task specific human capital would encompass experience on tasks that are generally not relevant or applicable in the current job which would also encompass company specific knowledge, including an employee's accumulated knowledge about a firm's policies, and procedures, culture, formal and informal reporting relationships and organisational systems (Groysberg et al., 2008). According to Becker (1975) cited in Schulz et al (2013), human capital theory predicts that firm specific human capital increases with longer firm tenure as employees become more skilled and knowledgeable in performing tasks related to the firm's operations.

3.3.2.1.1 Employee Skills

According to Garner (2008), the performance and knowledge of employees comprise of both soft skills and hard skills. Soft skills include communication skills, analytical skills, presentation skills and other interpersonal skills. These can be developed with proper training and education. Hard skills can be developed through technical education. They are skills connected with a particular subject matter and there is a requirement for practical training, exposure and experience and usually involves physical effort. Kennedy and Daim (2010) state that human capital is not a commodity that a company can 'buy', it can only be rented. Though a company can hire an employee- in which case that employee is momentarily compensated, that company has no guarantees where that employee is headed or how engaged that employee will be at any given point in time.

Møen (2007) argues that even though some R & D projects may be viewed as commercial failures, some knowledge created may be of social value. He argues that this value or knowledge is embodied in workers or teams of worker involved in these projects. He discusses the evolution of the semiconductor and how companies such as Sprague Electric and Shockley only made modest return on investment and how years later their research into semiconductors became the foundation for the success enjoyed by Intel. Moen (Møen, 2007) opines that there may be a 'scrap value' associated with unsuccessful R & D projects and firms can maximise the social returns and reduce the overall risk associated with such projects. This argument connects human capital directly with value that may not necessarily be enjoyed by organisations that originally create them but by organisations that employ individuals (human capital) who have acquired such value. This also justifies that the intangibles generated from project management is not totally dependent on project success or failure but on the methodology itself.

3.3.2.1.2 Employee Talent

According to Myatt (nd), the quality of a company's talent is the single biggest competitive value an organisation can own. Myatt (nd) opines that quality human capital is 'a catalytic asset that can be effectively leveraged across the enterprise to generate creativity, momentum, velocity, client loyalty, a dynamic corporate culture and virtually every other positive influencing force in the corporate universe'. He opines that quality talent designs best practices; understands the value of innovation, overcomes obstacles, breaks down barriers, creates growth and builds lasting brand. Myatt (nd) opines that recruiting talent is only part of the problem as the organisation must also retain these talents.

3.3.2.1.3 Changing Job Roles

Cardy and colleagues are of the view that the relationship of the traditional concept of the job to various performance outcomes is changing which has consequences both for employees and organisations (Cardy et al., 2007). They state that many organisations now used projects and team structures and this affects the definition of a job as the roles workers play may differ substantially across projects and across various team compositions. A particular project and the way it unfolds dictates the skills needed and the combination of talent and aptitudes that team members must possess. They opine that the traditional task-based structure/focus of jobs represents a short-range perspective that fails to capture the long-term value of employees in an organisation. According to Cardy and colleagues recognising employees as human capital with worth that goes beyond performance and immediate tasks and is a longer-run perspective that would shift the focus to attracting and keeping employees who provide the best long-term value for the organisation (Cardy et al., 2007). This suggest that a better understanding of how team members are selected and disbanded may play an important role in the value that human capital contributes to the organisation's competitiveness. According to Paulsson and colleagues, changes in work and the ways it is carried out bring a real need for upgrading workplace knowledge, skills and competencies (Paulsson et al., 2005). They opine that increased demand for learning brings a risk that can create greater stress levels and pose a risk to employee wellbeing. This again may influence the value that human capital can contribute to the organisation's competitiveness.

3.3.2.2 Changing Employee- Organisational Relationships

Coyle-Shapiro and Shore (2007) state that in the last twenty years, the employment relationship literature has gained huge popularity in large part due to the changes in employee-organisation relations (EORs) occurring in business between employees and employers. Globalisation and over-competition is putting pressure on organisations and their executives to reorganise to survive. They suggest that more research needs to be undertaken to better

understand the EOR in the evolving organisational structures. This has implication for project management as more organisations deploy projects. This requires an investigation into how this affects the EOR and the implications for developing intangible benefits.

Kennedy and Daim (2010) opine that one of the changes to the EOR is that organisations can no longer provide the lifelong employment and benefits to its employees as was obtainable in the past. Dulebohn and colleagues mention that generational difference may impact on the different expectations from employers where 'the baby boomer generation may prefer benefits' that the employer shoulders the risk of economic fluctuations while 'generation X and Y' may not trust employers to bear such risks and will prefer defined contribution and risk limitations (Dulebohn et al., 2009). This is already the reality of project workers as some work on contract basis and this will affect more employees as more organisations deploy project management. The author is interested in understanding how this affects the generation of project management intangibles and how organisations are managing this new reality. Furthermore, Orvis and Lefler (2011) opine that organisations are more supportive of self-development for staff as opposed to organisational training due to time and cost constraints. This is another reality for today's employees and the author is keen to see how this affects project management deployment and the value it creates in organisations today.

Gorafano and Salas (2005) summarise the changes in the business world and the impact on organisations and employees in Figure 3.5. Two main changes are identified: globalisation and rapid technological change. This in turn is causing organisations to restructure using mechanisms such as downsizing, type of employee organisational contracts and access to leaner budgets. There are two perspectives to this reality that of the employees who must admit that the EOR has changed and evolving, less emphasis on organisational training and less commitment to employees' welfare.

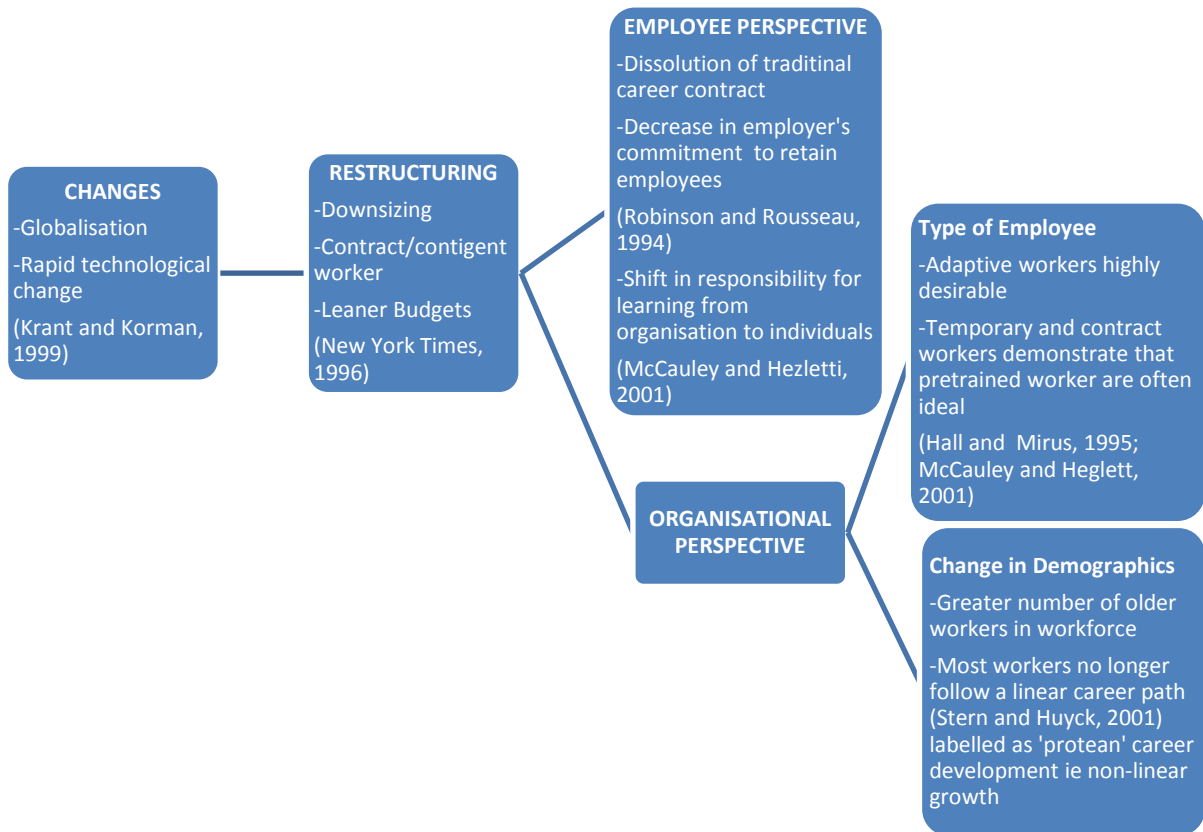


Figure 3.5: The Reality of the 21st Century Organisation

Source: Adapted Garofano and Salas (2005)

The view of the organisation is twofold: a different type of employee is required and different organisational demographics. These have serious implications for organisations as more organisations deploy project management.

3.3.2.3 Individual Career Aspiration

Arthur, Khapora and Wilderson (2005), discuss an established definition of career “*the unfolding sequence of a person’s work experiences over time*” (Arthur, Hall and Lawrence, 1989). Careers can also be described in two fundamentally different ways; subjective and objective career dimensions (Arthur et al., 2005). Arthur and colleagues explain that while subjective career dimension reflects an individual’s sense of his or her career and how it is evolving, the objective career dimension is an external perception of an individual’s career and how it is evolving. According to Author and colleagues, career success is an outcome of a person’s career experience and could be objective or subjective. They define career success as the accomplishment of desirable work-related outcomes at any point in a person’s work experience over time. It covers both the personal definition of success and how it is perceived externally as prosperity i.e. there are two distinct ways of viewing career success. The concept

of subjective-objective career duality argues that career success may involve both subjective and objective aspects which may not coincide. Author et al (2005) argue that other outcome variables which are contextual such as employment opportunities, government policy, a person's social situation, and so on influences the career outcome or experience.

3.3.2.4 Employee Retention

Hiltrop (1999) opines that the ability to attract and retain talent is rapidly becoming one of the core competences of high performing organisations in both developed and emerging countries. They argue that improving the ability to retain employees will become increasingly important as changes occur across the demography, and social and economic developments strengthen the connection between human talent and profitability. Beechler and Woodward (2009) opine that many organisations are changing their approach to finding talented individuals by rethinking and redesigning their global staffing strategies, compensation and promotions.

The author opines that because of the effects of technology and communication, quality staff can be sourced from any part of the globe and this is also true for losing quality staff to the competition. This in turn will impact on projects and project team design and hence affect the value that the project human capital can generate.

3.3.2.5 Measurement of Human Capital

According to the OECD (Keeley, 2007) proxies are needed to measure human capital as it cannot be directly measured. They opine that proxies such as length of time people spend in school, or the sort of education they gain, testing what people know, measuring a country's stock of human capital and its economic worth are examples. The OECD (Keeley, 2007) opines that it is difficult to measure human capital and that the different measures only give partial information and that by combining the different measures a better picture is created but there is the need to understand the limitations of the new insight gained.

In operationalising the measurement of human capital, Antonnelli and colleagues, used the labour demand perspective which applied the drivers of firm-provided work-based training as a measure of human capital for an empirical study on a sample of manufacturing firms in Italy over the period of 2001 to 2005 (Antonelli et al., 2010). According to the research by Antonnelli and colleagues, human capital stock of an organisation depends on four different sets of drivers:

- The internal labour markets, the organisation of labour and the coordination of tasks among job positions

- The technology and the propensity of the firm to innovate
- The dynamic of skill development and the process of adjustment of individual characteristics to the techno-organisational approach
- The economic network to which the firm belongs; intended as the position of the firm in the overall value chain.

3.3.3 Social Capital

Several definitions of organisational capital are put forward and then discussed based on the insight garnered.

“The sum of the actual and potential resources embedded within, available through and derived from the network of relationships possessed by an individual or social unit”. (Nahapiet and Ghoshal, 1998)

“Social capital consists of the stock of active connections among people: the trust, mutual understanding, and shared values and behaviours that bind the members of human networks and communities and make cooperative action possible” (Cohen and Prusak, 2001).

“Social capital is networks together with shared norms, values and understanding that facilitate co-operation within or among groups”. OECD (Keeley, 2007),

Social capital is the goodwill available to individuals or groups. Its source lies in the structure and content of the actor's social relations. Its effects flow from the information, influence, and solidarity it makes available to the actor. This definition encompasses ((Adler and Kwon, 2002)

By looking critically at the definitions of the above, social capital is first about networks of relationship, about the actual and potential resources as a result of the network. It is about relational resources such as trust, mutual understanding, shared values and behaviour binds people together in networks and this facilitates corporative action or cooperation and makes resources available or potentially available such as information, influence and solidarity. It is different to organisational capital and human capital, as social capital is created from relationships. Social capital can be demonstrated, analysed, invested in, worked with, and made to yield benefits, like other types of capital, it grows with effective use (Cohen and Prusak, 2001). Social capital approach to organisational work recognises a legitimate relationship of sorts between an individual employee and the firm that acknowledges the

networks of relationships among people in the organisation and the less tangible elements of the employee organisational relationship (Cohen and Prusak, 2001). This approach acknowledges the human need for membership and identification, the satisfaction gained from recognition by peers, the pleasure of giving as well as getting help. The OECD (Keeley, 2007) opines that human and social capital is linked in complex ways and to some extent feed into each other so that social capital promotes the development of human capital with the converse also true. Nahapiet and Ghoshal (1998) have argued that social capital is a productive asset facilitating some form of social action while inhibiting others. Adler and Kwon (2002) in their research identified the internal and external views of social capital. A focus on the internal relations refers to bonding forms of social capital and the focus on external is on the bridging forms of social capital. Therefore, they identify two main streams, one that considers the ties that make up the network and the second that consider that content of the network.

3.3.3.1 Two Different Approaches to Social Capital

In a different approach to decomposing organisational and human capital, two different approaches in line with the findings from extant literature are discussed. The first is the use of three dimensions of social capital: structural, relational and cognitive (Nahapiet and Ghoshal, 1998). The structural dimension is made up of the relations between persons and among persons describing the impersonal configuration of linkages between people and units and it is jointly owned. The relational dimension focuses on the particular relationships people have such as trust, respect, friendship that influence their behaviour. The cognitive dimension focuses on shared values, language, codes and narratives.

In the second approach, Adler and Kwon (2002) use the opportunity, motivation and ability schema to theorise on social capital. Adler and Kwon (2002) point to the fact that there is disagreement and confusion concerning the specific aspects of social relations that create social capital. For the opportunity aspect of the schema, Adler and Kwon use two indicators, the first is the closure of the network structure- extent to which actors' contact are themselves connected and the second the structure holes- linkages to groups not otherwise connected. In their view, an actor's network of social ties creates opportunities for social transaction and these can be internal to the organisation or external to the organisation. Closure provides social capital's cohesiveness benefits within an organisation or community; structural holes in the focal actor's external linkages provide cost effective resources for competitive action. This also highlight that there is also some confusion in the literature as to the relationship between trust and social capital, but in the opportunity-motivation-ability schema, trust presents itself as a key motivational source of social capital i.e. trust is a proxy. The last in the schema ability is the competencies and resources at the nodes of the network. They argue that this is

meritorious because a given actor's social capital includes the resources that could be potentially mobilised as a result of social relations. The share of those potentially mobilisable resources received is dependent on the contact's motivation, and the total amount actually mobilised depends also on the opportunity created by the number of these contacts. They opine that hierarchy is an important dimension of social structure that indirectly influences social capital by shaping the structure of social relations.

The author is of the view that the approach by Nahapiet and Ghoshal (1998) and Adler and Kwon (2002) are similar as both approaches draw attention to the similar dimension of social capital. What has been highlighted is the structural/opportunity dimension that influence whether relationships can be formed at all and relational dimension which has to do with trust, respect and friendship. However, the approaches are dissimilar in the third dimensions because whilst Nahapiet and Ghoshal (1998) draw attention to the cognitive-values, language, codes and narrative, Adler and Kwon (2002) draw attention to the ability, that is the resources available as a consequence of the opportunity, also inherent in the individual.

3.3.3.2 Benefits of Social Capital

Adler and Kwon (2002) identify benefits and risks for a focal actor and broader aggregate e.g. groups. The following benefits were identified for a focal actor: information; influence, control and power; and solidarity. Risk were also identified, informational risk, trade-off between power and informational benefits and lastly the solidarity backfiring. The study by (Shu-Chi and Yin-Mei, 2005) explains the positive impacts of social capital in career outcomes in structural perspective of network centrality. The results confirm the direct and significant impact of social capital on career outcomes, revealing social capital's relative importance compared to human capital. According to Bartsch et al. (2013) their finding is consistent with the notion that project teams' intra organisational social capital enhances the opportunity, motivation and ability to transfer knowledge from the project to the project based organisation as a whole, retain and apply it. Their study shows the importance of social capital as a source of continuity in the discontinuous context of project based work (Bartsch et al., 2013). Research already show that the internal networks as a result of the relationship that employees establish inside the organisation can sometimes overcome the formal organisational structure and its requirements (Longo and Mura, 2011).

3.3.3.3 Trust

Considering the work by Wong et al. (2008) and that of Cohen and Prusak (2001) while intuitive trust is aligned to affect-based trust, trust as a function of time and different situation is more aligned to cognitive-based dimension of trust. People tend to trust someone or give

them the benefit of the doubt if they have been trustworthy in the past over different situations. This the author refers to as the expectation dimension of trust. Even though trust is contextual and situational, people have an expectation. Trust as a function of relationship indicates that it is observed in action with regards to social actors, and not inherent in a social actor. System based dimension of trust refers to trust dependent on the organisational formal structures which is also similar to argument by Adler and Kwon (2002) about the effects of hierarchical relations of social structures. According to Cohen and Prusak (2001), trust is the essential lubricant to any and all social activities and supports cooperation in organisations; offers intrinsic rewards such that to be trusted is a source of self-esteem and satisfaction in its own right. This concept of trust a social resource being both cause and effect, is instructive as it supports the position of Adler and Kwon about goodwill as well as the author's position. The author argues that project organisations are ideal for thick trust to be generated across different project teams with thin trust, distrust or mistrust (She, 2013) across the organisation depending on the organisational structure, processes and culture.

3.3.3.3.1 Relationship between Trust and Reputation

Cohen and Prusak (2001) state that reputation act as the middle ground between thick trust and thin trust. The author argues that it is not only acts as the middle ground but a mediator between project actors and the base organisation. For example, in the case of a project worker, relations with other project workers (This can act as a motivator referred to as social support (Richmond and Skitmore, 2006b)) and the base organisation are particularly influenced by internal reputation such that it builds expectation or disillusionment. In the case of the client, contractor or supplier, the external reputation mediates collaborative action. This infers that internal reputation and goodwill is influenced by the alignment of expectation of the project worker to what the base organisation offers while the external reputation and goodwill is influenced by alignment of the expectation of the client, contractor or supplier and what the base organisation offers.

3.3.3.4 Measuring Social Capital

The OECD (Keeley, 2007) mentions trust as a good proxy for social capital but that the only issue is that trust is contextual and could mean different things in different cultures for example. Cohen and Prusak also identify what the author refers to as the dual nature of social resources. According to Cohen and Prusak (2001)

“Many of the elements of social capital are both cause and effect, simultaneously its underlying conditions, indicators of its presence and its chief benefits. For example, without some foundation of trust, social capital cannot develop- the essential connections will not form. So, trust is a precondition of healthy social capital. Not surprisingly, high levels of trust

also tend to indicate high social capital. And the trust-based connections that characterise social capital lead to the development of increased trust as people work with one another over time. So, trust is also a product or benefit of social capital and a source of other benefits”.

This implies that social resource has a great propensity to replicate itself; so positive reinforces positive and negative reinforces negative. Extant research introduces the concept of “span of trust” (Cohen and Prusak, 2001) describing organisational trust where trust can be measured by how far trust extends within a defined structure in terms of the number of people which trust can be “rolled over”. Variations in span of trust are sometimes referred to as “thin” and “thick” trust; thin trust meaning widespread organisational trust and thick trust defining the stronger, shorter trust bonds within a local group. In the light of the three dimensions of social capital by Nahapiet and Goshal (1998), it appears that trust the main component of relational capital is often used as a proxy for social capital and this is similar to motivation dimension of the schema by Adler and Kwon (2002). Nahapiet and Goshal (1998) opine that there is a primary focus on the independent effects of the different dimensions which limits the richness of social capital discuss with a real need to have integrated perspectives also. The author reasons that this point supports the findings from extant literature about the fact that social capital was not decomposed as organisational and human capital.

The author is of the view that the social capital component of intellectual capital is less understood and subsequently underdeveloped. However, the social capital component of intellectual capital is still an important component with implications for project management deployment as it often involves several stakeholders with formal and informal configuration of linkages, different types of relationship; with different levels of trust, respect and friendship; and bounded by shared values, language, codes and narratives; and with different actors and networks bringing different resources. In addition, the project environment presents challenges for the concept of span of trust in a multiproject environment with multiple stakeholders.

The author summarises the main themes from the review of literature in this section 3.3 in Table 3.2 below. It is evident that for the three components of intellectual capital, measurement was common and thus important. In addition, collective knowledge and its management was a major part of organisational capital.

Table 3.2: Summary of identified Themes across Intellectual Capital Components

Intellectual Capital Component	Themes Identified
Organisational capital	3.3.1.1 Knowledge Management as Organisational Capital 3.3.1.2 Owning Organisational Capital 3.3.1.3 Measurement of Organisational Capital 3.3.1.4 Costs of Organisational Capital 3.3.1.5 Company’s Reputation (Internal and External)
Human capital	3.3.2.1 Employee Knowledge, Skills and Talent 3.3.2.2 Changing Employee- Organisational Relationships 3.3.2.3 Individual Career Aspiration 3.3.2.4 Employee Retention 3.3.2.5 Measurement of Human Capital
Social capital	3.3.3.1 Two Different Approaches to Social Capital 3.3.3.2 Benefits of Social Capital 3.3.3.3 Trust 3.3.3.4 Measuring Social Capital

There are also the issues of ownership, the cost involved in generating organisational capital and reputation. In the case of human capital, the key themes identified indicate two groupings of themes: the first concerns employees, their individual knowledge and skills and their aspirations. The second grouping concerns the relationship between employees and the organisation including issues of retention, and relationship between employees and the organisation. Lastly, social capital was obviously different to organisational and human capital, with trust as the main proxy. However other dimensions of social capital highlighted include structural/opportunity dimension-relationships between people, other relational/motivation dimensions’ respect, friendship; cognitive dimensions -values, language, codes and narratives and ability dimension- what resources are available from the individual or network. A logical question to ask therefore is what is the implication for the intangible benefits derived from project management deployment? The author reasons that as intellectual capital is the sum of the components, intellectual capital approach applied to project management literature should also mirror the themes across the findings on intellectual capital. This will be further investigated empirically as part of a coherent approach. However, the next section discusses the evidence of the impact of intellectual capital.

3.4 Evidence of Impact of Intellectual Capital- Competitiveness

Intangibles have an impact especially because there is a changing value contribution between tangible and intangibles. That is, it has an impact on the organisation and how the organisation does things and invariably affects the organisations internal and external stakeholders e.g. staff (internal) and customers (external). It also has implications for shareholders evidenced in the gap between the market value of an organisation and the book value. Roos et al. (1997) show in Table 3.3 the difference between the market value and book value of some well-known organisations. For example, from the table, Coca-Cola's hidden value is 96 percent of its total value while General Electric has 82 percent of its value hidden. Many authors have argued that such gaps between the book value and market value are intangible assets. Brooking (1996) states that in the past, this gap was called goodwill but now called intellectual capital as the advent of information technology, the media and communications, has given new tools with which to build a global economy, many of these tools bring intangible benefits, which never existed before and which organisations take for granted. Similarly, according to Roos et al. (1997), the surplus paid on the book value for an organisation by investors traditionally attributed to goodwill is too large to just be goodwill, and is now called intellectual capital. The average company's tangible assets- the net book value of assets less liabilities represent less than 25 percent of market value (Roos et al., 1997).

Table 3.4: The Difference between the Book Value and Market Value of Some Companies

Company	Market Value (billion\$)	Revenue (billion\$)	Profit	Net Assets	'Hidden value'
General Electric	169	79	7.3	31	138 (82%)
Coca-Cola	148	19	3.5	6	142 (96%)
Exxon	125	119	7.5	43	82 (66%)
Microsoft	119	9	2.2	7	112 (94%)
Intel	113	21	5.2	17	96 (85%)

Source: (Roos et al., 1997)

According to Kaplan and Norton (2004), the trend away from a product-driven economy dependent on tangible assets, to a knowledge and service economy more dependent on intangible assets, has been occurring for decades. They opine that even after the bursting of the NASDAQ and the dot.com bubbles, intangible assets those not measured by a company's financial system account for more than 75 percent of a company's value. Therefore, intellectual capital impacts on the bottom line of organisations evidenced in the difference

between the market value and the book value and by implication, a company can be worth a lot more than its tangible assets may suggest.

3.5 Intellectual Capital Can Be Negative?

In contrast to the position of many researchers on the positive impact of intangibles, Harvey and Lusch (1999) argue that to assume that all intellectual capital translates into corresponding rise in equity is myopic. This position is also consistent with discussions in section 2.5.1 and 2.5.1.1 where disbenefits were also highlighted. Harvey and Lusch (1999) argue that there are intangible liabilities that are being accrued along with the potential benefits from intellectual capital. In the opinion of Harvey and Lusch (1999), just as the rapid growth of the information and knowledge economy may help firms create many intangible assets, this same economic and technological environment may result in more turbulence, chaos and other instabilities and surprises that may be fostering and creating untold billions or even trillions of dollars on unfunded liabilities. Harvey and Lusch (1999) argue that while intellectual capital is important to understanding the total value of an organisation, there must be a corresponding investigation of the potential downside of the information society in terms of the unrecorded, off-balance sheet intangible liabilities. Harvey and Lusch (1999) identify potential intangible liabilities and look at each from the internal and external perspective as shown in Table 3.5. Process issues include weak strategic planning which in the context of project management deployment could be weak strategic decisions made on projects to commission while external liabilities include poor product /service quality, trust issues, high customer turnover, potential litigation which are exactly the same for project management context. Human issues from an internal perspective include high turnover, inadequate training etc. which is exactly the same for project management context and external perspective includes bad reputation, low based loyalty which again can be experienced in the project management context. Informational issue from the internal perspective could include inadequate information infrastructure and inability to turn data into information and in the context of project management deployment can mean lack of existing information for project decision or lack of learning from projects. From the external perspective it could be negative brand, decreasing reputation etc. which in the project management context could be lack of repeat business etc. Configuration issues from the internal perspective could be lack of flexibility due to organisational structure and this could be experienced in the project management context as bureaucracy or routinisation etc.

Table 3.5: Classification of Intangible Liabilities

Potential Intangible Liabilities	Internal Intangible Liabilities	External Intangible Liabilities
Process issues	<ul style="list-style-type: none"> • Weak strategic planning process • Inadequate R&D • Antiquated manufacturing process • Poor new product development process 	<ul style="list-style-type: none"> • Poor product/service quality • Low commitment/trust of suppliers/distribution system • High turnover of customers, suppliers and distribution system • Potential litigation of government not meeting regulations/laws
Human issues	<ul style="list-style-type: none"> • High employee turnover • Discrimination among employees • Inadequate training/development • Inexperienced top management team 	<ul style="list-style-type: none"> • Bad word-of-mouth among customers • Potential product liability suits from customer harmed • Low based loyalty/awareness among growth market segment
Informational issues	<ul style="list-style-type: none"> • Lack of adequate information infrastructure • Inability to turn data into information (lack of analysis) 	<ul style="list-style-type: none"> • Negative brand/product information (recall) • Decreasing corporate reputation • Successful litigation against company • Unfavourable stock analyst report on company/industry
Configuration issues	<ul style="list-style-type: none"> • Organizational structure (lack of flexibility) • Lack of patents/copyrights • Inadequate geographic location of plants, warehouses, etc. 	<ul style="list-style-type: none"> • Inadequate distribution channels to achieve growth • Lack of strategic alliances to leverage resource base • Inefficient location of production facilities

Source: Harvey and Lusch (1999)

Thus there is the need for two different measuring criteria one for external reporting which is targeted at shareholders and those interested in the external performance of the organisation and one from the internal targeted at ensuring the wellbeing of the organisation's people and conducive for knowledge creation in the form of resources and products.

3.6 How Intellectual Capital is Measured

According to Brooking (1996), in a survey of 226 FT500 companies (UK equivalent of the Fortune 500), 76 percent had not assigned any value to intangible assets in their annual report and where intangible assets were included on the balance sheet, it mostly referred to goodwill generated by mergers and acquisitions. According to Brynjolfsson et al. (2002) the presence of intangible organisational assets can be observed in at least three ways: specific changes that firms make may be directly observable as firms sometimes try to highlight their

investments in these areas offering tours to customers; the effect of these changes on a firm's market valuation should be measurable and reflected in firm's market value; and should provide real returns in the form of higher output over time. According to Sullivan (1998) to manage and extract value from intellectual capital, a company must understand the context in which it operates and be able to define its own value.

Bontis et al. (1999) identify four approaches to measuring intangibles: the human resource accounting approach, economic value added approach, balanced scorecard approach and intellectual capital approaches. Similarly, according to Sveiby (2001), intangibles fall into at least four categories of measurement approaches: the direct intellectual capital methods (DIC), the market capitalisation methods (MCM), the return on assets methods (ROA) and the scorecard methods (SC). Also refer to Table G.1 for comprehensive measurement list compiled (Sveiby, 2001). In addition, Sveiby (2001) argues that the methods offer both advantages and disadvantages. For example, ROA and MCM methods are suited for mergers and acquisitions but because it puts everything in monetary terms it may be viewed as superficial. While the DIC and SC methods create a more comprehensive picture of an organisation's health than just financial metrics. Their disadvantage is that they are contextual and so do not help with cross organisational benchmarking. The question therefore is which of these methods highlighted above would be appropriate in the context of projects and project management? First of all, it was already established from the review of extant literature that the different models and perspectives had a common fundamental basis; they were developed with permanent organisations as the context. In addition, with the focus of the author's research on the intangible benefits derived from project management deployment, the ROA and MCM were not suitable. Similarly as the DIC and SC methods were more contextual and more suited to the context of permanent organisations, the author recognised that any measurement approach taken must be adaptable to the project context and allow for comparison across types of project organisations or projects depending on the research design. Bontis et al. (1999) gave a summary of intellectual capital as one of the items in their review of knowledge tool box shown in Table 3.5 Bontis and colleague however state that the IC approach also has advantages and disadvantages.

Table 3.6: Intellectual Capital Summary

Primary Rationale	Advantages	Disadvantages
A good part of the value generated by a company comes from intangible resources, and therefore these resources need	<ul style="list-style-type: none"> • Flexible • dynamic model • partial external comparison possible • applicable also to not-for-profit organisations 	<ul style="list-style-type: none"> • confusing literature • metric development is still at early stages; • too much concentration on stocks at the expense of flows

to be monitored like the physical ones if possible		
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Source: (Bontis et al., 1999)

The advantage is that it is flexible and dynamic, can allow for partial external comparison and applies also to not for profit organisations (i.e. not motivated by profit). The disadvantages include existing confusing literature, infancy of metric development, concentration on stocks at the expense of flows (i.e. a considering at a point in time as opposed to over time perspective). This is important because while the rationale for IC is clearly accepted, more work is required to overcome the disadvantages. Consequently, the author reasoned that the methods discussed by Sveiby (2001) and Bontis et al. (1999) were more suited to permanent organisations and a modified or different approach based on extant literature in the area of project management may be more appropriate to measuring the intangibles generated by project management. Particularly as project management involved multiple stakeholders with different configurations of linkages, different levels of trust, respect and friendship; different values, language, codes and narratives; and different ability across individuals, teams and organisations a different approach was required. Therefore, the author came to the pragmatic decision that whilst the IC approach was more suitable to investigate the intangibles generated from project management deployment in project based organisations as it was not burdened by the conditions of the resource based view, the method of measurement had to be more suited to contextualisation of the project context taking into account extant project management literature and project management practice.

3.7 It is about Sound Deployment

Lev opines that the abnormal profits, dominant competitive positions and sometimes even temporary monopolies achieved by organisations is as a result of the sound deployment of intangibles along with other types of assets (Lev, 2001). Brooking (1996) opines that the continuing management of cash, buildings and machinery is essential to the success of third millennium enterprises; but must be balanced by effective management of intangible assets to gain competitive advantage. Brooking (1996) states that companies live and die by their competitive advantage or lack of it and yet in this dynamic business environment, most organisations do not know what their intangible assets are, what they are worth or how to manage them. According to Roos et al. (1997) 'in the modern business world, the business imperative is to manage intellectual capital or die' and also state that good management has become much more than management of hard assets and 'human resources'. Roos et al.

(1997) opine that the ability to visualise, measure and report growth or decline in the company's intellectual capital will become increasingly important. Bontis and colleagues opine that in the information age, products and companies live and die on information and that the most successful companies are the ones who use their intangible assets better and faster (Bontis et al., 1999).

There are five key points highlighted in this section, that intellectual capital development needs sound deployment; a need for a balanced approach to manage tangible and intangible assets; that many organisations don't know the worth of their intangible assets and how to manage it, that intellectual capital management will become more important, and it will not just be about sound deployment but about doing it better and faster. The author recognises that the five key points will have implications for project based organisations as project management have been used traditionally by sectors such as Construction, Defence and Aerospace and the author argues that intangibles have always been generated whenever project management had been deployed. But the importance and contribution of intangibles as a result of deploying project management have become increasingly important and are projected to continue in this trajectory. The pressure exerted by globalisation, over competition and the knowledge economy facilitated by advances in information technology and telecommunication affects all organisations. This pressure is also driving the changes to project management deployment in organisations. According to Keegan and Turner (2001) an increasing number of project based organisations are encountering the dual pressures of upgrading their efforts from volume to value, generating customer intimacy and tailoring their efforts to generating solutions that are genuinely valuable for clients. Keegan and Turner conclude that project based organisations must remain employable in today's business environment and Aritua et al. (2009) argue that the delivery of projects as a means to achieve strategic goals has gained prominence. Moodley et al. (2008) also point to the fact that the construction industry today is a global industry and in this context contractors and consultants operate across international markets with implications for patterns of work and responsibilities. Consequently, there is need to investigate the intangible benefits from project management deployment to complement the prevalent tangible approaches, to help organisations know the worth of intangible benefits to the organisation and how to manage it, helping them to organise their intangible resources better and faster.

3.8 Rationale for Research

As already been argued in the chapter 2 there is limited research on the intangible dimensions of benefit management. However, in the light of the discussions in the preceding sections of

this chapter as a first step to articulating the rationale for this research, it is logical to investigate how the concept of intellectual capital has been captured in extant project management literature. Therefore, the author used content analysis and searched in all dates for “intellectual capital”, “organisational capital”, “human capital” and “social capital” in the title or keywords of articles in the International Journal of Project Management (IJPM) and the Project Management Journal (PMJ). These two journals are highly reputed for their contribution to project management theory and were therefore considered good authority to establish the thinking in project management (Chiocchio and Hobbs, 2014). The results are shown in Table 3.6.

Table 3.7: IC, OC, HC and SC as Search Terms in IJPM and PMJ

Search Term	Look in	International Journal of Project Management	Project Management Journal
Intellectual capital (IC)	Title	2 results Turner, Maylor and Swart (2015) London and Silver (2011)	No result
	Keywords	1 result Turner, Maylor and Swart (2015)	1 result Turner et al (2014)
Organisational Capital (OC)	Title	No result	No result
	Keywords	1 result Vincenzo and Mascia (2012)	No result
Human Capital (HC)	Title	1 result Brown, Adams and Amjad (2007)	1 result Suhonen and Paasivaara (2011)
	Keywords	1 result Brown, Adams and Amjad (2007)	1 result Suhonen and Paasivaara (2011)
Social capital (SC)	Title	3 results Lee, Park and Lee (2015) Bartsch, Eber and Maurer (2013) Vincenzo and Mascia (2012)	No result
	Keywords	5 results Lee, Park and Lee (2015) Bartsch, Eber and Maurer (2013) Vincenzo and Mascia (2012) Brookes et al (2006) Han and Hovav (2013)	1 result Hsu et al (2013)
Total		8 unique returned articles	3 unique returned articles

The search term IC returned two results in the IJPM and none in the PMJ searching only in the titles, however, by searching in the keywords one result each was returned and the papers were by some of the same authors. A search of the term OC returned no result searching article titles in the IJPM or PMJ; however, one result was returned from searching in the keywords of the IJPM and none for the PMJ. A search of the term HC in the IJPM returned

only one and the same result for searching title and keywords of articles, similar to the return by the PMJ, however of different authors. The search term social capital returned three results searching the title of articles in the IJPM but no return from the PMJ. However, searching the keywords returned five articles in the IJPM, three of which were already returned by searching the title and one result from the PMJ. There were 11 unique returns in all. From the quantitative content analysis, it is glaring first of all that intellectual capital and the three components organisational, human and social capital are not high on the agenda of project management researchers. However, there has been more activity since 2011 with nine papers returned between 2011 and 2015.

It is also instructive that the search term intellectual capital was only introduced by the papers of 2015 in the IJPM and PMJ which have some common authors between them. In these two papers, the authors take a knowledge based view of the firm equating IC to knowledge similar to Bontis (1998) and decompose it into organisational, human and social capital similar to Kang and Snell (2009). A possible reason for little reference to IC in the two leading PM journals is articulated by Bontis et al. (1999) who say that IC is very much a practitioner-created concept. It also became apparent that there was limited extant research around intellectual capital and its components organisational, human and social capital using them as the search term in the extant project management literature.

Project management and how it is defined and the perception of value it creates has evolved over time (Burke and Barron, 1997). This is consistent with the argument that project management deployment contributes to competitiveness (see section 2.3). The concept of evolution with time suggests that the tangible and intangible benefits of project management have also evolved as the needs and requirements of organisations have changed over the years. Identifying these intangible benefits and understanding how they are created will inform how to manage, measure and be innovative in the use of project management to help drive competitiveness of the executing organisation.

Whilst more is known about intangibles from an intellectual capital perspective, more understanding is required about how project management generates intangible benefits. The author has therefore summarised why intangible benefits matter for value from project management deployment, therefore for project management practice and project based organisations.

1. It matters for permanent organisations as the gap between book value and market value has been argued to be as a result of intangible value (Kaplan and Norton 2004, Roos et al 1997, Brooking 1996, Lev 2001). Intellectual capital management will become more important, it will not just be about sound deployment but about doing it better and faster. Therefore, it

matters for project management and project based organisations as they exist in the same business environment and project based organisations must remain employable (Keegan and Turner, 2001)

2. How organisations create value due to effects of globalisation and over-competition; influencing the business strategies of organisations informing mergers and acquisitions (Carillo, 2001; Delaney and Wamuziri, 2001; PWC, 2012); knowledge management strategy and the tools that support it (Prencipe and Tell, 2001); and new forms of division of labour, competitive products based on more complex scientific knowledge and more demanding customers (Welzl 2011). In addition, the type of product/services offered (Wikström et al., 2010; Kerzner, 2006) and the move towards service based project deliverables and solutions not just products or services (Wikström et al., 2010).

3. Furthermore, organisations that deploy project management cannot quantify what value the project management deployment contributes to their competitiveness (Mathur et al., 2007) and in so doing contributes to the ongoing debate on the value from project management deployment.

4. Traditional none users of project management now deploy project management as part of operations or business (Thiry and Deguire, 2007; Gareis, 1991) and as coping mechanism (Hobbs et al., 2008; Hurt and Thomas, 2009) even though projects mostly miss targets for time, cost and quality (Ojiako et al., 2008). The author argues that the intangible benefits generated, at least partly, explain the motivation for deployment of project management.

3.9 Implications for Further Research

In the light of the new understanding, it is recognised that the changing value contribution between tangible and intangibles therefore have implications for how project based organisations do things with consequences for project management stakeholders. In addition, there are expectations that with better understanding of how intangible benefits are derived from project management deployment, organisations will be better able to increase their market value. There are also expectations that better understanding of the generation of intangible benefits will be reflected in the way the organisation operates and organises its resources such that the increase in market value should over time impact the book value of the project based organisation. Importantly, attention has also be drawn to the role that shareholders play in shaping the criticality of intangible benefits derived from project management deployment. This is particularly observed where the issue of measurement is critical in reporting back to shareholders on the market or book value of the project based

organisation. However, disbenefits from project management deployment are also likely to accrue, therefore part of the objective of understanding how the intangible benefits from project management deployment is derived is to help organisations develop the ability to minimise the disbenefits that also accrues.

It has also been highlighted that whilst intangible benefits derived from project management deployment improve the competitiveness of project based organisations, it is also impacted by how the tangible resources are organised and generated. So whilst the focus of this research is on the intangible benefits derived from project management deployment, it is recognised that the tangible aspects of project management deployment cannot be overlooked. This is because a project based organisation that is struggling to organise the tangible aspects of project management deployment that is easier to copy and replicate by a competitor is unlikely to be concerned about or able to identify or manage the intangible benefits derived from its project management deployment. Therefore how the project based organisation organises its resources have implications for the generation of intangible and tangible benefits derived and the relationship between the tangible and intangible aspects of project management deployment is also important. More importantly, it has been demonstrated that the intellectual capital approach is not limited by the conditions of the resource based view or its extensions, the knowledge based view or the capabilities based view.

The author is of the view that by investigating intangibles generated in organisations in industries that are traditionally known to use project management, more light can be shed on how they are generated, their characteristics and how they contribute to competitiveness. The result from the content analysis discussed in section 3.8 has highlighted the fact that there is limited research on project management from an intellectual capital point of view. The author also recognises that similar to the approach used in this chapter, the components of intellectual capital can be decomposed using their definitions and using the resulting key words as search terms in extant project management literature may be used to identify demonstrate that aspects of intellectual capital have been captured in extant literature. However, the understanding about intangible benefits from project management deployment will still be limited as it will be purely grounded in extant project management literature with the flaw of being too mechanistic. In addition, it may omit other benefits of project management captured differently in extant project management literature.

Therefore, a more coherent approach to investigating the intangible benefits derived from project management is required, informed by what benefits have already been captured in

extant project management literature and informed by findings from intellectual capital in permanent organisations and combining both a theoretical and empirical approach. The theoretical approach would ground the research in extant project management literature whilst the empirical would allow for an interpretivist approach. The result from the content analysis discussed in section 3.8 supports the reasoning that grounding the research in extant literature requires a different approach where benefits of project management deployment are first identified from extant literature. In addition, the key aspects of organisational, human and social capital populated in Table 3.3 will be useful in generating the appropriate data set to empirically investigate the intangible benefits derived from project management deployment. Furthermore, the empirical research will be conducted specifically in the construction industry that manages by project. In construction organisations, project management is deployed using different ways of organising, and it can also be deployed in a project that is set up as a firm to deliver that project and that project only. In addition, the coherent approach must consider that within the context of project management, intangibility must also meet the criteria for immateriality and realisation of value. More fundamentally, because project deployment occurs in phases through the project lifecycle, there are implications for the generation of the intangible benefits of project management deployment. Therefore, the coherent approach to investigating the intangible benefits should recognise that intangible benefits can accrue while the project is ongoing (across project lifecycle) and after the project has been completed (product lifecycle).

3.10 Summary

This chapter has established the argument that intellectual capital is a primary source of competitive advantage primarily due to the changing ratio of contribution of intangible and tangible assets. This is facilitated by globalisation i.e. over-competition, information technology and communications, also described as the knowledge economy characterised by sophisticated workforce and diminishing strategies for profitability. Intellectual capital is intangible, hidden, takes organisational effort to realise and introduces issues of opportunity costs and trade-offs. It also has a long term effect on the organisation and evidenced in the gap between the market value and the book value of organisations. It was also pointed out that intellectual capital is about sound deployment, a balanced approach to tangible and intangible asset of the organisation. It has been projected that it will be increasingly important and will also become about the speed and how well organisation deploy their intangible assets. In addition, intangible benefits can be negative and are referred to as disbenefits.

The findings have highlighted several points that need to be considered. It was found that intellectual capital is often discussed by decomposing it into components and there was no consensus on terminology used. It was also found that intellectual capital was considered from the point of view of permanent organisations that didn't manage by projects. The findings showed that all the components required human input and that there was a time lag between investing in intangibles and the benefits accruing. Organisational, human and social capital were also defined and discussed. While organisational capital is focused on the organisation, human capital is focused on people. Social capital is focused on the relationship that people have and the resources that can be accessed from the network. The use of content analysis on extant project management revealed that limited research had been done from an intellectual capital point of view and support the reasoning that a first step was to identify benefits of project management deployment as captured in extant literature which can then be mapped onto the key findings from the intellectual capital approach based on the new understanding garnered. Therefore, it has been argued that a coherent approach to investigating the intangible benefits derived from project management is required, informed by what benefits have already been captured in extant project management literature and informed by findings from intellectual capital in permanent organisations and combining both a theoretical and empirical approach. The intellectual capital approach has been argued to be the most appropriate to investigate intangibles from the perspective of project management deployment as it is not limited by the conditions of the resource based view or its extensions, the knowledge based view and the capabilities based view whilst still focusing on the intangible.

Chapter 4 Research Methodology

It has been established from extant literature that intellectual capital also matter for project based organisations. This chapter details potential research methodologies and research design used and the justification. The research design for objective 1 was then discussed including the data analysis. The research design for objective 2 was also discussed including the research design and process, case selection and access, background of participating organisations, questions pre-test, pilot study, and data collection and analysis. The research design for objective 3 was also discussed focusing on the data analysis. The research design for objective 4 was then discussed and the chapter summarised.

4.1 Research Approaches and Design

According to Cresswell (2008), the worldview influences whether qualitative, quantitative or a mixed method approach is chosen. To be able to articulate the rationale for a research design and methodology, the researcher has to understand the relationship between his view of reality (ontology) and the meaning ascribed to knowledge and its creation (epistemology) (Darlaston-Jones, 2007). The worldviews by Cresswell (2008) are discussed below:

The Postpositivist Worldview: The postpositivist assumptions have represented the traditional form of research and these assumptions hold true more for quantitative research than qualitative research. This worldview is sometimes called the scientific method or doing science research. It is also called positivist/post positivist research, empirical science and postpositivism.

The Socio Constructivist Worldview: Socio Constructivist holds assumptions that individuals seek understanding of the world in which they live and work. Individuals develop subjective meanings of their experiences-meanings directed towards certain objects or things. These meanings are varied and multiple, leading the researcher to look for the complexity of views rather than the narrowing meanings into a few categories or ideas.

The Advocacy and Participatory Worldview: Another group of researchers hold to the philosophical assumptions of the advocacy/participatory approach. This position arose during the 1980s and 1990s from the individuals who felt that the postpositivist assumptions imposed structural laws and theories that did not fit the marginalised individuals in society or issues of social justice that needed to be addressed. This worldview holds that research inquiry needs to be intertwined with politics and a political agenda. The research contains an action agenda for reform that may change the lives of the participants, the institutions in which the individuals work or live, and the researcher's life.

The Pragmatic Worldview: Pragmatism is not committed to any one system of philosophy and reality. This applies to mixed methods research in that inquirers draw liberally from both quantitative and qualitative assumptions when they engage in their research. Pragmatists agree that research always occurs in social, historical, political, and other contexts. In this way, mixed methods studies may include a postmodern turn, a theoretical lens that is reflective of social justice and political aims.

While no one worldview can be considered as best, according to Jick (1979), the pragmatic view provides the most appropriate approach to researching projects. Raftery and colleagues argue that construction management is wide and diverse and there is a need to adapt a multi-method approach to research (Raftery et al., 1997). According to Jick (1979), multiple methods are used under the conception that qualitative and quantitative methods should be viewed as complimentary rather than rival camps. Triangulation may be used not only to examine the same phenomenon from multiple perspectives for new or deeper dimensions to emerge. In all the various triangulation designs one basic assumption is that the effectiveness of triangulation rests on the premise that the weaknesses in each single method will be compensated by the counter-balancing strengths of another.

Cresswell (2008) defines methodology as types of qualitative, quantitative, and mixed methods design or models that provide specific direction for procedures in research design. According to Dainty (2010) research methodology refers to far more than the methods adopted in a particular study and encompasses the rationale and philosophical assumption that underlie a particular theory. These in turn, influence the actual research methods that are used to investigate a problem and to collect, analyse and interpret data. In other words, research methods cannot be viewed in isolation from the ontological and epistemological position adopted by the researcher. Ontology according to Corcho and colleagues is a word taken from philosophy where it means a systematic explanation of being (Corcho et al., 2003). For Dainty (2010) ontology can be broadly referred to as conceptions of reality. Epistemology on the other hand according to the Stanford Encyclopaedia of Philosophy can narrowly be defined as the study of knowledge and justified belief (Matthias, 2005). Epistemology is a consequence of the context in which the action occurs and is shaped by the cultural, historical, and social norms that operate within the context and time (Darlaston-Jones, 2007). The epistemological contribution to research is essentially theoretical; it has to do with theories of knowledge (Carter and Little, 2007).

Quantitative and qualitative approaches are strongly associated with objectivity (quantitative) and subjectivity (qualitative) respectively (Hughes, 2006). Tshakkori and Teddlie (1998) opine that the term 'mixed method' typically refers to both data collection techniques and the

analyses given that the type of data collected is so intertwined with the type of analysis used. Qualitative research provides a means of accessing unquantifiable facts about actual people researchers observe and talk to (Berg, 2009) and researchers speak a language of 'cases and contexts' (Neuman, 2003). According to Hughes (2006), the problem of adequate validity or reliability is a major criticism because of the subjective nature of qualitative data and the viewpoints of both researcher and participants have to be identified and elucidated because of issues of bias. For example, the structured interview schedule used in a case study can gather data that are both objective (fact: e.g. what project management methodology is used in your organisation) and subjective (opinion/perception: what is the most effective way to share knowledge in your organisation). Another weakness is that contexts, situations, events, conditions and interactions cannot be replicated therefore challenging generalisations (Hughes 2006).

In contrast, quantitative methods seek to gather factual data, to study relationships between facts and how such facts and relationships accord with theories and the finding of any research executed previously (Fellows and Liu, 2008). In quantitative research, researchers speak a language of 'variables and hypotheses' (Neuman, 2003) and use reliable measurement, is controlled, uses statistical techniques to allow for sophisticated analyses and is replicable (Hughes, 2006). Some of the weaknesses of quantitative research are that quantification may become the end in itself and does not take into account peoples' unique ability to interpret their experiences, construct their own meanings and act on these (Hughes, 2006).

Tshakkori and Teddlie (1998) state that the term 'mixed method' typically refers to both data collection techniques and the analyses given that the type of data collected is so intertwined with the type of analysis used. Johnson and Onwuegbuezie (2004) define the mixed method research as "the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study".

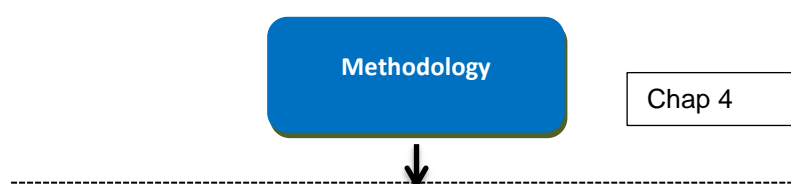
To gather data whether through qualitative, quantitative or mixed methods, several research methods can be used including interviews, case studies, surveys, experiments, observation, measurement, photography and questionnaires Yin (2003). Fellows and Liu (2008) also include content analysis as a research strategy. The different research methods have their strengths and weaknesses and in selecting the ones applied in this research, critical evaluation of the available methods was undertaken (Darlaston-Jones, 2007).

According to Fellows and Liu (2008) action research involves participation by the researcher in the process under study, in order to identify, promote and evaluate problems and potential solutions. Fendt and Sachs (2007) consider grounded theory method to be essential research

method for the development of new insights into social phenomena and involve the generation of theory from data through inductive and deductive thinking. Fellows and Liu (2008) state that the experimental style of research is best suited to 'bounded' problems or issues in which the variables involved are known, or at least hypothesised with some confidence. According to Cresswell (2008) ethnography is a strategy of inquiry in which the researcher studies an intact cultural group in a natural setting over a prolonged period of time by collecting primarily observational and interview data. Krippendorff (2004) defines content analysis as "a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the context of their use". Content analysis could be quantitative e.g. used in media research or qualitative e.g. used in nursing and education (Graneheim and Lundma, 2003). According to Neuman (2003), to use a survey, the researcher often uses sample or a smaller group from a larger group of people and then generalises the results from the survey for that larger group or population. Surveys operate on the basis of statistical sampling with samples commonly surveyed through questionnaires or interviews (Fellows and Liu, 2008). Yin (2003) is of view that the case study method is an empirical inquiry that investigates a contemporary phenomenon within its real-life context especially when the boundaries between phenomenon and context are not clearly evident. According to Eisenhardt (1989) case studies typically combine data collection methods such that triangulation of data is possible providing stronger substantiation of constructs and hypotheses. Similarly, Yin (2003) argues that by using multiple case studies, the research is considered more robust. In addition, Yin (2003) opines that case studies provide the opportunity for analytical generalization whether in single (from theory) or multiple case study (predict similar results (literal replication) or predict contrasting results but for predictable reason (theoretical replication)).

4.2 Research Design to achieve Research Objectives

The research design for the objectives of this research is discussed in sections 4.2.1 to 4.2.4. In section 4.2.1, the research design for objective 1 is discussed. In section 4.2.2, the research objective for objective 2 is discussed. Similarly, in section 4.2.3 the research design for objective 3 is set out and lastly in section 4.2.4, the research design for objective 4 is set out. The research design for this research is shown diagrammatically in Figure 4.1 and subsequently discussed.



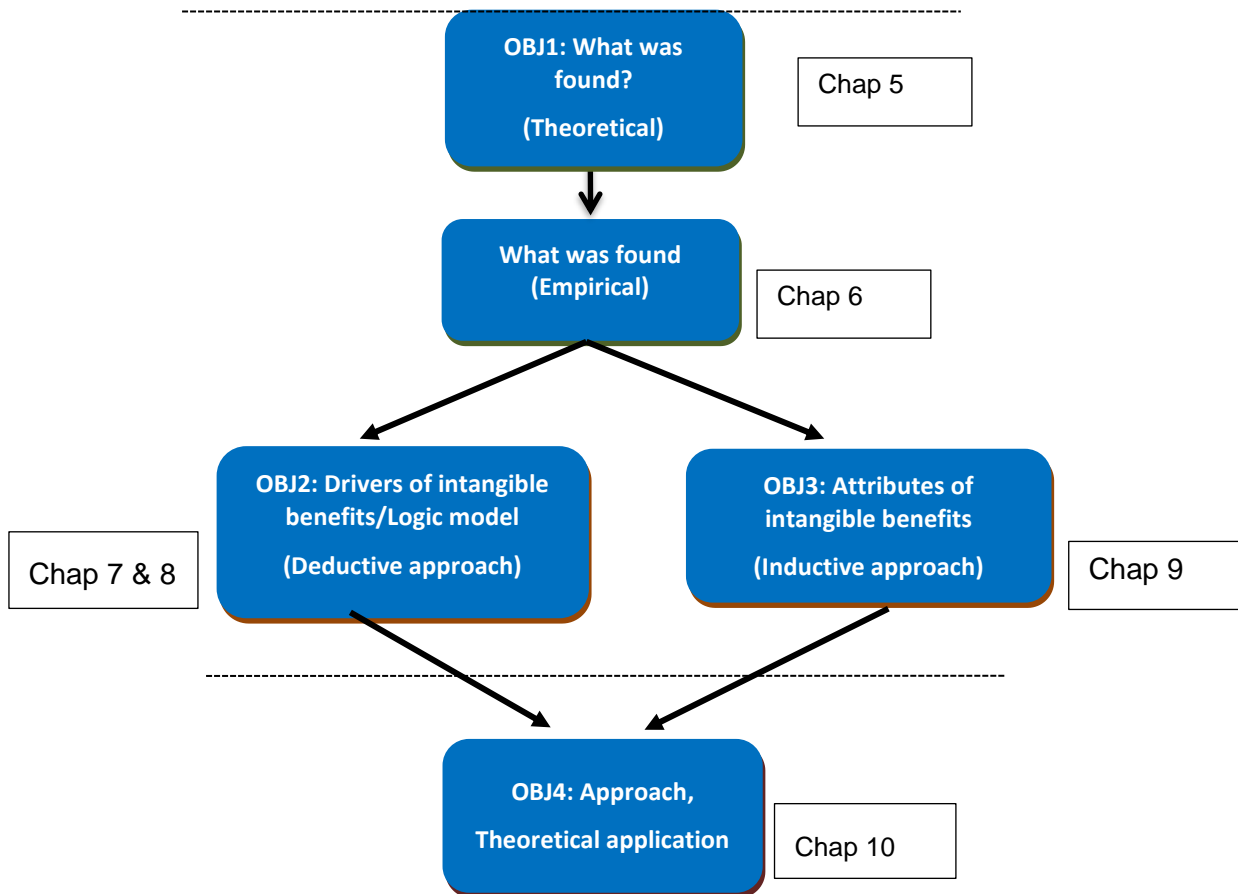


Figure 4.1: Showing Thesis Research Design

4.2.1 Research Design for Objective 1

The theoretical approach is based on the premise that organisations deploy project management which generates intangible benefits that help organisations to be competitive. The different research methods have their strengths and weaknesses and in designing the appropriate one to be used for this objective, the different research methods are discussed briefly. Action research is suitable for investigation of current issues and therefore is not suitable for investigating contents of existing literature. Grounded theory is suitable for involves generation of theory from data, however the concern of this objective it to identify what other researchers have said is the benefit of project management and identify which fall into the intangible group. Therefore, grounded theory is inappropriate. Experiments are also inappropriate as they cannot be used to investigate contents of existing literature. Ethnography which investigate real life human phenomenon in their natural setting is also inappropriate for investigating content of existing literature. Surveys are also not appropriate to investigate

content of existing literature. Case study approach is also inappropriate to investigate the content of existing literature.

However, content analysis is suitable because it is complementary to literature review as it can help make sense of the information been found out. Content analysis is a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use (Krippendorff, 2004). Content analysis uses abductive inferences which process across logically distinct domains from particulars of one kind to particulars of another kind; for example, by been aware of the sounds and vocabulary that babies make, one can infer the age of children from the sounds or vocabulary they use (Krippendorff, 2004). Hart (1998) says that a systematic search and critical reading of the literature is essential to contributing to knowledge. Therefore, qualitative content analysis using both frequency and latent content analysis that is interpretation of content (Hsieh and Shannon 2005) on the journal articles and relevant text books and online articles was conducted on literature reviewed on value both from the perspective of permanent organisation and organisations that deploy project management as shown Figure 4.2. Content analysis has been applied in the project management research field evidence by work by Kolltveit et al (2007) who used content analysis on selected text books on project management to investigate what perspective today's authors mostly used in the field of project management. The choice of content analysis was based on the fact that content analysis of what is published reveals what is thought to be important and disseminated also influencing what is used. Similarly, Yu et al (2006) conducted a qualitative content analysis on data generated from survey questionnaires investigating the critical success factors of construction project briefing. This approach was similar to that of Svejvig and Andersen (2015) that used a structured literature review approach on existing Rethinking Project Management literature

The unit of analysis: Kassarian (1977) identified five units of analysis; word or phrase, theme, character, item and space and time measures. In extant literature content analysis using words as the unit of analysis has been used in the project management discipline (Kolltveit et al, 2007; Yu et al., 2006). The units of analysis for this research were words and phrases:

The search terms “organisational value”, “intangible assets”, intellectual capital” in extant literature from the perspective of permanent organisations

The search terms “value and project management”, “intangibles and project management”, “intangible assets and project management”, “intellectual capital and project management” from the perspective of organisations that deploy project management

Furthermore, the search terms “project management benefits” and “project management” and “benefits” from the perspective of organisations that deploy project management.

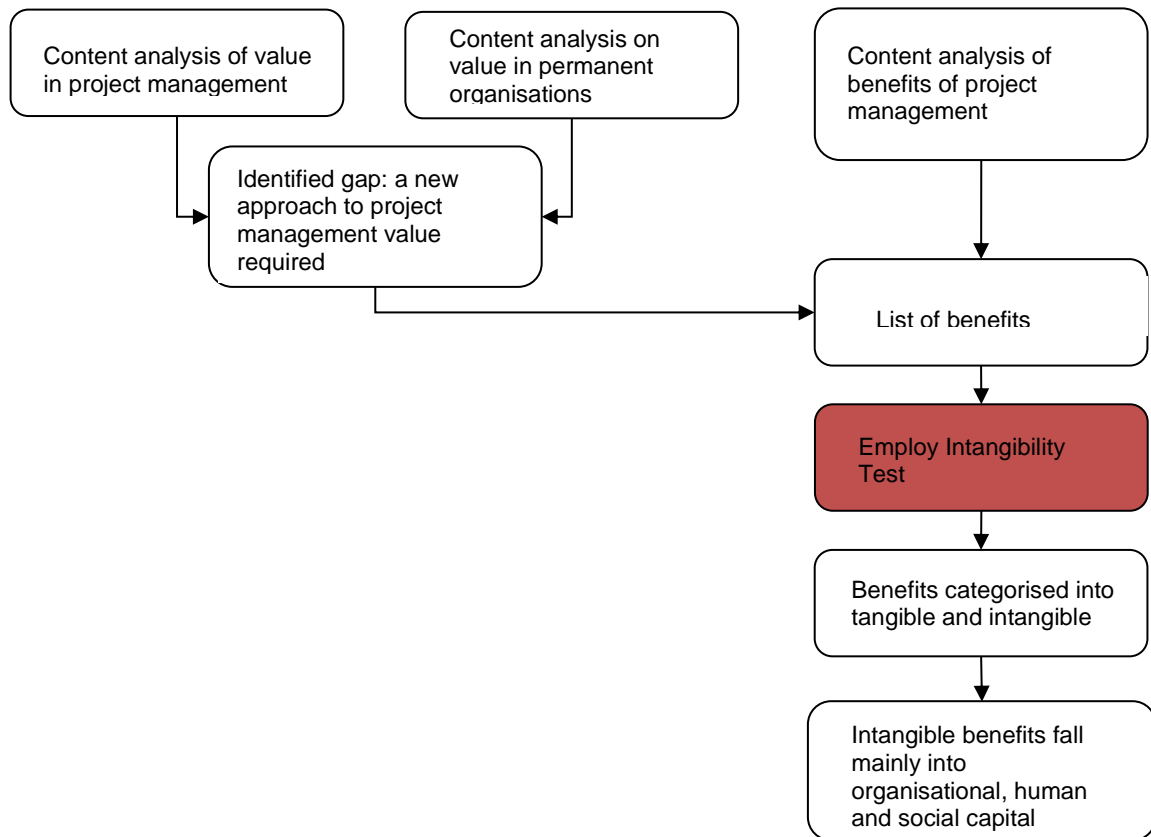


Figure 4.2: Research Approach

Data collection: Based on common databases (Business Source Premier, Science Direct, Wiley Online library and ASCE library); from project management Journals, specifically- the PMJ and the IJPM and relevant text books and online articles. The data sources are shown in **Error! Reference source not found.**

Table 4.1: Data Sources

Source: Journal/Book	Number	Author and year
IJPM	11	Ahlemann et al 2008 White and Fortune (2000) Canonico and Suderlund (2010) Thiry and Deguire (2007) Keegan (2004) Huemann (2010) Adenfelt (2010) Gareis (1991) Martinsuo and Ahola (2010), Becerik (2000) Gareis (1989)
PMJ	2	Hurt and Thomas (2009)

		Thomas and Mullaly (2007)
Books	3	Kerzner (2006) Melton et al (2008) Kousholt (2007)
PICNET Conference proceedings	1	Becerik (2006)
Long Range Planning	1	Whittington et al (2006)
IEEE	1	Shuping (2009)
European Management Journal	1	Harvey and Lusch (1999)
Decision Support System	1	Van Alstyne et al (1995)
TOTAL (number of sources)	21	

The terms were searched for in the Title, Abstract and Author supplied keywords search boxes in the databases. The first approach was to search using only Title search box and then extended to Abstract and Abstract and Keyword. This was because some search engines predetermine what search boxes can be combined. This was done strictly for quantitative content analysis.

A second approach was to use latent content analysis with regards to searches involving value and project management deployment and the terms “intangibles”, “intangible assets”, “intellectual capital” and “project management” from the perspective of organisations that deploy project management. This search was conducted using everywhere boxes after the first approach did not return adequate articles.

However, the input of two other papers were also included, that of Harvey and Lusch (1999) and Van Alstyne et al (1995) especially to introduce the terms “intangible liabilities or dis-benefits”. This term was introduced to ensure that the negative benefits/dis-benefits of project management deployment was also captured.

Data analysis: Conventional content analysis was used (frequency of text) for “organisational value” in extant literature from the perspective of permanent organisations. The initial findings indicated that value was viewed in financial and non-financial terms. Based on knowledge gathered from literature reviewed, further investigation was conducted on non-financial aspects with the search terms intangible assets and intellectual capital and were also found to be used interchangeably in some instances. With regards to the search term “value and project management” a mixed result was returned from the databases referring to value from the perspective of earned value management, value management or value engineering and in terms of project business i.e. similar to how it is viewed in permanent organisations. The findings also showed a skewed view of value in the IJPM and PMJ in the sense that in comparison, based on returned articles titles, value was perceived more from the perspective of earned value management (and value management and engineering) in the IJPM than the PMJ. From further investigation, it was found that to identify value from the perspective of

project management deployment, the search terms “intangible assets” and “intellectual capital” and “project management” were also required. By using the new search terms, it was found that the IJPM actually had more relevant articles to the research compared to the PMJ. It was also found that when value was referred to similar to permanent organisations it was often addressed in terms of benefits. Therefore, the search term “benefits” and “project management” and “project management benefits” were also introduced and investigated and qualitative content analysis was also employed for returned journal articles, books and so on. This was necessary because value means different things to different stakeholders and influenced by the perspective of the writer.

Furthermore, to determine if a benefit from project management deployment is tangible or intangible it would need to satisfy the two conditions which have been established from extant literature as critical to determining if a benefit is intangible called the intangibility test:

- Immateriality i.e. not tangible, not easily identifiable or concrete
- The value of the asset must be difficult to measure precisely

Due to the inherent nature of intangibility, it was important that benefits indicated to be intangible were arrived at in a rational and scientific manner. To ensure that the benefit categorisation process was robust, the intangibility test was developed. The list generated was then subjected to the intangibility test. Two steps were required in applying the intangibility test to a list of benefits carried out by an individual or group of people with the relevant knowledge and information about the organisation. The first step categorises benefits clearly as tangible and others as intangible benefits. The second step involves the reapplication of the intangibility test to intangible and tangible benefits that fall into the fuzzy category. The fuzzy category refers to benefits that have been categorised as both tangible and intangible by different persons depending on the knowledge and experience of the person categorising in the first step. This is done through one or more cycles (e.g. meetings) to reach a consensus. The assumptions or rationale for consensus must be captured so that it is repeatable. The research supervisors and colleagues involved in projects (research and practice) were asked to categorise the benefits on the list into tangible and intangible benefits.

Validity and Reliability: The issue of trustworthiness of the sources been investigated was not considered because reliable database was used and the IJPM and the PMJ were particularly consulted as the findings will be further tested by the multiple case study research method. The author achieved category reliability by carefully selecting the unit of analysis- the

search phrases for permanent organisations and organisations that deploy project management. This was to ensure that it is reproducible. The categorisation of benefits into tangible and intangible benefits was done by several people who had relevant experience of project management deployment to improve the validity of the research.

4.2.2 Research Design for Objective 2

The different research methods have their strengths and weaknesses and in designing the appropriate one to be used for this objective, the different research methods are discussed briefly. Action research requires active participation of the researcher in the process of enquiry and this requires a single case study and duration long enough for the researcher to be part of the whole experience. For the purpose of this research, a single case study will not be appropriate in achieving the research objectives and the author requires the perspective from different project based organisations in the construction industry. Grounded theory involves the generation of theory from data through inductive and deductive thinking. For the purpose of this research, this method is not appropriate as the development of theory is not the primary aim of this research. This research involves the investigation of intangibles that have already been identified in literature i.e. theoretically and seeks to confirm that this is the case in practice and to understand how and why and the relationships. Furthermore, the research seeks to understand to what extent intangible benefits are contextual and generic. Experiments are inappropriate for real life investigation (where variables are not clearly defined or even understood) of the generation of intangibles by project management deployment because of the complexity of a sociotechnical nature. It will be difficult to have a 'control' as people behave differently as they engage in project management deployment. This will also be difficult compounded by the fact that this research will involve multiple case study investigation. Ethnography as a method is inappropriate as the generation of intangibles generated from project management deployment does not require the author to become a part of the whole experience. The aim of this research is to understand what intangibles are generated by different projects in different organisations and to look for similarities or differences and not to understand why the project actors behave the way they do. Surveys provide essential information about a population based on a representative sample, but for the purpose of this research by itself as the research method to be adopted, it will not give the depth of information required to identify how the intangibles are generated from project management deployment. It will be appropriate in a follow-on study based on the findings of this research. Content analysis as a method is inappropriate for identifying the intangible benefits generated in practice and how.

However, case study is an appropriate method (Adenfelt, 2010; Gareis, 2010; Yin, 2003) have argued that the case study method can make use of several means of data collection. This is further evidenced in the work of by several researchers (Kasvi et al., 2003; Modig, 2007; Becerik, 2006; Wikström et al., 2010). The case study research method is the most appropriate of all the methods as it provides an avenue to investigate projects in different organisations and allows for cross case analysis. Some of the strengths are better understanding of real-life phenomenon in depth with contextual conditions (Yin, 2003; Merriam and Associates, 2002); provides the capability to build and test theories which will be essential in investigating the intangibles generated by project management deployment (Eisenhardt, 1989; Yin, 2003); uses both qualitative and quantitative strategies which help for triangulation of the investigation for reliability and better generalisation (Eisenhardt, 1989). Some of the criticism against case study research has been the possible lack of generalisation and external validity (Yin, 2003; Cresswell, 2008). But Yin (2003) argues that by using multiple case studies this can be minimised while (Eisenhardt, 1989) argues that by triangulating the data better external validity can be achieved. Yin (2009) state that there are six sources of evidence for case studies: documentation, archival records, interviews, direct observation, participant-observation and physical artefacts. The author argues that for the purpose of achieving the research objective, interview is the most appropriate source of evidence. According to Yin (2009), the interview is a guided conversation rather than structured queries. He mentions three types of interviews, the first, in-depth interview, which asks about the facts of the matter as well as their opinions. That is asking both objective and subjective questions. The second is a focused interview which is a shorter time duration compared to the in-depth interview; however, this follows certain questions derived from the protocol. A third type of interview is the structured interview along the lines of a formal survey which is designed as part of an embedded case study.

The research literature on project management intangibles so far is limited and fragmented; often touching different areas of project management work (PMOs (Hurt and Thomas, 2009), (real project experiences (Fortune and White, 2002)), (intangible aspects of project work (Aronson et al., 2013)). The use of the mixed method approach in project management research is evidenced from the literature review where several researchers have used the mixed method approach; combining mostly surveys, single/multiple case study and action research using research methods such as observations, interviews, use of company information from documents and websites etc. Examples include work by several researchers (Kasvi et al., 2003; Modig, 2007; Becerik, 2006; Wikström et al., 2010)

For this objective therefore, based on the arguments of the above a mixed method approach with qualitative and quantitative data was appropriate. The author used the multiple case

studies by employing an in-depth interview in phase 1 and focused interview in phase 2. However, the key decisions in choosing a mixed method approach according to Cresswell and Plano Clarck (2011) is to consider the level of interaction between the quantitative and qualitative strands, the priority of the strands, the timing of the strand and where and how to mix the strands. Applying this in the context of this research, the first phase uses an exploratory design where qualitative data collection and analysis is conducted which falls under the constructivists approach followed by a convergent parallel design which is a pragmatist approach in the second phase where both quantitative and qualitative data are collected concurrently as shown in Figure 4.3. The need for both concurrent qualitative and quantitative data in the second phase was driven by the fact that the author needed to collect data in one visit driven primarily by time and that both types of data play an important role in understanding the research problem. The cases were selected based on theoretical sampling (Eisenhardt and Graebner, 2007) and by implication the quantitative aspect was by purposive sampling (Battaglia, 2008), a type of non-probability sampling.

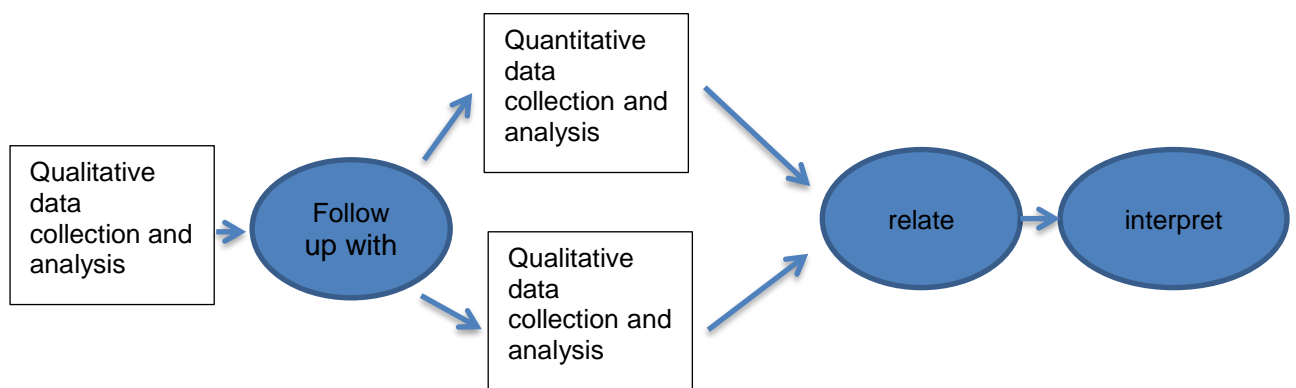


Figure 4.3: Research Design

Source: Adapted from Cresswell and Plano Clarck (2011)

How data is generated and interpreted is important in research, hence the need for a robust research design regardless of the methodology used whether quantitative, qualitative or mixed method. In the first phase, qualitative data was analysed using purely qualitative approaches, but in the second phase, each data type was analysed separately i.e. use of both qualitative and quantitative methods but converged for interpretation. The quantitative data was analysed using weighting procedures such as ranking (Battaglia, 2008) and simple statistical analysis.

Issues around construct validity and reliability during data collection (Yin 2003) are a primary concern for PhD researchers and a pilot study would shed light on them. According to Van Tiejlingen and Hundley (2001) the term 'pilot studies' refers to mini-versions of a full-scale study (also called feasibility studies) as well as the specific pre-testing of a particular research

instrument such as a questionnaire or interview schedule. However, a pilot study is not another name for small sample sizes; the term pilot study is inappropriate unless the study was designed to test research methods and unless the results are reported in terms of the feasibility of the methods examined (Foster, 2013). A pilot study is a critical element of a good study design but does not guarantee success in the main studies but increases the likelihood of success (Teijlingen and Hundley, 2001). There are discussions on the implications of qualitative and quantitative approaches in conducting pilot studies.

In addition to the other general reasons already discussed why doing a pilot study is essential, three primary reasons were also identified for why a pilot was essential in this research stated below:

1) This is an explanatory research with both subjective and objective aspects about people and their relationships and their interactions with technology, infrastructure and processes.

2) Multiple case studies take time and involve a lot of resources (including the preparation time of the researcher and that of the participants and their organisations) (Yin 2003, (Mason and Zuercher, 1995) therefore capturing the right data at the interview stage is critical. It is difficult and may also indicate a lack of careful planning to go back to the participating organisation to request for more time their employees to get more information a second time around.

Two other critical elements that were considered during the preparation for the pilot study were: 1) Criteria for pilot study success and 2) How the data will be interpreted. According to Thabare et al. (2010), it is important to state the criteria for success of a pilot study which should be based on the primary feasibility objectives as these provide the basis for interpreting the results of the pilot study and determining whether it is feasible to proceed to the main study. This is also echoed by Yin (2003). The author will therefore pre-test the interview instrument and treat the first organisation interviewed as the pilot case study to collect and analyse the data to ensure that the case study protocol is suitable.

4.2.2.1 Research Design and Process

It was demonstrated theoretically that intangible benefits derived from project management deployment generated organisational, human and social capital (see Figure 4.4). To understand and identify how organisational, human and social capital manifested in project based organisations in practice; the empirical approach was based on the theoretical

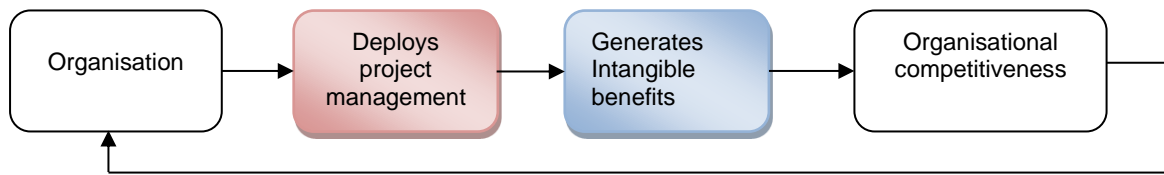


Figure 4.4: Theoretical Framework

orientation and helped to focus attention on what data to collect (Yin, 2009). The approach was to use multiple case study method with five participating organisations. In the first phase involving three organisations, using qualitative interview schedule (data generated from semi-structured interviews) the author investigated where and how intangible benefits and dis-benefits manifested in project based organisations. The lessons learnt and new insight was then used to develop the mixed qualitative and quantitative interview schedule for the focused interview in the second phase with two participating organisations. This is shown in Figure 4.5. The study was to validate the initial findings and understanding, and to identify the key contributors to intangible benefits derived.

However, project management deployment occurs throughout the project lifecycle from mandate through to commission and a decision about which phase in the project lifecycle would be ideal for this study was necessary. The execution phase (construction phase) was selected because many more stakeholders (internal and external) were involved in this phase. Furthermore, the work done in the initiation and planning phases were predominantly implemented in this phase and so most of the intangible benefits will be generated in this phase. The rationale being that the intangible benefits derived from project management did not change across the project lifecycle, but the extent to which individual contributors to organisational, human, social capital and reputation would change from phase to phase in the project lifecycle because of the predominant project activities in each phase.

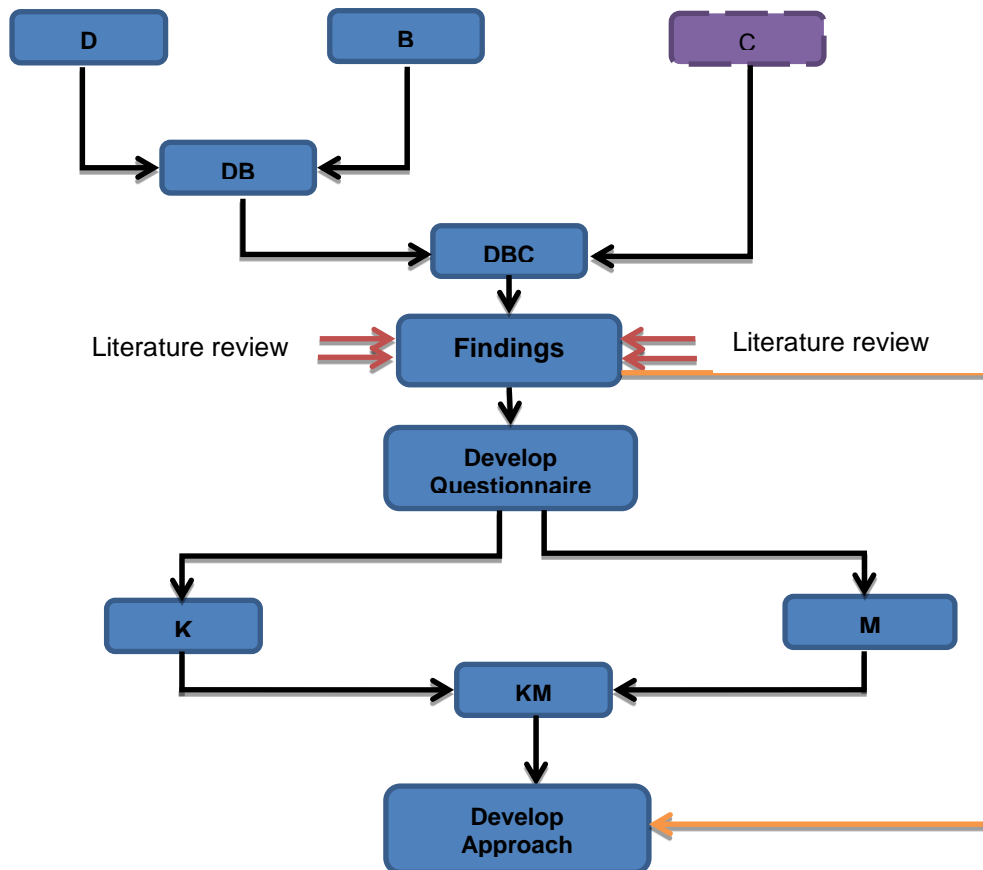


Figure 4.5: Showing Research Design using Multiple Case Studies undertaken in Five Organisations

This also highlighted project knowledge application areas and their role in the different project phases and hence the influence on the intangible benefits derived from project management deployment. A further argument was that some of the intangible benefits derived in the construction phase feeds directly into the initiation and planning phases of ongoing projects.

This research approach ensured the robustness of the research process and outcome. To address one of the criticisms of why case study i.e. why theory building and not theory testing Eisenhardt and Graebner (2007), the author demonstrated that a coherent approach to intellectual capital generated from project management deployment was not yet developed. This leads to another criticism of case studies why theoretical sampling and not statistical sampling, the authors response is that as a consequence of understanding how intangibles are generated from project based organisations in practice, there is the need for cases that provide the opportunity to do so. Theoretical sampling means that the cases were selected because they are particularly suited for illuminating and extending relationships and logic among constructs (Eisenhardt and Graebner, 2007). Another criticism against case study

research has been the possible lack of generalisation and external validity (Yin, 2003; Cresswell, 2008). The rationale for the use of case study research is based on analytical generalisation (Yin, 2003) and not statistical generalisation. Therefore, to ensure that the findings were robust the use of multiple case studies and not a single case study was adopted. Multiple case studies allow for cross case analysis, providing a stronger basis for theory building (Yin, 2003). Furthermore, the research design involved the use of semi-structured interviews in phase 1 and focused interview in phase 2. By conducting interviews using a qualitative interview schedule in the first phase, there was a better understanding of the intangible benefits from project management deployment and by conducting a focused interview in the second phase asking quantitative and qualitative questions, more light was shed on the initial findings, and the key contributors to intangible benefits were identified. Therefore, the approach allowed for a more rigorous approach to analytical generalisation.

4.2.2.2 Case Study Protocol

The case study protocol was developed to improve the reliability of the research findings (Yin, 2009). According to Yin, the case protocol is more than a questionnaire; it contains the instrument and also the procedures and general rules to be followed in using the protocol. It is essential for multiple case study.

4.2.2.2.1 Section A Introduction to the Case Study and Purpose of Protocol

This protocol serves as a guide for the author to conduct interviews in five organisations. The case study protocol comprised of four sections A-D. Section A introduces the protocol, the research proposition and the theoretical orientation. Section B discusses the data collection procedure. Section C discusses the plans for study report and section D, the questions and the interview schedule.

Research proposition: Project management deployment generates intangible benefits that contribute to organisational, human and social capital which helps organisations to be competitive.

For Theoretical framework please see 4.4

4.2.2.2.2 Section B Data collection procedure

1. Names of organisations A, B, C, D, K and M and contact persons for each (anonymised)
2. Interviews over the phone or face to face at client location.
3. Preparation prior to interviews onsite or over the phone.
 - Send case study protocol documents ahead. Please see Appendix A
 - Have initial introductory meeting if required or requested

4.2.2.2.3 Section C Outline of case study Report

Follow thematic approach as per theoretical framework that is use of table shell. Please see Appendix C.1

Leave room for emergent themes

4.2.2.2.4 Section D

Please see section 4.2.2.3 and 4.2.2.3 for discussion of the questions and Appendix B.3 for copies of the structured interview schedule

4.2.2.3 Developing the Questions for Fieldwork 1

The variables organisational, human and social capital was operationalised. This was captured using table shells (Miles and Huberman, 1994) indicating the data to be collected. The general question design therefore had three main sections for organisational, human and social capital and a section to understand the participants' strategic awareness of the subject matter and to triangulate some of the sub themes in the three main sections. The next step was questions pre-test in Organisation A to ensure the appropriateness and reliability of the research design instruments i.e. the appropriateness of the questions.

4.2.2.3.1 Developing the Questions Table Shell

In the light of the key intellectual capital components discussed in section 3.3, organisational, human and social capitals were operationalised which will be useful in generating the appropriate data that will address the research enquiry and populated in Table 4.2 in line with the theoretical framework.

Table 4.2: Key Aspects of Organisational, Human and Social Capital

Organisational Capital	Human Capital	Social Capital
1) Process (team work, meetings, reporting hierarchy etc.)	1) Individual capabilities (knowledge, talent, competences -skills, know-how and experience; attitude; Intellectual agility (absorptive capability)	1) Goodwill (internal and external)
2) Structure (Knowledge management systems, information databases, technology infrastructure, organisation structure etc.)	2) Team capabilities (knowledge, talent, competences -skills, know-how and experience; attitude; Intellectual agility (absorptive capability)	2) Internal social cohesion -extent of relations and resultant value; type of relationship: formal or informal
3) Culture (team work, leadership etc.)		-extent to display of trust, respect and power and their impact
4) Organisational learning (collective knowledge etc.)	3) IT enabled capabilities	-extent of communications
5) IT capabilities (closely linked with structure)		3) Reputation (internal: trust of employee; internal-external: trust of other internal stakeholders and external: trust of external stakeholders)

4.2.2.3.2 Questions Discussion

Questions that had both objective and subjective aspects were asked as two units of analysis were used- the organisation and the project individuals. Questions about the organisation (business systems and processes- more objective) and about projects and project teams (opinions about business processes, routines) were solicited. This was to gain insight into how people function in project organisations and therefore helping to map how the resultant intangible benefits or dis-benefits was manifested.

The first section solicited the strategic awareness of project management deployment the interviewee by trying to gauge the understanding of the use of project management techniques to deliver a project and what the benefits or dis-benefits derived were from the perspective of the organisation and the individual.

The second section on organisational capital had seven questions, the author wanted to know the project management methodology, tools and techniques the individual was aware was used in the organisation. The second question asked the interviewee to describe how project teams were utilised within the organisation. Prompts such as team selection and disbandment strategy, promotion, impact of IT were used. The third question wanted to know how well teams were utilised in the organisation. Prompts such as factors, leadership, culture, routinisation etc. were used. The next question was about knowledge management including lessons learnt and who was responsible. Prompts such as formal or informal systems, knowledge capture or loss etc. were used. The fifth question wanted to know how project management affected collaborative action due to engaging in project deployment whether positively or negatively. Prompts used include impact on different stakeholders-internal and external and their perception, organisational leveraging power etc. The sixth question wanted to know how project management deployment affected the organisation's reputation and how. The last question was to understand the barriers to sharing knowledge and sharing knowledge effectively.

The third section on human capital had six questions. The first question wanted to know whether the general human capital was adequate for job and role in project. Prompts such as learning across project lifecycle, different types of knowledge etc. were used. The second question wanted to know whether there has been any material change in the time that the interviewee has been in the industry and in the organisation, that has affected human capital. Prompts such as changing employee organisational relationship, no clear career path, self-development etc. were used. The third question wanted to know how many projects an individual worked on and the impact. Prompts such as multiple roles and multiple projects etc. were used. The next question wanted to know the perception of the individual on the project

staffing strategy and the impact on promotion and career progression. The fifth question wanted to know whether project management deployment attracted certain types of people. The last question wanted to know how individuals shared and accessed knowledge and what motivated them to share knowledge. However, team knowledge was not considered (collective knowledge of team). This was because by focusing on individual knowledge and knowledge of team working in the context of the organisations team member selection, the effect of collective knowledge of the team is implied. That is to say if the base organisation puts the right people on the right team and they have requisite individual knowledge and capabilities and team working knowledge, the collective team knowledge and team cues will be effective in solving the associated project problems.

The last section on social capital had seven questions. The first wanted to know the relationship with team mates and the impact. Prompts such as length of time, impact of It etc. were used. The next question was about the relationship between project teams and particularly with regards to knowledge sharing and access to information. The third question was about relationship between project teams and non-project teams. The fourth question wanted to know how the relationship with the client influenced the organisation's performance. The next question wanted to know how the relationship with the contractor affected toe organisations performance. The sixth question wanted to know how the relationship with suppliers affected the organisation's performance. The last question wanted to gauge the awareness of what the benefits of project management was to the public.

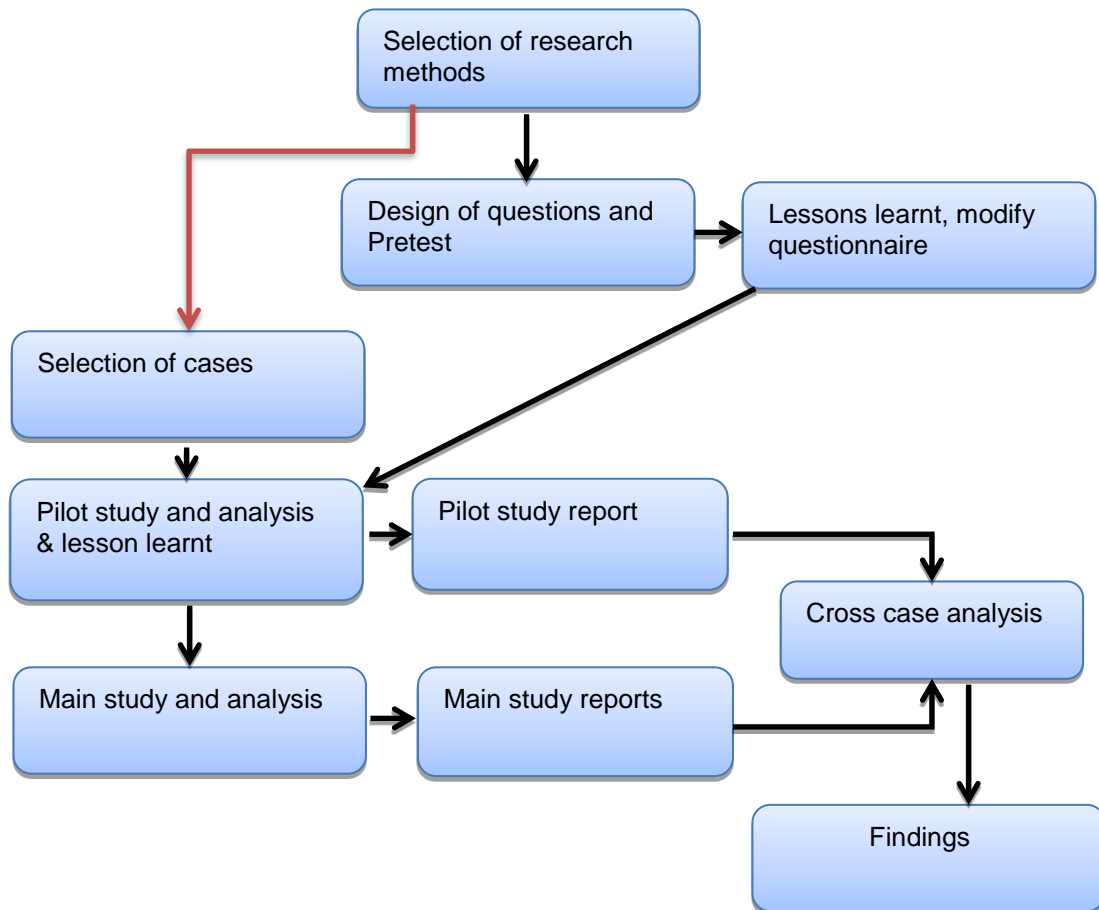


Figure 4.6: Research Approach

4.2.2.4 Developing the Questions for Fieldwork 2

Guided by the findings of the phase 1 of field work, the new insight and knowledge gained and from further literature reviewed on components of intangible benefits, the questions were developed.

4.2.2.4.1 Approach to questions development

The approach to the questions followed four steps discussed below guided by findings from fieldwork.

Step 1: develop specific question(s) for each intangible benefit

Step 2: develop sub questions that answer the question developed in step 1 (one or combination of rate, rank, select option, closed ended question or open-ended question)

Step 3: develop specific question(s) for each group of influencing factors

Step 4: develop sub questions that answer the question in step 3 (one or combination of rate, rank, select option, closed ended question or open-ended question)

Two variants of the structured interview schedule were administered to core project management function (e.g. project manager or team member) and senior management. Table 4.3 show the intangible benefit components and the indicators below

Table 4.3: Intangible Components and Indicators

Intangible	Indicators from Findings in Phase 1 of Fieldwork
Corporate knowledge ownership intangible	Knowledge repository (people/system) (tacit/explicit) -capture, mange, tailor and transform -Knowledge sharing and integration -Barriers to knowledge sharing and integration
Corporate knowledge Alignment intangible	-Employee voice and ownership -Type and category of training available -Impact of training (e.g. knowledge stock repository, employee voice) -Attitude of organisation to knowledge sharing and integration
Project management Methodology intangible	-Impact Formal or informal methodology -Responsiveness to project change, flexibility -Responsiveness to tailoring/adapting/modification -Leadership and strategy
Organisational Team working intangible	-How tasks are identified and delegated -Team selection/assignment/disbanded -Team culture (site and office based)
Decision making intangible	-Project time -Quality of decision - Impacts of available decision-making tools
Individual career progression intangible	Objective and subjective career success components- general and individual) Temporary- objective and subjective career components (general and individual) i.e. Team
Project leadership intangible	-as an ability (competence and skills) -effectiveness as reward or incentive i.e. upward or horizontal mobility -base organisation conducive for project management appropriate leadership skills development
Individual- Project Allocation Ratio Intangible	-Workload and impacts (effects of the PMM- learning, bureaucracy etc.) -Organisation's attitude -Motivation -Productivity -Wellbeing
Individual Allocation – Multiple Project Phases intangible	Pressure and impacts (effects of the PMM- learning, bureaucracy etc.) -Organisation's attitude -Motivation -Productivity -Wellbeing
Individual Knowledge Type intangible	Knowledge about people Knowledge about projects (task specific, non-task specific) (in relations to entrepreneurial, technical and project management)
Individual Knowledge Type Alignment	-Willingness to share and integrate knowledge i.e. motivation -Aligned/fit to organisational needs

Communications Intangible	-Project level IT communications -Project to project IT communications (formal/informal) -efficiency: volume & mode Effectiveness: right volume, right mode & right frequency
Work Modes and Practices Intangible	-Type of work (client type/non-client type)- practices -Networking -Project worker availability
Relationship Dynamics	-Value of the relationship -Links of the relationship -Drivers of the relationship
Power Tensions Intangible	-Negotiation and persuasion -Manoeuvring/manipulation -System of favour -Strategic friendship
Relationship Building Intangible	-Initial trust and reputation -Mutual understanding -Shared belief and values -Employee voice and ownership -Client voice -Contractor's voice -Supplier's voice -Non-project workers voice
Relationship Managing Intangible	-Trust -Mutual understanding -Shared belief and values -Employee voice and ownership -Client voice -Contractor's voice -Supplier's voice -Non-project workers voice

The indicators were developed from the findings in field work one guided by the theoretical framework developed in section 4.2.

Questions discussion- project management function

Questions 1-5 are general questions to collect data about the interviewee, their job title, and age range and how long they have worked in their current role and in the organisation. This data was gathered to ensure data accuracy by having participants from different hierarchical levels and also to identify any different in views as a result of position, age or organisational tenure.

Questions 6 -16 explores Corporate knowledge intangible: questions on five themes: knowledge capture and retrieval, knowledge sharing and integration, knowledge stock assessment, factors (barriers) and perception of knowledge management strategy.

Questions 17-28 explores Corporate knowledge alignment: questions cover type of project training attended, type and mode of training attended, employee voice/input and relevance of type and mode of training to project management knowledge. It also questions employee

satisfaction with whole process (internal reputation) and questions how easy it is to know who knows what in the organisation (formal or informal i.e. knowledge stock). Questions 29- 32 Project management deployment: questions around perception of organisation project management methodology, tools, techniques and processes used. Fit of the methodology (characteristics) and contribution of methodology to project management deployment across team functions. Questions 33-36 Communications: questions using timeliness of communications as a measure across the organisation and between stakeholders, around effective mode of communications and factors that influence communication effectiveness and mode to communicate and transfer knowledge (prevailing culture). Questions 37-49 Team working: questions around description of team task design and allocation, main mechanism- importance of meetings, how project managers and team members are allocated and team working strategy, what factors influence allocation of project managers and team members and employee voice and factors that influence employee voice. Questions 50-57 Decision making: questions around accessibility of relevant performance measures (as a metric to test effectiveness of decision support systems/processes), whether information is tailored i.e. scalability of information and whether any particular decision support system stands out. Questions using timeliness and quality of decision making as metrics for decision making in the organisations generally, how well one make decisions- individual perspective of own task, individual task and organisation task if it applies, the factors that influence decision making and perception of contribution of decision making capability of the organisation to some staff performance. Question 58-61 Interface: treated as a key factor impacting on team working, decision making, knowledge sharing, communications and opinion of outcome of interface issues from own experience in organisation and the effect of interface issues on some performance metrics of project deliverables. Question 62- 68 was about Individual knowledge and asked project actors to rate own capabilities in order of importance to organisations competitiveness. They were also asked to rate organisation's capabilities to its contribution to competitiveness. The author wanted to understand what motivates knowledge and influences project actors to share knowledge. Intellectual agility of individual and perception of organisation and why i.e. corporate factors that influence corporate agility. Explore whether developing new knowledge for current and future work challenge as an individual or team member. Questions 69-71 was about leadership, the perception of leadership characteristics reflected in project leaders in the organisation. The author wanted to know which leadership characteristics against which one is promoted in organisation and why that is your opinion. Questions 72- 74 Alignment intangible- IT enabled communications: how IT influences communications using key attributes. How IT influences work modes. Whether IT influences decision making, interface management, stakeholder management, team working and

knowledge sharing. Question 75-84 Factors that affect human capital: Questions exploring leadership development strategy (meeting career aspirations), impacts on project staff capabilities and impact on team working. Questions around the factors that influence the organisation's leadership development strategy and how human capital is currently deployed. Questions around organisations attitude to stress/wellbeing of staff and whether the project management methodology supports key stress triggers of project deployment. Questions 85-90 Relationship dynamics: questions around relationship (measure of relational resources trust, respects etc.). Questions around what trust means in operational terms and whether it changes with situation, factors that influences collaborative action. Questions around making and managing relationships. Questions 91 Power tension: around power tensions between stakeholders. Question 92-93 Access to information and knowledge: question around factors that influence network resources. Questions 94-96 Reputation: questions around individual, team and organisation reputation

4.2.2.5 Case Selection and Access

The PMBOK refers to the organisational system as one of the influencers of the organisation. In line with the PMBOK, the author uses two organisational system categories in this research: contracting organisations, and single project client organisations shown in Table 4.4.

Table 4.2: Project Based Organisation Categorisation for this Research

Categories of Project Based Organisations		
Characteristics	Contracting Organisation	Single Project Client Organisation
	(Type 1)	(Type 2)
Strategic purpose	Delivery of projects is the main source of income.	Set up to deliver one project and nothing else.
Management approach	Employs management by projects.	Employs management by projects. Usually a megaproject.
Role	Can act as pseudo-client, main contractor or sub-contractor. Deliver project at any stage of project life cycle	SPV or set up by Statute.

For each organisational system, there are two perspectives to consider, that of the base organisation and that of the supply side which particularly in the case of single client organisation can have multiple contracting organisations in the supply side. Five organisations D, B, C, K and M participated with organisation D treated as pilot case study. Organisation D, B, K and M were categorised as contracting organisations and organisation C as a single project client organisation. Organisation D, B and M gave the perspective of main contractor while organisation K gave the perspective of supply side of the single project client organisation. All the organisations were also considered to be multi-project organisations.

Theoretically sampling (Yin, 2003) was used as the basis for selecting the five organisations with the condition that the logic of replication (theoretical and literal) can be applied. Several organisations were approached using contacts of the author's Supervisors and Academics in the Department of Civil Engineering, University of Leeds, including with the help of the Major Projects Association. Only these five responded positively. The selection criteria consisted of the size of the organisation and how the organisation was categorised (see Table 4.2). Organisation D, B and K presented the opportunity for literal replication while organisation C and M presented the opportunity for theoretical replication.

4.2.2.5.1 Background of Participating Organisations

Organisation D, the pilot case is an international consultancy and construction company with integrated services that cover the full property and infrastructure lifecycle with staff strength of more than 4300 people. Organisation B is a UK leading integrated support services organisation with strong construction capabilities that interlink with other capabilities and employs over 40,000 people worldwide. Organisation C is a regional company with a real commitment to tackle the lack of capacity and congestion on the existing network in the region. Organisation K with 535 members of staff is a subsidiary of a leading Spanish infrastructure and a service operator committed to developing sustainable solutions with over 68000 people across several countries. Organisation M is a leading international infrastructure group to deliver a highly complex infrastructure projects and employs 36000 employees worldwide.

Organisation B had undergone three changes; mergers and acquisition and change to an enterprise wide approach- central function which is driving changes to organisational practices and change to the business model. The merger and acquisition has had an impact on more access to information and work redesign. The changes to IT also impacts on project management practice less staff required and therefore a project actor is a knowledge worker who is multi skilled, therefore more valuable and consequently more stressed. The change at the organisational level was a business model change from strictly construction to a service company and the construction side of the business was considered a reputational asset and

cash flow asset. This has also had an impacted on project actors who are presented with uncertain career prospects. Organisation M had also undergone a major change to an enterprise wide approach –central function which had impacted on people’s motivation and satisfaction. It had also impacted on organisational practices.

In organisation D, four people were interviewed: A Project Director and three Project Managers that work with integrated project teams were interviewed. In organisation B four people were also interviewed: A Programme Director, a Supply Chain Director, a Quality Surveyor and Design Manager were interviewed. In organisation C, four people were interviewed: A Programme Director, a Senior Risk Analyst, the Head of Utilities and Business Manager were interviewed. In organisation K, eleven people were interviewed, Project Director, Commercial Manager, MD Major Projects, Business Efficiency Director, Communications Director, Legal Director, MD Regional business, HR Divisional Director, Sustainability Director, MD Business Services, Project manager – Business Services. In organisation M, five people were interviewed, Project Manager, Section Engineer, Tunnel Agent, Tunnel Engineer, Head of Consulting- Innovation and Process.

Table 4.3: List of Organisations and Interviewees

Organisation	People Interviewed	Total Number of Interviewees
D	Project Director and three Project Managers	4
B	Programme Director, Supply Chain Director, Quantity Surveyor and Design Manager	4
C	Programme Director, Senior Risk Analyst, Head of Utilities and Business Manager	4
K	Project Director, Commercial Manager, MD Major Projects, Business Efficiency Director, Communications Director, Legal Director, MD Regional business, HR Divisional Director, Sustainability Director, MD Business Services, Project manager – Business Services	11
M	Project Manager, Section Engineer, Tunnel Agent, Tunnel Engineer, Head of Consulting- Innovation and Process	5
TOTAL 5 Organisations		28

4.2.2.5.2 Questions Pre-test

The questions were pretested in organisation A before the main study was embarked upon. One participant was interviewed in Organisation A. Organisation A is a SME in water and

waste water industry, a leading environmental consultancy specialising in the treatment of water, waste water, biosolids and organic waste. It is a project based organisation with no formal project management methodology in place. Projects typically last from a few weeks to a year.

Criteria for success

The pre-test was undertaken to satisfy the following:

1. To test if questions were clear and comprehensible
2. If data generated was fit for purpose
3. To test researcher's interview skills
4. To boost researcher's confidence

Pre-test Findings

Pre-test lessons learnt and outcome

1. Made changes to some questions to make it clearer and more comprehensible
2. The level of questions needed to be adjusted to reflect organisational role/hierarchy (no structure for Project Managers or Project Directors)

Data preparation

3. The amount of time it took to transcribe five (5) minutes of talk on the average was forty-five (45) minutes of typing. This therefore meant that there needed to be a rethink of how the interview data was transcribed and analysed e.g. verbatim. There are existing positions of what is the appropriate way to generate qualitative data and it is a trade-off of getting everything and then subjectively (by researcher's interpretation) using the relevant parts of the data or to do this at the interview interface (the researcher subjectively selects what is important at the interview phase)

Data Analysis

4. Steps and processes involved and how it would be reported

Researcher

5. The author was able to test interviewing skills including (listening and comprehension, interview direction or control and note taking skills)
6. It was also an opportunity to boost confidence and become familiarise with research design instruments

The feedback and lessons learnt was used to modify the questions and the interview. The improved questions were then piloted in Organisation D because access was readily available and subsequently Organisation B and C.

4.2.2.6 Pilot Study

The pilot study was undertaken in the pilot organisation A and it included the deployment of the structured interview schedule, data analysis, the reporting, and what was brought to light. and these are discussed below.

4.2.2.6.1 Structured Interview Schedule Deployment

The author sent across the case study information folder as specified by the case study protocol which included the case study information sheet, primary interview questions, participant formal invitation, confidentiality agreement and participant consent form. The interviewees were advised that the interview could be done face to face or over the phone. All the interviews in the pilot study were done over the phone. The author's version of the questions had cues which were used as prompts. Please see Appendix B.2 for structured interview schedule. The ordering of the sections of questions was altered across the interviewees to determine the best approach to the interview. It was determined that face to face or over the phone worked fine. However, on one occasion the interviewee didn't book a meeting room and stayed by his desk for the duration of the interview and it came across as uncomfortable.

The questions under the introductory section and organisational capital were well received. The particular question under human capital about individual knowledge was not clear enough about how individual project actors conceived knowledge. The questions for social capital had to be changed to be more conversational; people didn't appreciate the theoretical construct of relationship or perceived it as a network. They just wanted to talk about how they worked and got support or information through colleagues who were sometimes considered friends etc.

The case information sheet gave guidance on how long each interview will take as between 60-80minutes but it took about 120 minutes to run through the questions. On two occasions, the interview was completed in two sessions. This was the case because it was conversational and the interviewees seemed to enjoy articulating some of their observations, concerns and recommendations. As the interviewer, the author also needed to develop the skill of moving interviewees along

4.2.2.6.2 Analysis

The pilot study confirmed that the table shell developed for data analysis as part of the case study protocol was the best approach for coding. This was identified because the transcripts were coded in both the interview format and in the case study protocol format. It was found that the protocol format was the most suitable because it was already sub-themed under

organisational, human and social capital. Manual coding was done and first and second order cycle codes were developed as shown in Table 4.6.

Table 4.4: Pilot Study Themes

Theoretically Generated Themes	First Order Cycle Generated Themes	Second Order Cycle Generated Themes
<ol style="list-style-type: none"> 1. Methods/tools/techniques 2. Workforce training 3. Work design and input to work design 4. Criteria for team selection 5. Input on assignment to team 6. Working on several projects 7. Knowledge management 8. Better decision making 9. Organisational reputation 10. Barrier to sharing knowledge 11. Effective sharing of knowledge 12. Change in project organisation 13. Knowledge 14. Project staffing strategy 15. Relationship with your project team 16. Relationship between project teams 17. Relationship between project teams and non-project team members 18. Relationship with the contractor 19. Relationship with supplier 20. Benefit to society 	<ol style="list-style-type: none"> 1. What the organisation knows <ol style="list-style-type: none"> a) Knowledge management system b) Effective sharing of knowledge c) Barriers to sharing knowledge 2. What the organisation should know 3. Knowing and ensuring knowing 4. How we work <ol style="list-style-type: none"> a) Project management methodology b) Team working c) Work design d) Input to work design e) Criteria for team selection f) Input on assignment to team 5. Decision making 6. Communications 	<ol style="list-style-type: none"> 1. Corporate knowledge <ol style="list-style-type: none"> a) Knowledge capture and retrieval b) Knowledge sharing and integration 2. Corporate alignment 3. How we work <ol style="list-style-type: none"> a) Project management methodology b) Team working c) Decision making d) Communications
		<ol style="list-style-type: none"> 4. Individual knowledge 5. Project leadership
		<ol style="list-style-type: none"> 6. Relationship dynamics 7. Power tensions 8. Access to knowledge and information 9. Reputation
		<ol style="list-style-type: none"> 10. Factors that affect human capital <ol style="list-style-type: none"> a) Career aspiration b) Workload/Stress
<ol style="list-style-type: none"> 7 Progression intangibles <ol style="list-style-type: none"> a) Employee progression b) Selection for project lead 8. Working on multiple projects 19. IT enabled capabilities 10. Individual Knowledge 		
<ol style="list-style-type: none"> 11. Relationship dynamics 12. Relationship building 13. Power tensions 14. Reputation 		

4.2.2.6.3 Reporting

Please see Appendix C.3 for reporting format. The pilot study presented the opportunity to practice reporting the findings from a case study. It also helped the author to identify patterns from the data which was useful for reporting the findings from the main case.

4.2.2.6.4 What was New or Unexpected

It came to light that the interviewee was affected by the location they were when being interviewed. The author therefore advised interviewees if the interview was over the phone to book a meeting room or any location where they could speak freely.

Corporate knowledge was decomposed into corporate ownership and corporate knowledge alignment with organisational training provision as the main driver of alignment. The question for human capital and social capital were modified. Social capital was decomposed into three elements, a relational dimension- relationship dynamics, a relational and cognitive dimension- power tensions and a structural aspect, access to knowledge and information. This informed how the questions for social capital was asked in the main study.

The pilot study informed the author of the deficiency of the questions to individual knowledge element and social capital components and therefore changes were made for the main study. Interviewees were also informed of the time implications and the possible need for two sessions whether it was over the phone or face to face interviews. Advised interviewees if the interview was over the phone to book a meeting room or any location where they could speak freely. The order of the questions was fixed for the main study. For analysis, the decision was made that the data would be coded manually, using the process in the case study protocol and the codes generated from the case study were stored in the case study database. The report also generated a pattern that would be followed in the main study.

4.2.2.7 Data Collection

By conducting semi structured interviews in the first phase, information was sought about the organisation's current use of project management and the benefits or dis-benefits as it pertains to organisational, human and social capital. In the second phase by conducting focused interviews, using survey style questions and open-ended questions; specific information was sought about the intangible benefits identified in phase 1. The questions were to identify the common ways the identified intangible benefits manifested, to identify which factors were the most important and to better understand the context. This approach was necessary because from phase 1 of the field work, the logic of how intangible benefits manifested in project based organisations came to light, however, different measures of intangible benefits and influencing factors were presented. Phase 2 of the field work was employed to identify and measure the

intangible benefits and factors in a systematic way. The rationale was to ensure that intangible benefits could be identified and measured in the context of the business reality of project based organisations.

The interviews for both fieldworks were conducted in two ways, face to face and over the phone. Most of the interviews took more than one sitting and took longer over the phone because the author had to read it out loud and the interviewee often needed to read it personally to comprehend and answer correctly. While in phase one, the interviews were more conversational, in phase 2, it required more thoughts from the interviewees to provide answers. The positive feedback was that the purpose of the interview was appreciated and valued. Particularly for phase 2, the negative feedback was that the questions were too many; the questions were complex and needed time to answer which was a bit frustrating for the interviewees. The outcome was a few incomplete structured interview schedules from senior management in organisation K. In the author's defence, the questions were not originally designed for senior management except project/programme director level. The author made changes to accommodate reality of the fieldwork and envisaged the outcome but couldn't change the research approach. This was to ensure data collection consistency and consequently reliability. More importantly, there was a debate about how many questions and how complex and the decision was not to bias the findings by the author selecting which aspects of the findings were more important but to leave that to the experts in practice to decide. The feedback was predicted but the approach was justified.

Unit of analysis: Multiple case study design with two embedded units; the organisation and the project individual were used. Questions were asked at the organisational, project and individual level.

4.2.2.8 Data Analysis

The data analysis shown in Figure 4.7 followed the data reduction, data display and conclusion drawing and verification cycle (Miles and Huberman, 2009). The approach used was a theory building structure (Yin, 2009) where the report for the first case was used to generate a pattern based on the themes from the theoretical framework and the other four cases were then compared to this pattern using the logic of literal and theoretical replication. For the first phase, notes were taken during the interviews however the interviews were also recorded. The interview recording was reviewed to ensure that all the key themes and issues were identified and added to the notes. The transcription process was not to achieve verbatim data but to ensure that the notes developed captured all the important data. This was one of the decisions made as a result of the questions pre-test. There are different arguments for when coding begins whether at the transcription phase or after (Saldana, 2009). The act of coding requires

the knowledge and expertise of the researcher to analyse data based on researcher's perception and interpretation (Saldana, 2009). The author by taking notes during interviews predetermined the key themes and issues and by reviewing the interview recordings updated anything significant point that was left out thus saving time and effort transcribing verbatim.

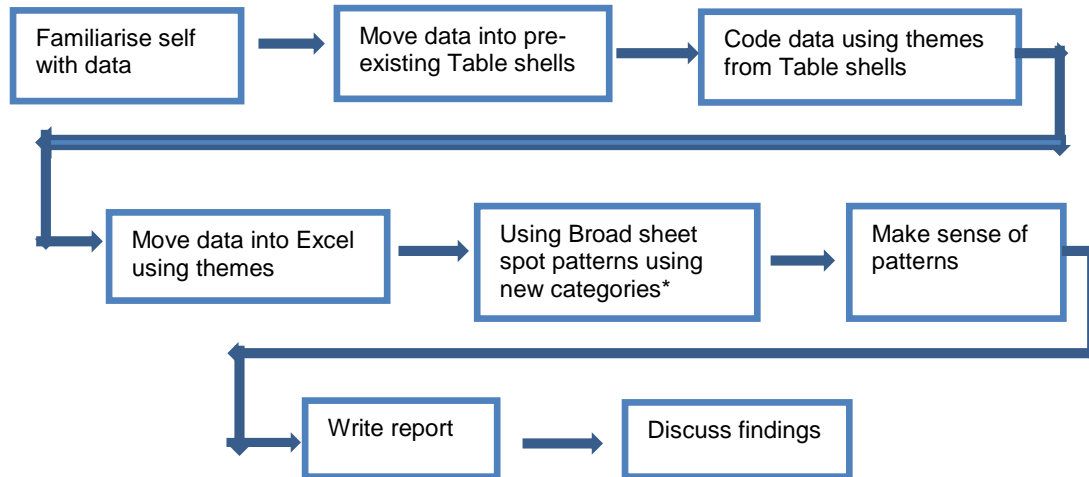


Figure 4.7: Data Analysis

The data was analysed using manual coding method (Saldana, 2009; Bernard and Ryan, 2010 and Bazeley 2013). According to Saldana (2009) coding has been defined as analysis (Miles and Huberman, 1994), crucial aspect of analysis (Basit, 2003), as a heuristic-an exploratory problem-solving technique (Saldana, 2009), linking data to idea and idea to data (Richards and Morse, 2007) and a cyclical act.

The author used two categories of coding methods; first cycle and second cycle coding (Saldana, 2009) and this is shown in Table 4.6. Saldana argues that the first cycle methods are the processes that happen during the initial coding of the data while second cycle methods are more challenging requiring such analytical skills as clarifying, prioritising, integrating, synthesising, abstracting, conceptualising and theory building depending on the nature of the research enquiry. Every line was initially coded- micro analysis of the corpus (Strauss and Corbin, 1998) also described as the splitting coding method by Saldana (2009) using theoretically generated themes (18) and sub themes (2) guided by the theoretical framework. Please see Appendix C.2 for snapshot of case study database showing codes of Pilot case. These codes were then recoded by studying the patterns and with the use of visual aids, 15 themes and sub themes were generated. The new themes were then subjected to further analysis based on the researcher knowledge of extant literature and field experience and 12 themes were generated and factors that affected human capital were identified.

Table 4.5: Themes Generated Through Analysis

Theoretically Generated Themes	First Order Cycle Generated Themes	Second Order Cycle Generated Themes
<ol style="list-style-type: none"> 1. Methods/tools/techniques 2. Workforce training 3. Work design and input to work design 4. Criteria for team selection 5. Input on assignment to team 6. Working on several projects 7. Knowledge management 8. Better decision making 9. Organisational reputation 10. Barrier to sharing knowledge 11. Effective sharing of knowledge 12. Change in project organisation 13. Knowledge 14. Project staffing strategy 15. Relationship with your project team 16. Relationship between project teams 17. Relationship between project teams and non-project team members 18. Relationship with the contractor 19. Relationship with supplier 20. Benefit to society 	<ol style="list-style-type: none"> 1. What the organisation knows <ol style="list-style-type: none"> a) Knowledge management system b) Effective sharing of knowledge c) Barriers to sharing knowledge 2. What the organisation should know 3. Knowing and ensuring knowing 4. How we work <ol style="list-style-type: none"> a) Methodology b) Team working c) Work design d) Input to work design e) Criteria for team selection f) Input on assignment to team 5. Decision making 6. Communications 7. Interface management 	<ol style="list-style-type: none"> 1. Corporate knowledge <ol style="list-style-type: none"> a) Knowledge capture and retrieval b) Knowledge sharing and integration 2. Project management methodology 3. Team working 4. Decision making 5. Communications 6. Corporate alignment <ol style="list-style-type: none"> a) Knowledge enabled b) IT enabled c) Interface management
	<ol style="list-style-type: none"> 8 Progression intangibles <ol style="list-style-type: none"> a) Employee progression b) Selection for project lead 9. Working on multiple projects 10. IT enabled capabilities 11. Knowledge 	<ol style="list-style-type: none"> 7. Individual knowledge 8. Project leadership 9. Relationship dynamics 10. Power tensions 11. Access to knowledge and information 12. Reputation
	<ol style="list-style-type: none"> 12. Relationship dynamics 13. Relationship building 14. Power tensions 15. Reputation 	<ol style="list-style-type: none"> 13. Factors that affect human capital <ol style="list-style-type: none"> a) Career aspiration b) Workload/Stress

For each of the second order themes, sixty-seven drivers of intangible benefits were also identified as shown in Table 4.8 to operationalise in practice each intangible benefit component.

Table 4.6: Second Order Themes with Associated Number of Drivers of Intangible Benefits

S/no	Intangible Benefit Components	Number of Drivers
1.	Corporate Knowledge ownership intangible	7
2.	Project management and methodology intangible	3
3.	Team working Intangible	5
4.	Decision making intangible	5
5.	Communications intangible	4
6.	Corporate alignment knowledge based intangible	5
7.	Corporate alignment IT enabled intangible	3
8.	Corporate alignment interface management intangible	2
9.	Individual knowledge intangible	1
10.	Project leadership intangible	3
11.	Factors that drive human capital	8
12.	Relationship dynamics intangible	6
13.	Power tensions intangible	6
14.	Access to knowledge and information intangible	4
15.	Reputation	5
	Total	67

The findings were used to develop the logic model and the steps taken are shown in Figure 4.8 below.

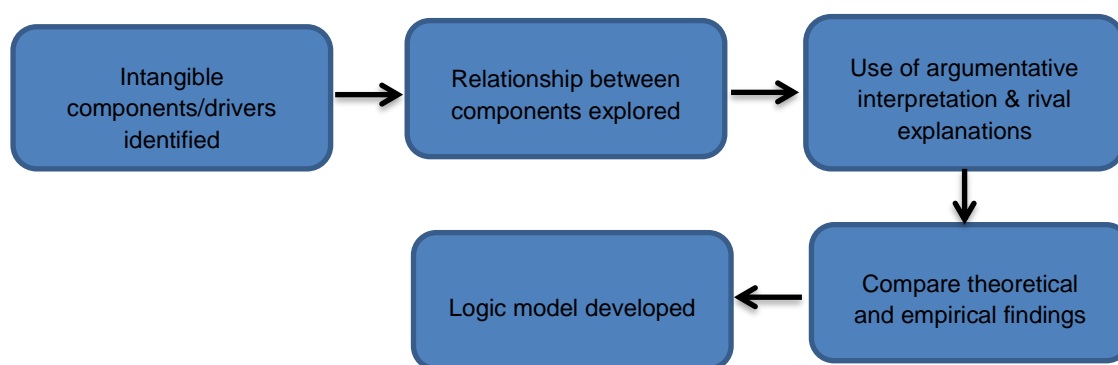


Figure 4.8: Steps taken for Deductive Approach

As input to developing the logic model, the theoretical findings and the empirical findings from earlier chapters were compared to establish the new insight garnered about intangible benefits in practice. The intangible benefits had been identified, therefore the relationship between the different intangible components were explored and with the use of argumentative

interpretation and rival explanations, the logic to how intangible benefits are generated was developed. For ease of analysis, the first part which identifies the drivers of intangible benefits are recounted in chapter 7, whilst the comparison of the empirical and theoretical findings and subsequent development of the logic model is recounted in the following chapter 8.

Reliability: A pre-test of the questions and pilot study was conducted to ensure reliability and robustness of the approach. A case study protocol and case study database was used in this research to maintain objectivity of the interview process and the researcher, contributing to reliability.

Internal/construct validity: For data collection, the questions were developed by correctly operationalising organisational, human and social i.e. content validity which is established through correct operational measures (from permanent and temporary organisations) (Yin, 1994). A chain of evidence (Yin, 2003) was also established by ensuring that there was a connection between the initial research questions, the case study protocol and the findings to ensure construct validity. For the interviewees, there was a good representation of different project knowledge and experiences across different organisations. According to Eisenhardt and Graebner (2007) there is need to use data approaches that limit bias, for example using knowledgeable informant who have different perspectives. Furthermore, the impact of subjective and objective data was considered both at the data gathering, data analysis and interpretation phase to ensure construct validity. This was achieved by using in-vivo coding and evaluation coding techniques during qualitative data coding. For the quantitative data collected in phase 2 basic statistical analyses was undertaken. The use of theoretical framework, pattern matching technique using non-equivalent dependent variables; organisational capital, human capital and social capital for analysis was to improve internal validity. Using the thematic approach, use of rival explanations, theory building structures, logic models and exploring the relationships between variables during data analysis ensured that the findings made sense. In addition, the comparison of the empirical and theoretical findings ensured that the findings were grounded both in theory and practice. Furthermore, in the light of the new insight garnered about intangible benefits, the drivers of intangible benefits were used as search terms in extant project management literature to determine to what extent components of intangible benefits have been captured and the implications. The logic model was consistent with the theoretical framework and in order to validate the logic of the logic model, the relationship between the different intangible benefits generated were discussed.

External validity: The use of multiple case studies applying the logic of replication logic in research design was to improve external validity (Yin, 1994). The multiple case sampling was used to add confidence to the findings (Miles and Huberman, 1994).

4.2.3 Research Design for objective 3

This was a second analytical lens and shared the same data as objective 2. Please see section 4.3 specifically sections 4.2.2.1, 4.2.2.5, 4.2.2.6, 4.2.2.7 and 4.2.2.8 for discussions on research design and process, case selection and access, background of participating organisations, questions pre-test, pilot study and data collection.

4.2.3.1 Data Analysis

The analytical approach for objective three also used a theory building logic. Consequently, it used attributes generated from the case organisation data itself that is, using an inductive approach (Brookes et al., 2015). The steps that were taken are shown in Figure 4.9 and the number of attributes for each component of organisational, human and social capital is shown in Table 4.9 below. The data was displayed in a table shell to compare across the organisations using attributes of intangible benefits derived from the case study analyses, findings and subsequent discussions from earlier chapters, applying the theory of literal and theoretical replication, and the difference between contracting and single project client organisations were identified. The word table was created to display the data from the individual cases according to the uniform framework developed from the data and using argumentative interpretation (Yin, 2009) was able to infer differences between contracting and single project client organisations. The use of argumentative interpretation helped to draw out the differences and similarities of contracting and single project client organisation and to better understand how context drives the intangible benefits and the factors and mechanisms. Therefore, the use of two different set of lenses of interpretation in objective 2 and objective 3 allowed the author to achieve theory triangulation (Patton, 2002). According to Yin (2009), the challenge was to develop a strong, plausible and fair argument that was supported by data.

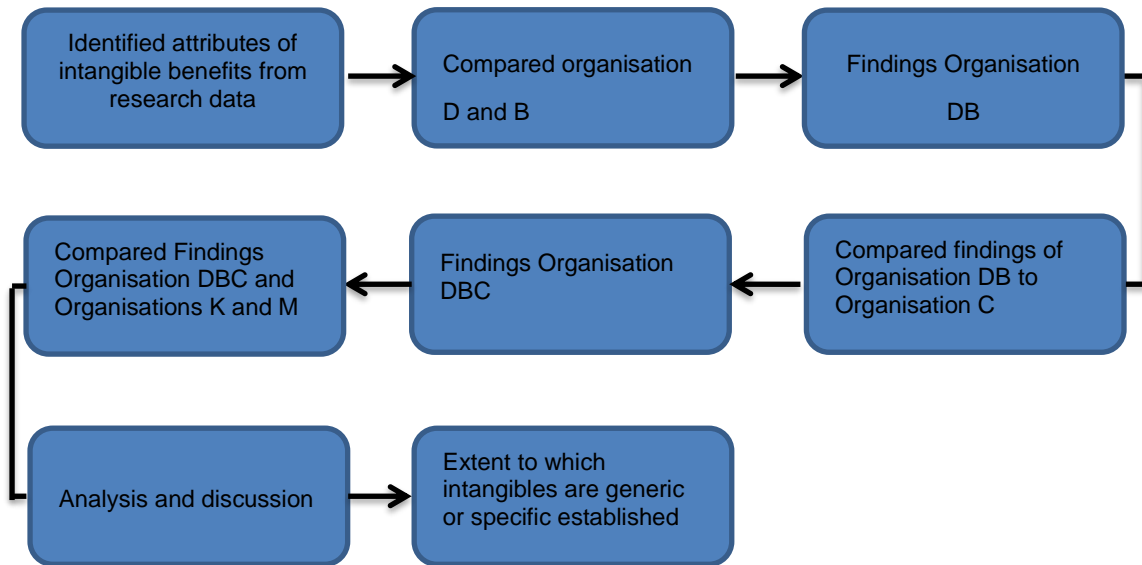


Figure 4.9: Steps taken for Inductive Approach

A total of thirty-eight attributes of intangible benefits were identified from the data from the case organisation

Table 4.7: Second Order Themes with Associated Attributes of Intangible Benefits

S/No	Intangible benefit component	Number of Attributes
1.	Corporate knowledge ownership intangibles	6
2.	Project management and methodology intangibles	3
3.	Team working Intangibles	2
4.	Decision making intangibles	2
5.	Communications intangibles	2
6.	Corporate alignment knowledge based intangibles	3
7.	Corporate alignment IT enabled intangibles	1
8.	Corporate alignment interface management intangibles	2
9.	Individual knowledge intangibles	1
10.	Project leadership intangibles	2
11.	Factors that drive human capital	3
12.	Relationship dynamics intangibles	2
13.	Power tensions intangibles	3
14.	Access to knowledge and information intangibles	2
15.	Reputation intangibles	4
	Total	38

Also refer to 4.2.2.9 for reliability, internal validity and external validity. However, with specific reference to objective 3, reliability, internal and external validity was assured because the findings were grounded in the data. Furthermore, rival explanations were used to interpret the findings.

4.2.4 Research Design for Objective 4

In order to develop the approach, the author used a combined version of the PMBOK and the APMBOK using the themes generated from the empirical findings to identify the appropriate project management activities and was then mapped onto the logic model of generating intangible benefits. Three columns, one for deploy project management, one for intangible benefits and one for intellectual capital was populated making reference to the drivers and attributes of intangible benefits. The box for competitiveness was also populated and the arrows showing linkages and implications were also discussed. Therefore, the approach to the generation of intangible benefits from project management deployment, showed the link between the deployment of project management and the generation of intangible benefits and the link between the generation of intangible benefits and the generation of intellectual capital and the consequent contribution to competitiveness. A feedback loop was also included from competitiveness back to the project organisation to indicate a learning organisation that makes adjustments based on new knowledge and information. The project management deployment generated intangible benefits approach was then used to expound the difference between the contracting organisation and the single project client organisation demonstrating its application using a generic organisation model. The implications for practice was also discussed and the chapter concluded.

Also refer to Section 4.2.2.9 for reliability, internal validity and external validity. However, with specific reference to objective 4, reliability, internal and external validity was assured because the findings were grounded in the data. This was achieved by ensuring that the approach was consistent with the theoretical framework and logic model developed from earlier objectives. In addition, project management deployment activities were identified from combining two leading project management bodies of knowledge, the PMBOK and APMBOK and mapped to the logic model.

4.3 Summary

The first objective was to identify the intangible benefits as captured in existing literature. This required the use of content analysis complemented by the intangibility test to categorise the benefits into tangible and intangible benefits. A theoretical framework was developed. The second objective was to understand how organisational, human and social capital manifest in practice. The third objective was to explore to what extent intangible benefits are generic and specific across types of project based organisations and the fourth and last to develop an approach to facilitate managing and maximising intangible benefits. All three objectives were achieved using a multiple case approach. The multiple case studies were carried out in two phases, and a pilot study was used. Five organisations participated in this research; four were contracting organisations (type 1) however three presented the view point of a main contractor while one gave the viewpoint of an organisation in the supply side of a single project client organisation. The fifth organisation was a single project client organisation (type 2). Using a deductive analytical approach, the author identified the drivers of intangible benefits and used a theory building logic. The theoretical and empirical findings were then compared and the insight served as input and with the findings used to develop the logic model. For the third objective, theoretical triangulation was achieved by using an inductive analytical approach, the author employed the attributes of intangible benefits from project management deployment identified from the findings and applying the logic of literal and theoretical replication to distinguish between the contracting and single project client organisation established to what extent the intangible benefits are generic or specific. For the fourth objective, in the light of the theoretical framework developed from findings in addressing objective 1 and the developed logic model, the difference between contracting and single project client organisations, the combined version of the leading project management body of knowledge was mapped to the logic model to develop an approach to help organisations facilitate and maximise intangible benefits. The application was demonstrated using a generic organisation model and implications discussed.

Chapter 5 Theoretical Approach to Intangible Benefits

This chapter discusses the theoretical approach used to investigate the intangible benefits derived from project management deployment. Using content analysis, benefits and disbenefits captured in extant project management literature were identified. The intangibility test developed in the methodology chapter was applied and benefits were categorised into tangible and intangible benefits and were discussed. The key findings were identified from the discussion of the intangibility test and consequently the theoretical framework was developed. The chapter was then summarised.

5.1 Identifying Benefits and Disbenefits

Kerzner (2006) presented a summary of the benefits from project management deployment organisations believe to accrue in the past and in today's business world and shown in Table 5.1. Work by other researchers reviewed on the benefits of project management is summarised in Table 5.2. Examples of tangible and intangible benefits from three organisations that used project management implementation through PMOs are described (Hurt and Thomas, 2009). According to the survey results by White and Fortune's research, 46% (108) of respondents reported that their use of project management gave rise to unexpected side-effects or outputs and this was grouped into desirable side-effects and undesirable side-effects (White and Fortune, 2002).

Table 5.1: Benefits of Project Management

Past View	Present View
<ul style="list-style-type: none"> • Project management will require more people and add to overhead costs • Profitability may decrease • Project management will increase the amount of scope changes • Project management creates organisational instability and increases conflicts • Project management is really 'eye wash' for the customer's benefit • Project management will create problems • Only large projects need project management • Project management will increase quality problems 	<ul style="list-style-type: none"> • Project Management allows us to accomplish more work in less time, with fewer people • Profitability will increase • Project management will provide better control of scope changes • Project management makes the organisation more efficient and effective through better organisational behaviour principles • Project management will allow us to work more closely with our customers • Project management provides a means for solving problems • All projects will benefit from project management

<ul style="list-style-type: none"> • Project management will create power and authority problems • Project management focuses on sub optimisation by looking at only the project • Project manager delivers products to a customer • The cost of project management may make us non-competitive 	<ul style="list-style-type: none"> • Project management increases quality • Project management will reduce power struggles • Project management allows people to make good company decisions • Project management delivers solutions • Project management will increase our business
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Source: Kerzner (2006)

Focusing on Table 6.1, the past view is generally negative and enshrined in the traditional views of project management primarily concerned with the iron triangle and single project paradigm while the present view seems more positive, considers the interest of whole organisation and is more aligned to multi-project paradigm. However, what is not certain is the time line that the comparison spans but it gives a good indication of how project management is perceived and what benefits are considered to accrue.

Table 5.2: Review of Benefits Accrued from the Use of Project Management

	ID	Benefit	Source
Tangible	A.	1. Cost Savings in time 2. Reduced write-offs and rework 3. Revenue increases (through support of acquisitions)	Hurt and Thomas (2009)
		4. Customer retention 5. Increased customer share	Hurt and Thomas (2009), Kujala and Ahola (2005)
		6. Greater market share 7. Improved competitiveness	Hurt and Thomas (2009)
Intangible	B.	8. Attainment of Strategies objectives 9. More effective human resources 10. Improved reputation 11. Impact of improved regulatory compliance 12. Strategic alignment 13. Improved general use of resources 14. Better project decision making 15. Impact on new product/service streams	Hurt and Thomas (2009)
Perception of value of project management	C.	16. Spreading project management to other part of the business 17. Decreased costs for similar projects 18. Leveraging on experience- Moving towards fixed price contracts 19. Leveraging on experience- Taking on bigger, more complex projects	Hurt and Thomas (2009)

	D.	20. Processes/Culture- Bureaucratic /traditional 21. Effect on organisational structure- creation of more management positions	Turner et al (2010)
	E.	22. Global leveraging of knowledge-Transnational project helps to leverage knowledge across several units simultaneously countries, borders etc.	Adenfelt (2010)
	F.	23. Uniformity in culture of project management help harmonise divergent terminology and different understanding of processes and methods 24. Better communication within company due to common objectives 25. Better project controlling	Shuping (2009) Ahlemann et al (2008)
	G.	26. Track record- Potential advertising opportunities 27. Repeat business 28. Improve time to market performance	Thomas and Mullaly (2007)
Desirable	H.	29. Increased business sales opportunities 30. New understanding/knowledge gained 31. Improved business/staff retention 32. Standardising- greater consistency of working	White and Fortune (2000)
Undesirable	I.	33. Relational dimension: Organisational conflict 34. Relational dimension: Problems with staff/client/contractors/supplier 35. Technical limitations come to light 36. Project context unappreciated: Lack of awareness of environment 37. Underestimation of cost/time 38. Changes to goals/objectives 39. Poor IT awareness/knowledge 40. Conflicting priorities	White and Fortune (2000)
	J.	41. Goodwill	Kousholt (2007), Lin and Wu (2011)
	K.	42. Improve company's reputation	Hurt and Thomas (2009)
	L.	43. Motivation/Personnel Satisfaction	Longvist (2002)
	M.	44. Standardization and lack of creativity	Canonic and Suderlund (2010), Thiry and Deguire (2007), Whittington et al (2006)
	N.	45. Routinization	Whittington et al (2006)
	O.	46. 'no home syndrome' no clear career path	Keegan (2004)
	P.	47. HR function is not changing to support client organisation project management	Huemann (2010)

	Q.	48. Lack of ownership of project management	Hurt and Thomas (2009), Alstyne et al (1995)
	R.	49. Help with resolution of conflict (document trail)	Becerik (2006)
	S.	50. Better project control 51. Better multi-project co-ordination 52. Better organizational reputation 53. More stakeholder/client satisfaction 54. More effective communication 55. More staff satisfaction 56. Increased efficiency/profitability 57. Increased competitiveness/increased number of projects 58. Improved organizational culture 59. Improved resource utilization 60. Greater project transparency 61. Greater innovation	Chen et al (2009)
	T.	62. Identification of functional responsibilities to ensure that all activities are accounted for regardless of personnel turn over 63. Minimising the need for continuous reporting 64. Identification of time limits for scheduling 65. Identification of a methodology for trade-off analysis 66. Measurement of accomplishments against plans 67. Early identification of problems so that creative action can may follow 68. Improved estimating capacity for future planning 69. Knowing when objective cannot be met or will be exceeded	Kerzner (2006)
	U.	70. Regulatory compliance (soft benefit)	Melton et al (2008)
	V.	71. Contingency approach to project management- source of competitive advantage i.e. differentiated project management strategies i.e. the flexibility of the methodology	Gareis (1991)
	W.	72. Lack of commitment and trust between the base organisation and suppliers as not enough time to build relationship due to nature of project demand.	Martinsuo and Ahola (2010)
	X.	73. Reduced write offs/errors 74. Customer retention 75. Improved regulatory compliance 76. Advanced purchase/forecasting 77. Better communication 78. Leveraging knowledge 79. New organisational structure/processes 80. Reduced storage requirements 81. Reduced transaction costs	Becerik (2000)
	Y.	82. New understanding/knowledge gained 83. Career advancement	Gareis (1989)

	Z.	84. Intangible liabilities	Harvey and Lusch (1999)
	AA.	Intangible Costs 85. Unreliable Software Metrics 86. Unknown Training Requirement 87. Disputed Opportunity Costs 88. Spent Political Capital	Alstynne et al (1995)

The author reviewed and modified the list of benefits/dis-benefits as identified in literature for example, some of the benefits/dis-benefits identified by the researchers had the same basic meaning - H32 'greater consistency of working' is similar in meaning to A2 'reduced write offs and rework'. Similarly, some of the benefit/dis-benefits can be said to be subsets of others, for example E22 'transnational projects help to leverage knowledge across several units simultaneously across countries etc.; T66 'Measurement of accomplishment against plans' and V71 'contingency approach to project management deployment' are components of B8 'attainment of strategic objectives'. The author also categorised the benefits under different themes. The categorisation is shown in Table 5.3

Table 5.3: Modified Lists of Benefits under Themes

Costs	A.	1. Cost savings on time 2. Decreased costs for similar projects 3. Underestimation of cost 4. Intangible liabilities <ul style="list-style-type: none"> a. Intangible costs b. Disputed opportunity costs
Customers	B.	5. Customer retention 6. Increased market share/customer base
Time	C.	7. Identification of time limits for scheduling 8. Underestimation of time
Contractors/Suppliers	D.	9. Help with resolution of conflicts (document trail)
Government/Society	E.	10. Improved regulatory compliance
Organisation	F.	11. Attainment of strategic objectives <ul style="list-style-type: none"> a. Measurement of accomplishment against plans b. Contingency approach to project management deployment c. Transnational projects help to leverage knowledge across several units simultaneously across countries etc. 12. Strategic alignment <ul style="list-style-type: none"> a. Uniformity in culture of project management help harmonise, terminology, processes and methods b. Improved organisational culture 13. Better project decision making <ul style="list-style-type: none"> a. Minimise the need for continuous reporting b. Early identification of problems

		<ul style="list-style-type: none"> c. Knowing when objective cannot be met or will be exceeded d. Improved estimating capacity for future planning e. Conflicting priorities f. Changes to goals/objectives g. Better multi project coordination h. Greater project transparency <p>14. Technical limitation comes to light</p> <ul style="list-style-type: none"> a. Identification of a methodology for trade-off analysis b. Poor IT awareness/knowledge c. Unreliable Software Metrics <p>15. Improved general use of resources</p> <p>16. Spreading project management to other types of projects</p> <p>17. Bureaucratisation</p> <p>18. Standardization and lack of creativity/Routinisation</p> <p>19. Creation of more management positions</p> <p>20. Conflicts e.g. lack of trust</p> <ul style="list-style-type: none"> a. Internal i.e. organisational; among staff b. External i.e. with suppliers, contractors and other stakeholders <p>21. Lack of ownership of project management</p> <p>22. Spent Political capital</p>
Staff	G.	<p>23. New understanding/knowledge gained</p> <p>24. Improved business/staff retention</p> <p>25. Motivation/Personnel satisfaction</p> <ul style="list-style-type: none"> a. 'No home syndrome', no clear career path b. HR function not changing to support project management deployment in client organisation <p>26. More effective human resources</p> <ul style="list-style-type: none"> a. Identification of functional responsibilities to ensure that all activities are accounted for regardless of personnel turn over b. Unknown training requirements
Organisation- Market related	H.	<p>27. New product/Service streams</p> <ul style="list-style-type: none"> a. Taking on bigger, more complex projects <p>28. Revenue increase</p> <ul style="list-style-type: none"> a. support of acquisition/mergers b. Increased business sales <p>29. Improved competitiveness</p> <ul style="list-style-type: none"> a. Improved time to market b. Lack of awareness of the environment c. Reduced write offs and rework <p>30. Goodwill</p> <ul style="list-style-type: none"> a. Improved reputation b. Potential advertising opportunities <p>31. More strategic contractual agreements leveraging on strengths e.g. moving towards fixed price contracts</p>

The list was then subjected to the intangibility test discussed in the methodology chapter (see section 4.2.1) and several benefits were categorised clearly as either tangible or intangible while a few were categorised under tangible or intangible by the participants depending on

their own understanding and personal experience. Two steps were taken in applying the intangibility test carried out by participants selected by the author who were properly briefed about the aim of the categorisation exercise and then provided the list of benefits. The selection criteria for the participants were based on the fact that they were the colleagues of the author and were involved in project management practice or research. The first step categorised benefits clearly as tangible and others as intangible benefits. The second step involved the reapplication of the intangibility test to intangible and tangible benefits that fell into the fuzzy category. The fuzzy category referred to benefits that had been categorised as both tangible and intangible by different participants depending on the knowledge and experience of the participant categorising in the first step. By each participant articulating their rationale, by way of discussion and consensus, the fuzzy group was regrouped into tangible and intangible. The author concluded that benefits fall within a continuum from tangible at one end and intangible at the other with a fuzzy area in the middle; where both tangible and intangible characteristics may be observed. The results are presented in Table 5.4. These have been categorised under different themes and are twenty-nine in number.

Table 5.4: Result of Analysis Using Intangibility Test and Characteristics Matrix

Themes	Intangible Benefits	Intangible Dis-benefits
Government/Society Related	1. Impact of improved regulatory compliance	
Organisational Related	2. Attainment of strategic objectives 3. Strategic alignment 4. Better project decision making 5. Improved general use of resources	6. Bureaucratisation 7. Standardisation and lack of creativity/Routinisation 8. Conflicts e.g. lack of trust 9. Lack of ownership of project management
Employee Related	10. New understanding/knowledge gained 11. More effective human resources 12. Motivation/personnel satisfaction	
Organisation-Market Related	13. New product/service streams 14. Improved competitiveness 15. More strategic contractual agreements leveraging on strengths e.g. moving towards fixed price contracts 16. Goodwill	
	Tangible Benefits	
Costs Related	1. Cost savings on time	

	2. Decreased costs for similar projects 3. Underestimation of cost	
Customer Related	4. Customer retention 5. Increased market share/customer base	
Time Related	6. Identification of time limits for scheduling 7. Underestimation of time	
Contractors/Suppliers Related	8. Help with resolution of conflicts (document trail)	
Organisation Related	9. Technical limitation comes to light 10. Spreading project management to other types of projects 11. Creation of more management positions	
Employee Related	12. Improved business/staff retention	
Organisation-Market Related	13. Revenue increase	

5.2 Discussion of the Intangibility Test Results

The results of the intangibility test as shown in Table 5.4 are discussed below highlighting the different themes and their implications.

5.2.1 Intangibles (Positive and Negative Intangibles)

Government/society related, employee related and organisation- market related have intangible benefits while organisational related have both intangible benefits and disbenefits as shown in Tables 5.4 and discussed below.

5.2.1.1 Government/Society Related Intangibles

The impact of improved regulatory compliance suggests that organisations by deploying project management do not struggle to meet the regulatory requirements and perhaps also do above average compared to their peers; as they are able to meet the customer's specifications within the confines of the law. The key word is 'impact' as by the little changes that occur from the improvement within the organisations, the performance against the specification of compliance is exceeded. The impact is intangible because it is difficult to pin point exactly how it adds the value and when; it is immaterial because you cannot see it.

5.2.1.2 Organisational Related Intangibles (Benefits)

There is a total of eight intangibles under organisational related intangibles as shown in Table 5.4 with four benefits and four disbenefits. However only the benefits are discussed below in this section.

5.2.1.2.1 Attainment of Strategic Objectives

The decision to go ahead with a project or not is of strategic importance. Furthermore, along the project lifecycle, the planning function of project management allows different alternatives to be considered before a decision on whether to proceed or not and the use of milestone, progress report, planning and designing the task (work packages, work breakdown structure) and the use of critical path and other project management techniques. Therefore, the base organisation needs to be aware of the tools and techniques available and based on their strategic objectives, develop a suitable project management strategy. This then suggests that the organisation and particularly the project manager (and project team) must be aware of the different packages of tools, techniques appropriate for different strategic outcomes e.g. market leadership, meeting the project costs, quality and time criteria. Organisations can measure and monitor progress effectively by exploring the possible outcomes using the planning method, the project stakeholders are more aware of the threats and weaknesses and are better prepared for most eventualities e.g. the use of contingency plan/budget.

Furthermore, what an organisation knows is important to its strategic objectives. Therefore, leveraging on the knowledge across several business units, or business or even across countries is based on the understanding that there are opportunities to interact and learn new things. Whether an organisation or the individual project team member learns anything and puts it to use to profit the base organisation is the critical issue and this is what determines the benefits (tangible and intangible) to the organisation or the individuals or society at large. This is intangible because knowledge is intangible and the processes involved in converting it into value for an organisation are intangible. The interaction of the business units, other organisations and in different countries introduces different characteristics that make it even more immaterial. The ability to interpret what is being learnt e.g. knowledge, about a business opportunity or identifying a weakness within the context of the base organisation to make a difference and add value is intangible. To what extent this profits the primary organisation or the individual involved or the society is also difficult to measure. In the opinion of the author, the extent to which an organisation can generate these intangibles from the project management deployment the greater the value enjoyed by the organisation.

5.2.1.2.2 Strategic Alignment

Strategic alignment involves the organisation doing what is necessary to achieving the strategic objectives. From extant literature, communication has been identified as a key issue in achieving project objectives. When there is uniformity in the culture of project management within the organisation, it helps with a common understanding of terms, processes, techniques and methods. This also informs the 'doing of things differently' as people can better communicate their innovations, discoveries etc. and this can be incorporated into the organisations project management deployment strategies. This also implies/ assumes that the organisation documents changes and articulates the context in which they occur so that a technique or a process is not misapplied. These changes also imply that the organisation's behaviour changes as processes change and that the interactions also changes and that the organisation adapts both to the internal requirements and external requirements i.e. it is aware of the appropriate changes and to what extent. For project management deployment, this will include things like communication and politics of senior management. The kind of relationship/ contracts with external suppliers, contractors and stakeholders i.e. what is in place, the policy and how it is implemented. The attitude of the organisation's employees and other stakeholders.i.e. the project management communication intangibles and this also intersects with stakeholder management intangibles i.e. looking at it from the perspective of attitude i.e. 'the doing' as opposed to what is documented to being done. Therefore, strategic alignment draws attention to the more relational aspects of project management deployment as it involves change and adjustments which will require effective communications.

5.2.1.2.3 Better Project Decision Making

Because project management deployment involves the planning process this ensures that information from other knowledge areas e.g. communication would identify how often progress report is needed or a review meeting for the team, with customers or senior managements. It has already been established that project management involves uncertainty as the endeavours are new and unique. By using appropriate risk management methodologies, the risks would be identified and appropriate decisions made, contingency plans would also be put in place.

Planning and scheduling involves designing the project tasks and when it should occur and this informs what should be expected i.e. outcomes at every point in time. Project planning help organisations to know if projects should continue or not while estimating help organisations prepare budgets and make decisions on contractual agreements etc. Because of the uncertainty involved in project management deployment, there are certain compromises that have to be made e.g. for example a trade-off between performance and time etc. These

decisions would constantly have to be made throughout the project life cycle i.e. making trade-offs among competing objectives and alternatives i.e. changes to goals and objectives of products or projects. Lessons learnt also helps inform decisions on future projects. Better project decision making also focuses attention on the more relational aspects of project management deployment as communications is an important aspect of decision making.

5.2.1.2.4 Improved General Use of Resources

The rationale for this is that project management as a discipline is about assessing what is available and what is required in the end i.e. deliverable and ensuring that the resources are used judiciously in recognition of the project constraint and uncertainties. It also carries over into every aspect of the organisation or business units. As employees engage with project management some of the skills are transferred to their everyday activities. This then breeds a culture of risk assessment, contingency planning, and learning from past mistakes etc. and so that the management and employee use resources better. This will also inform the relationship with suppliers and contractors and other stakeholders.

5.2.1.3 Organisational Related Intangibles (DisBenefits)

As stated in the earlier section, there is a total of eight intangibles under organisational related intangibles as shown in Table 5.4 with four benefits and four disbenefits. However only the disbenefits are discussed below in this section.

5.2.1.3.1 Bureaucratisation

Project management may require formal processes and a lot of discipline but this must be monitored or else people will forget why the project or project task is being done at all and this then becomes the way we do things around here even when it may be inappropriately-linked with organisational strategy. What value is generated or lost if the processes are not properly deployed? Undue bottlenecks can result in slow decision making which can have a negative impact. Bureaucracy can also affect relationships within the project and across the base organisation which can also have a negative impact. Bureaucratisation also draws attention to the relational aspects of project management as bottlenecks imply that communications is suppressed and ineffective.

5.2.1.3.2 Standardisation and Lack of Creativity/Routinisation

Client organisations would prefer to use procedures/methods just like for operations and if this is not monitored, certain aspects of projectification and programmification can become standardised such that people no longer challenge the status quo but just do it because for instance project A is similar to project B. The danger of standardizing is that the contextual

considerations may be lost. How much value is generated or lost because of lack of flexibility and creativity in approaching projects? Standardization may have benefits and dis-benefits and the act of balancing based on the strategic fit may be the key as trade-offs may be necessary. Project control stifles innovation. Could innovation be an intangible benefit? Trade-off between delivery on time, cost, quality and innovation?

In particular, demotivation and lack of satisfaction as a result of stifling innovation is quality related where reduced write off and its de-motivating effects to the employees with the use of project management, the quality is not inspected in but built into the product or service. This ensures that there is adequate risk management and that products meet all the statutory requirements while satisfying the customers' requirement on quality and fit for purpose. Project management in practice is in a dynamic changing environment, work progress, changing team members and so the standardization and routinisation should only be applied to hard aspects; things like documents and not to the practice of project management itself i.e. socio-technical interaction. Project stakeholders must be aware that the environment and project status today informs decisions today and in the long term. This is not to say that there is no place for 'best practice' but to emphasise that project management is proactive and dynamic.

5.2.1.3.3 Conflicts

Conflicts focuses on the relational and political dimensions of project management deployment. Internally this has to do with organisational conflict among staff; for example, within the team, team and organisation, between project manager and other functional managers or project manager and the project board. While externally, this could be between the project team and other stakeholders including suppliers, contractors, vendor, government etc. The conflict itself may be visible and material and sometimes it could be unspoken but the effects are intangible. Conflicts may also have ripple effects and the impact could be felt during the duration of the project or during the product/service life cycle.

5.2.1.3.4 Lack of Ownership of Project Management

When project stakeholders are not involved in the formulation of the project management strategy, there may exist demotivation to embrace it as it was developed from outside and is being superimposed. This can also occur when roles are not properly defined, when there is bureaucratisation and routinisation, the employees are ill-equipped to use project management, no one can really own the project management deployment strategy, it all becomes eye service, people document for documentation sake, and they follow routines and not really going through the motion. So, what is documented and what happens in practise are not the same.

5.2.1.4 Employee Related Intangibles

There are three intangibles benefits as shown in Table 5.4 that fall under employee related intangibles and discussed below.

5.2.1.4.1 New Understanding/ Knowledge Gained

According to Leaseure and Brookes (2004), there are two kinds of knowledge: Kernel knowledge a form of knowledge-related to the core competences of a company and includes forms of knowledge that need to remain and been instituted within a company in order to sustain high project performance in the long term and project specific knowledge (ephemeral): Knowledge useful for one project and has a low probability of ever being used.

Using the categorisation of Leaseure and Brookes (2004) with regards to client or contracting organisation; some of the knowledge will be routine, everyday knowledge would be necessary to the core competence and only a few will fall into the category of project specific knowledge. This will be the case or except the department is a much-specialised department where the project knowledge may not be relevant for future projects. This new knowledge gained and understanding refers to two parts: the part that is reabsorbed into the fabric of the organisation i.e. organisational and that which remains with the individual's human capital.

5.2.1.4.2 More Effective Human Resources

From the perspective of task design and allocating who should do what and when project management deployment is effective. What cannot be controlled is willingness of the individuals involved to apply themselves, however the organisational culture can be a strong motivation. So, putting the right people on teams and motivating them is a key to effective human resources.

5.2.1.4.3 Motivation and Personnel Satisfaction

Project team members are usually torn between satisfying their line manager or their project manager. In some organisations, it is unclear who is responsible for the career progression of the individual. In many organisations also, there is no clear project management career path and based on the organisations policy individuals may or may not volunteer to be project managers as it may help or ruin their careers. Some authors have argued that some organisation outsource project management roles to agency staff which means that project managing skills, competencies are developed by external staff and only a limited part of the value generated is converted to organisational capital, the rest is absorbed as human capital taken by the external staff to profit self and the society at large. Therefore, the exclusivity of the value generated is diffused.

5.2.1.5 Organisation- Market Related Intangibles

There are four intangibles as shown in Table 5.4 that fall under organisation- market related intangibles and discussed below.

5.2.1.5.1 New Product/ Service Streams

By deploying project management, organisations are able to determine their strengths and weaknesses with product or service delivery and in pursuit of overcoming their weakness or threats may become aware of opportunities which may be developed as an alternative with very good risk management capabilities, forecasting may become a key strength of the organisation and hence facilitate the creation of new products/services. In addition, through the support of acquisition/mergers, by ensuring that acquisition and mergers are done with all the checks and balances including stakeholder analysis etc. project management can improve revenue increase by not wasting resources and identifying key resources, limiting mistakes and omissions etc. Increased business sales are very tightly linked to new product/ service streams. With identification of new products/service streams, organisations are able to increase their revenue

5.2.1.5.2 Improved Competitiveness

Improved time to market ensures that the organisation may be the first to market or is able to maximise the window of opportunity. It also helps with the successful implementation of new market strategies. It helps organisations to be aware of their competitors' activities and that of other stakeholders to ensure that the project is still able and that the project outcome is still relevant. Barrier to entry; because of the organisation's market position, other competitors may refrain from competing on identified products or services

5.2.1.5.3 More Strategic Contractual Agreements

More strategic contractual agreements project management empowers organisations who have mastered its use for project delivery to command more influence at the contractual stage. This is as a result of leveraging on success of the past and track record and project management deployment capability.

5.2.1.5.4 Goodwill

According to Yang (1978), this is enjoyed by an organisation with regards to competitors, statutory bodies and other stakeholders including the organisations' customers. However, goodwill is not just enjoyed in a vacuum and without conditions (explicit or implicit). It is dependent on the project based organisations capabilities to deliver project and the perception of the service provided.

5.2.2 Tangible Benefits

Tangible benefits include both cost, customer, time, contractor/supplier, employee, organisation and market related

5.2.2.1 Cost Related

This is a well-known benefit of using project management in organisations especially in the form of cost avoidance. If an organisation carries out a similar project, cost avoidance can be experienced again as there is a decreased cost for similar projects as the former projects informs some of the important decisions and help to avoid or mitigate mistakes i.e. certain/typical mistakes can be avoided. The flip side is if estimates are generated wrongly then costs may be underestimated causing cost issues throughout the project life cycle. Notwithstanding costs is tangible.

5.2.2.2 Customer Related

Project management help organisations retain their customers/repeat business because of the quality, time and customer relationship that is nurtured. This also causes an increase in the market share/ customer base of some organisations. This could also happen negatively. If projects go badly, the organisation may lose their customers and experience a shrink in their customer base.

5.2.2.3 Time Related

Project management allows organisations think and plan ahead so that they can become proactive in scheduling tasks and mitigating risks and resolving issues.

5.2.2.4 Contractors/Suppliers Related

Because project management requires document control including version and access; organisations are able to determine when key decisions were made and who was in attendance and who approved. This is important for the resolution of conflicts especially claims and to help litigation and discovery costs.

5.2.2.5 Organisation Related

Technical limitation comes to light as project management helps organisations to ask critical questions about their competence with regards to projects they want to embark on. This is to help decide on the skills required on the project and how it will be recruited for. Often this also involves the infrastructural capability of the organisation in terms of its IT awareness and IT knowledge. In today's business environment, IT is critical to the organisation's ability to remain competitive, whatever the industry the organisation belongs to.

In addition, project management is spreads to other parts of the business as project management is used to deliver other types of projects that are none traditional. Organisations try to leverage the benefits accrued from one business unit to other business units as the benefits become obvious. This is certainly true evidenced in many organisations that now use project management in some form in their organisation.

Project management it has been argued, generates more management positions. Whether this is a good or bad (benefit or dis-benefit) is difficult to say at this point. What is important is the fact that project management identifies different tasks and the skills required to accomplish those tasks.

5.2.2.6 Employee Related Improved Business/Staff Retention

Project management uses teams and this has been known to help with motivation and thus staff retention. Staffing is also done based on skills required, therefore the behaviour of organisations can influence staff motivation and how rewarded staff feel thus staff turnover is minimised.

5.2.2.7 Market Related- Revenue Increase

This is closely related to costs savings; however, this focuses on how changes in different aspects of project management that are customer facing or external project stakeholder facing indirectly influence revenue increase. Intangible benefits may be associated with the increase in revenue, but revenue increase itself is tangible.

5.3 Linking Intangible Benefits and Intellectual Capital

Out of 29 benefits of project management deployment identified, the author categorised 16 benefits as intangible whilst thirteen were tangible using the intangibility test. For the tangible benefits costs related had three entries at 10.2% while customer related had two entries at 6.8%, Time also had two entries at 6.8%, contractors/suppliers and employee related had one entry each at 3.4% and organisation related had four entries at 13.6%. Similarly, for the intangible benefits Government/society had one entry at 3.4%, organisational related had eight entries at 27.2 %, employee related had three entries at 10.2% and market had four entries at 13.6%.

At a first glance, the results from the intangibility test suggests that there are more intangible benefits of project management deployment than tangible benefits. The findings also imply that a lot of value is lost because organisations are not aware of the intangible benefits being created talk less of measuring and monitoring it. In addition, by focusing on the intangible

benefits, the findings demonstrate that the intangible benefits and disbenefits of project management are mostly organisational, market and employee related as organisation related had eight entries at 50% while employee related had three entries at 18.75%, organisational-market related had four entries at 25% and government/society had one entry at 6.25%. This suggests that most of the intangible benefits generated by project management deployment accrue to the organisation in terms of achieving strategic objectives, aligning the business to its strategic objectives, improving decision making and the general use of resource (also related to human capital). Similarly, human capital has to do with what people know and how they apply their knowledge and their motivation. In addition, while the organisational related and employee related intangible benefits can be clearly categorised under organisational and human capital, organisation-market related intangible benefits suggests innovation and relational capitals which are dependent on both the organisation and its employees. In addition, the author argues that organisation related and organisation-market related are also dependent on relationships which the author refers to as social capital which is embedded in both organisational and human capital as currently captured. Therefore, it can be argued that social capital is not readily obvious but this can be seen from the need for effective relationships to engage with the team, or other employees, contractors and other project stakeholders.

In view of the summary of identified themes across intellectual capital components discussed in Table 3.2, it is submitted that the findings from the intangibility test are also consistent with the extant literature reviewed on intellectual capital. This position was reached by comparing the intangible benefits and disbenefits of the result of analysis using intangibility test and characteristics matrix (see Table 5.4) and summary of identified themes across intellectual capital components (see Table 3.2). Under Government/society related, impact of improved regulatory compliance corresponds to company's reputation with the reasoning that the output of the organisation is perceived as high-quality meeting or exceeding regulatory requirements. Under organisational related, the attainment of strategic objectives, strategic alignment, better decision making and improved general resources are considered to correspond to owning organisational capital, that is as a result of project management deployment, there is observable and measurable changes across the four. Under organisational related intangible disbenefits, bureaucratisation, standardisation and lack of creativity and routinisation, including conflicts correspond with costs of organisational capital as a balance between management control and project actor autonomy is pursued. In addition, lack of ownership of project management corresponds to owning organisational capital. Under employee related, new understanding/knowledge gained corresponds with employee knowledge, skills and

talent and owning organisational capital as some of human capital is converted into organisational capital. In addition, most effective human resources correspond to employee knowledge, skills and talents and measurement of human capital as effectiveness supports the reasoning that the changes are observable and measurable. Motivation/personnel satisfaction corresponds to individual career aspiration. Under organisation market related new product/service streams corresponds to knowledge management as organisational capital and owning organisational capital as new knowledge and capabilities are transformed into new product or services with the project based organisation protecting the new knowledge and insight. In addition, improved competitiveness corresponds to owning organisational capital as whilst it is the final outcome of organisational, human and social capital, it requires the project based organisation to take ownership and protect its intangible to able to maximise the contribution to competitiveness. Lastly, more strategic contractual agreements leveraging on strengths corresponds to owning organisational capital as it is evidence of knowledge by the project based organisation of its competitive advantage and goodwill corresponds to the company's reputation internal and external and can also influence its leveraging opportunities.

Table 5.5: Comparison of Theoretically Derived Intangible Benefits and Disbenefits (see Table 5.4) and Summarised Themes from across Intellectual Capital Components (see Table 3.2)

Themes	Intangible Benefits	Appropriate Themes from findings from IC
Government/ Society Related	1. Impact of improved regulatory compliance	3.3.1.5 Company's Reputation (Internal and External)
Organisational Related	2. Attainment of strategic objectives	3.3.1.2 Owing Organisational Capital/ 3.3.1.3 Measurement of Organisational Capital
	3. Strategic alignment	3.3.1.2 Owing Organisational Capital/ 3.3.1.3 Measurement of Organisational Capital
	4. Better project decision making	3.3.1.1 Knowledge Management as Organisational Capital/ 3.3.1.3 Measurement of Organisational Capital
	5. Improved general use of resources	3.3.1.2 Owing Organisational Capital/ 3.3.1.3 Measurement of Organisational Capital
Employee Related	6. New understanding/knowledge gained	3.3.2.1 Employee Knowledge, Skills and Talent
	7. More effective human resources	3.3.2.1 Employee Knowledge, Skills and Talent/3.3.2.5 Measurement of Human Capital

	8. Motivation/personnel satisfaction	3.3.2.3 Individual Career Aspiration
Organisation-Market Related	9. New product/service streams 10. Improved competitiveness 11. More strategic contractual agreements leveraging on strengths e.g. moving towards fixed price contracts 12. Goodwill	3.3.1.1 Knowledge Management as Organisational Capital/3.3.1.2 Owing Organisational Capital 3.3.1.2 Owing Organisational Capital 3.3.1.2 Owing Organisational Capital 3.3.1.5 Company's Reputation (Internal and External)
	Intangible Dis-benefit	
Organisational Related	13. Bureaucratisation 14. Standardisation and lack of creativity/Routinisation 15. Conflicts e.g. lack of trust 16. Lack of ownership of project management	3.3.1.4 Costs of Organisational Capital 3.3.1.4 Costs of Organisational Capital 3.3.1.4 Costs of Organisational Capital/3.3.3.3 Trust 3.3.1.2 Owing Organisational Capital

In view of the theoretical lens of the resource based view used in this research, in Table 5.5, the theoretically derived intangible benefits and disbenefits (see Table 5.4 and the summarised themes from across the intellectual capital components from chapter 3 (see Table 3.2) are compared. From the inspection of the IC themes in Table 5.5, it can be observed that there are seven references to owning organisational capital, three under intangible benefits organisational related theme, one under intangible disbenefits organisational related theme and three under organisation market related themes. In addition, there also four references to measurement of organisational capital under intangible benefits organisational related theme. In addition, two references for Employee knowledge, skills and talents, one reference for measurement of human capital and one reference for individual career aspiration all under intangible benefits Employee related theme. There were also two references for company's reputation one under intangible benefits organisational related theme and one under intangible benefits organisational market related theme. The inspection of the IC themes also shows that

there are four references to costs of organisational capital and one for lack of trust under intangible disbenefits organisational related theme. Therefore, from inspection, there are more references that correspond to organisational capital than to human capital and just one for social capital consistent with the arguments from IC researchers that more intangibles should accrue to the organisation. In addition, the fact that there is only one reference to social capital in the form of trust. Therefore, the author's position on social capital is supported by the reasoning that extant literature tends to capture the general disposition of researchers to a given subject and project management literature has been criticised by the RPM and CPM streams of project management work of being too mechanistic pointing to the fact that the relational aspects of project management deployment have not been effectively captured in extant literature as the soft and more relational less mechanistic and social and political aspects of project management are undervalued and underrepresented in literature. This reference to social capital (relationship) is also supported by literature on socio-technical systems (soft and hard aspect have to be considered simultaneously) and the work of researcher such as (Stiles, 2003).

Therefore, using content analysis on extant project management literature, it has been demonstrated that project management deployment generates several intangibles benefits and that whilst organisational capital and human capital have been captured in extant project management literature, the social capital has been underdeveloped. In addition, it was also demonstrated that the findings from the intangibility test were also consistent with the extant literature reviewed on intellectual capital. In view of the new insight, in the next section the theoretical framework which articulates the approach to the empirical investigation is discussed.

5.4 Developing the Theoretical Framework for Empirical Approach

Building on the understanding developed from earlier chapters and the findings in this chapter, the author makes a connection between the literature reviewed on project management deployment and the generation of intangible benefits or disbenefits and competitiveness by developing a theoretical framework shown in Figure 5.1. The intent of the theoretical framework is to serve as a guide to the empirical investigation into the generation of intangible benefits and the basis for the development of the approach to the generation intangible benefits for project based organisations. The PMI's 2014 definition of project management alludes to the fact that that the strategic outcome of project management deployment is the ability of organisations to compete in their markets. In addition, the theoretical lens of the resource based view focuses attention on resources of the project based organisation from

an intangible point of view that lead to competitiveness consequently draws attention to how those resources are organised and generated.

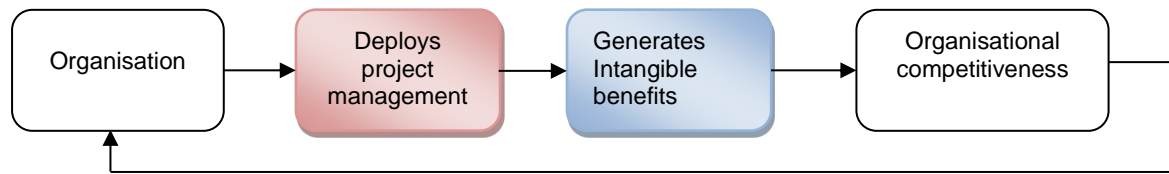


Figure 5.1: Theoretical Framework

In making the connection between the generation of intangible benefits and intangible benefits leading to competitiveness, organisational, human and social capital were identified to be the link between intangible benefits and competitiveness. This is because it had been demonstrated in section 5.3 that the themes of the findings from the intellectual capital was consistent with findings of intangible benefits from extant project management literature reached by comparing the content under the intangible benefits in Table 5.4 with that of Table 3.2 and shown in Table 5.5. This is because the literature on intellectual capital had demonstrated that organisations become competitive (see section 3.4) by developing different components of intellectual capital (see section 3.3). In particular, the findings in section 5.1 demonstrated that in project management terms, these are organisational, human and social capital, that is, intangible benefits or disbenefits derived from project management deployment can be categorised into organisational, human and social capital.

The “deploys project management” box was populated in section 2.3 where project management deployment was defined as the outworking of decisions taken in delivering the project. It was also pointed out that the decisions will be taken around the key project management activities and processes as highlighted by the PMI and APM. Therefore the “deploys project management” box of the theoretical framework draws attention to how project management deployment generates intangible benefits by focusing on how resources are organised in order to execute the project.

In addition, the “generate intangible benefits” box was populated in section 5.2 with Government/society related, organisational related, employee related, organisation-market related intangibles as shown in Table 5.4. The “generate intangible benefits” box draws the attention of the project based organisation to the benefits derived from improved regulatory compliance which is categorised under Government/society related and corresponds to company’s reputation as shown in Table 5.3. The “generate intangible benefits box” also highlights to the project base organisation the organisational related benefits: the attainment of strategic objectives; strategic alignment, better project decision making; and improved

general use of resource with attainment of strategic objectives, strategic alignment and improved general use of resources corresponding with owning organisational capital and measurement of organisational capital and better project decision making corresponding to knowledge as organisational capital and measurement of organisational capital. As shown in Table 5.4. Similarly, the intangible dis-benefits categorised under organisational related are also put in focus to be minimised which include bureaucratisation, standardisation and lack of creativity/routinisation, conflicts and lack of ownership of project management. The disbenefits also correspond to cost of organisational capital with conflicts also corresponding to trust. The employee related benefits: new understanding/knowledge gained; more effective human resources; motivation/personnel satisfaction; new understanding/knowledge gained; more effective human resources and motivation/ personnel satisfaction are also highlighted to the project based organisation. New understanding /knowledge gained correspond to employee knowledge, skills and talent whilst more effective human resources corresponds to employee knowledge, skills and talents and measurement of human capital. Motivation/personnel satisfaction corresponds to individual career aspiration. Lastly new product/service streams; improved competitiveness; more strategic contractual agreements leveraging on strengths and goodwill categorised under organisation market related benefits are also drawn to the attention of the project based organisation. Whilst new product/service streams, improved competitiveness and more strategic contractual agreements leveraging on strengths corresponds to owning organisational capital, new product /service stream also corresponds to knowledge management as organisational capital and good will corresponds to company's reputation.

Similarly, organisational competitiveness was populated in sections 2.3.1 which in summary is to do comparatively better than the competition either by cost leadership or differentiation with regards to dealing with adaptability, complex business transactions and complex designs and performance requirements, time to market and offering lifecycle solution. Lastly the feedback loop implies that as the organisation becomes more competitive, changes will be made to the organisation that influences how the organisation organises its resources and therefore impacts on project management deployment with the cycle being continuous.

Therefore it becomes evident from the theoretical framework that because project management deployment and intangible benefits were approached in the context of the project based organisation using the rationale of the resource based view of the firm, this research focuses on the link between the generation of intangible benefits from project management deployment and the generation of organisational, human and social capital and the link between the generation of organisational, human and social capital and competitiveness.

Furthermore, it points to the fact that the theoretical approach was the first step to investigating intangible benefits from project management deployment as what has been captured in extant literature was a good place to start. In addition, it will serve as a guide for the empirical study and the basis for the development of the approach to generation of project management deployment in the later part of the thesis.

5.5 Summary

Using a theoretical approach applying content analysis, the benefits and disbenefits already captured in extant project management literature were identified. Applying the intangibility test developed in the methodology chapter sixteen benefits were categorised as intangible and thirteen as tangible. Focusing on the intangible benefits, it was identified that the intangible benefits generated by project management deployment accrued to the organisation in terms of achieving strategic objectives, aligning the business to its strategic objectives, improving decision making and the general use of resource (also related to human capital). Similarly, human capital had to do with what people know and how they applied their knowledge, and their motivation. In addition, while organisational related and employee related intangible benefits could be clearly categorised under organisational and human capital, organisation-market related intangible benefits included new product/service streams, improved competitiveness and types of contractual agreements referring to innovation and relationships which were dependent on both the organisation and its employees that is requiring organisational, human and social capital inputs. The key findings from the intangibility test demonstrated that whilst organisational capital and human capital have been captured in extant project management literature, the social capital has been underdeveloped. In addition, the comparison of theoretically derived intangible benefits and disbenefits from this chapter and summarised themes from across intellectual capital components developed in chapter 3 demonstrate that the findings from the intangibility test were also consistent with the extant literature reviewed on intellectual capital. Therefore, project management deployment and intangible benefits were approached in the context of the firm using the theoretical lens of the resource based view of the firm. Subsequently, the theoretical framework was developed from making the link between the deployment of project management and the generation of intangible benefits and the link between the generation of intangible benefits and the generation of organisational, human and social capital and the link between organisational, human and social capital and competitiveness. The theoretical framework will serve as a guide to the empirical investigation of the intangible benefits form project management deployment in subsequent chapter.

Chapter 6 Presentation of Empirical Data, Initial Analysis and Findings

In line with the theoretical framework developed in the previous chapter, this chapter presents the data from the multi-case study with four participating organisations. The context to this chapter is first elucidated and then the data is presented. The initial analysis and findings are then discussed based on observations from the data. The chapter was also summarised.

6.1 Context to this Chapter

In view of the developed theoretical framework in the previous chapter, data was collected from four participating organisations with the use of a multicase studies approach as discussed in the methodology chapter. The generated data was organised under the themes identified from the empirical data corresponding to organisational, human and social capital in line with the theoretical framework. The identified themes from the data are closely related to the key aspects of organisational, human and social capital identified in Table 4.2 of the methodology chapter and Table 5.5 in the previous chapter that compares the theoretically derived intangible benefits and disbenefits and the summarised themes from across intellectual capital components. The author therefore reasoned that the data under each theme supported the generation of knowledge and capabilities (intangible benefit or intangible) corresponding to an intangible benefit with a name similar to that of the theme. The intangible benefits identified can therefore be described as empirical expression or validation of organisational, human and social capital in the context of project management deployment. Furthermore, the initial discussion and analysis was done based on observation of the data and discussed under three headings: what the identified intangibles are, the implication of the fact that the data was gathered from varying participants and the implication of the organisational context.

6.2 Data Relevant for Organisational Capital

The data relevant for organisational capital was organised under two main themes identified: corporate knowledge ownership i.e. collective knowledge and corporate project management deployment i.e. “how we work”. However, a third theme emerged which the author considered an alignment element to the generation of organisational capital, ensuring that the organisation knows what it should know and can apply what it knows effectively in the interest of the organisation. The relevant data for the three identified themes are presented below.

6.2.1 Corporate Knowledge Ownership Theme

In organisation B and C, different types of knowledge were discussed in the context of project management deployment from technical, to commercial, to financial and people based

knowledge. In addition, across organisations B and C, it was indicated that technical capabilities, commercial awareness and knowledge about team working were the most important knowledge types for competitiveness. It was also indicated that past experience and innovative capabilities were also important for competitiveness.

In organisation B, there was no formal procedure for lessons learnt at the project or organisational level. The issues with lesson learnt activities highlighted were with the frequency i.e. how often and when it was done, how it was conducted and how the findings were presented and recorded. It was also pointed out that in the past, resources were allocated to capture lesson learnt at project site level but was stopped because it was too expensive, however, it was indicated that the organisation currently used the mechanism of knowledge champions for knowledge sharing. Organisation B also has a knowledge management system which was managed centrally but the knowledge management system was described as not friendly; search query returned unhelpful results, some information not available and that many people were not using it. It became apparent that the central function approach to knowledge capture and retrieval was different from onsite approach. Onsite approach was dependent on the project manager and the infrastructure and culture at the organisational and project levels. The barriers to sharing knowledge identified included people aspects (e.g. don't see the benefits), technology aspects (e.g. fit of IT infrastructure), geography aspects (e.g. distance between sites), location aspects (e.g. onsite or office based project tasks) and organisational culture aspects (e.g. not high enough on agenda of project teams).

In organisation C, learning from other projects was a strategy used and lessons learnt were conducted at team level with someone responsible but coordinated by the central team. However, not everyone was sure of the process. Meetings were the main mechanism used for lessons learned and it occurred formally and frequently. There was also recognition that meetings in general were avenues for knowledge sharing. A central document management system was in place and was described as not friendly, overly complex and not fit for purpose. However, it was opined that knowledge capture was for auditing purpose, record keeping purpose and knowledge sharing purpose. The barriers to sharing knowledge identified were the inherent nature of project delivery (e.g. time-schedule driven) and inherent nature of project (e.g. multiple stakeholders, number of interfaces). Organisational culture was also highlighted where "everything was meant to be done yesterday" culture was prevalent. Particularly it was mentioned that this culture affected knowledge sharing especially within teams and between teams. Within teams, knowledge sharing was good, however between

teams, there were problems with sharing knowledge due to “focus on day job” and the fact that the projects were geographically dispersed.

Findings from organisation K and M show that they have similar mechanisms for knowledge capture and retrieval. These include lessons learnt in individual project and across projects, storytelling, document repositories, suggestion boxes, informal discussions, knowledge management systems and experts. Organisation K has a companywide IT Knowledge management system and it was indicated that two types of knowledge were captured. These were used for winning work (bidding teams) and project execution (lessons learned and can be used in individual projects or across projects). It was however indicated that the winning team had a knowledge management system of its own. In organisation K, there were various mechanisms and varying degrees of effectiveness but communities of practice were particularly emphasised. Other mechanisms also mentioned were the use of case studies, lunch time lectures by subject experts, internal forums and informal networking. These mechanisms serve as both knowledge capture and knowledge sharing and integration mechanisms. From organisation M, it was indicated that the organisation had a mechanism in place to capture onsite knowledge which was used for future projects involving close working relationship with the bidding function. Furthermore, it was stated that the organisational learning objectives were different as the learning goals for the base organisation and the partner organisations and tier 1 contractors were different. Furthermore, the performance management strategy was also different i.e. the process in the base organisation was different to that of the partner organisations and the tier 1 contractors. Still on knowledge sharing and integration, in organisation M it was mentioned that no department coordinated knowledge management activities at project level and that there were differences between how it was done in the UK and Spain. In the UK, there was more focus on documentation while in Spain it was more informal and less documentation focused. However, there were a whole range and hundreds of different methodologies with varying degrees of effectiveness.

Using how project actors accessed knowledge as an indicator for effectiveness of knowledge sharing and integration in the base organisation it was found that in organisation K, the organisation wide knowledge management system was mentioned again and senior management indicated that it was a mix of formal and informal mechanisms with technology led and people led mechanisms. For organisation M, there was no one way, there was a combination of formal and informal approaches with technology and people led mechanisms. Another indicator used for effectiveness of knowledge sharing and integration in the base organisation was derived from the assessment of the organisation formal knowledge management system. In organisation K, at the project level it was indicated that system related

issues (not enough information, not friendly enough) were the main issues; senior management indicated that it was about incentive at the individual and team level to take ownership of knowledge capture. While in organisation M, project level staff indicated that it was the time to capture and retrieve information. The senior management indicated that the friendliness of the system and time were the main issues.

Another indicator used for knowledge integration was whether there was access to people considered knowledge experts in the base organisation, and in both organisation K and M, the answer was yes with reasons such as “due to their knowledge and experience”, “the most direct and accessible way” and “the most up to date mechanism”. It was found that they also had access to alternative experts internally and externally who could attend periodically or on a needs basis when required.

On determining the mechanisms for knowledge sharing and integration, in organisation K meetings, reviews, lessons learnt and pairing employees with longer tenure were agreed to all be used. In organisation M, it was similar to organisation K except that senior management included story telling but not pairing employees with people with longer organisational tenure.

In addition, the author asked what factor most influenced how individuals contributed to knowledge capture in their organisations. The findings indicated in organisation K that at the project level it was the system was not friendly enough and senior management indicated time as an issue. In organisation M, there was no consensus from the perspective of project level and senior management; it was about incentive (e.g. reward/compensation), the system and time constraints.

On identifying the factors that most influenced project knowledge sharing, from the project level in organisation K and M, the following were common: focus on the day to day job; scarcity of time; type of existing knowledge sharing mechanisms; the number or project interfaces; the value placed by the base organisation and the value of knowledge to the original owner. Organisation M also included the type of project and the distance between project sites as factors. From the perspective of senior management in organisation K, the focus on the day to day job and the value placed on the knowledge by the original owner were the two most important factors

Furthermore, in organisation K, the findings indicated that the benefits of knowledge management included improving ways of working, costs savings and improved project cycle time. However, the costs of knowledge management were also indicated to be the cost of not capturing and sharing knowledge to the organisation. Factors such as not putting a value (how

much could have been made or how much has been lost) to it or not justifying doing knowledge management were also identified.

6.2.2 Corporate Project Management Deployment Structural Themes

The data relevant grouped under the umbrella theme corporate project management deployment structural theme is presented under four main components discussed in turn below. The themes include the methodology the base organisation employs to deliver project management, how the base organisation communicates, and how the organisation engages in team working and decision making.

6.2.2.1 Project Management Methodology Theme

In organisation B, it was indicated that a composite project management methodology was used consisting of different processes, tools and techniques. The perspective of team members of the project management methodology was that it was a process of ticking boxes and managing the build process. The team members also indicated that it was about compliance, meeting internal and external requirements and health and safety requirements.

In organisation C, no standard project management methodology was used, however a collection of industry best practice, quality assurance systems and mandatory document management system across delivery project team, partner organisation and the tier 1 contractors was used. Furthermore, some project managers had autonomy on the methodology deployed based on the high level of competence, knowledge and know-how and the high levels of trust in their decision-making capabilities. In particular, the attitude of senior management to decision making in organisation C was that it was more important that it worked than it fits a particular approach (i.e. practical based approach) bearing in mind that the performance of partner organisations and the tier 1 contractors was the performance of the organisation. The rationale articulated was that “we are not refining or improving anything for next project”. Furthermore, in organisation C, it was also pointed out that there were external factors that affected project management deployment and the organisation had no control over such as: compliance/legislation requirements, changes to City Council policies and Health and Safety requirements. It was also indicated that the benefits of project management methodology includes: informs decision making and approach to work; a structured approach and clear reporting lines; ability to manage and control risks; gain control and confidence on the job; less adhoc requests and ability to track and communicate performance and productivity e.g. DASH boards at different levels.

In organisation K and M, at project level it was recognised that the project management methodology was composite but was considered formal by senior management. With regards to the characteristics of the project management methodology used, similar answers were obtained from organisation K and M. It was indicated that the project management methodology increased meeting clients, infrastructure and regulatory requirements, as well as the quality of delivery of the project. In organisation M, it was stated that the formal methodology employed in the UK generated a lot of paperwork and bureaucracy compared to Spain. It was also highlighted that language both literal and in project management terms influenced the methodology. Furthermore, it was highlighted that different methods or tools may also be expressed in different forms and complexities in different parts of the business.

6.2.2.2 Team Working Theme

In organisation B team selection was conducted by the project manager in conjunction with the line manager. Tasks were allocated using a combination of specified roles and responsibilities and conferring with different functional teams facilitated by good personal working relationships. Personal relationship indicated relational aspects and was covered under social capital in this thesis. Team tasks design were integrated from day one, from bidding to planning to the execution phase. It was highlighted that the factors that affected team member selection were resource constraint (availability), the geography, type of client and the time gaps between jobs i.e. between finishing and being reassigned to a new project.

Organisation B as a main contractor employed sub-contractors and therefore had teams with mix of own staff and partner organisation(s) staff. Usually project actors had multiple roles. Two types of teams were identified; the delivery team (operationally focused, practical) and the work winning team- different (works with client, make promises). It was also mentioned that both teams required different types of people and different skills set. Issues were identified with this approach as delivery teams could not keep promises made by work winning teams as some designs were impractical to build. Clients preferred a case where people on the work winning team continued in the project execution phase but this is not always practical.

In organisation C, task design was at high level committee meetings and the selection process pooled resources from the base organisation, partner organisations and tier 1 contractor organisations. Therefore, a line manager could be from the base organisation or partner organisation. Team selection was based around knowledge, experience and right mix of people. The roles and responsibilities were well defined and this applied to all project teams. Two types of teams were also identified in organisation C, delivery teams (core construction) and non-delivery teams (support core construction) e.g. utilities team.

Unlike in a contracting organisation where a project actor had multiple roles and when a project ended was still engaged in other projects, in organisation C some roles became redundant along the project lifecycle and some became necessary at different phases of the life cycle. Therefore, there were opportunities to change job roles on the project i.e. in-project mobility, however dependent on previous experience, knowledge and qualifications i.e. general human capital. This was not considered a promotion but a job change based on generalist knowledge. The team working strategy employed in the past in organisation C allowed the partner organisations to have all the in-project mobility opportunities which had a negative impact. The base organisation's project people were demotivated, resulted in high turnover and negatively impacted team working.

For organisation K, the factors that affected project manager allocation decision were the size of project, the line manager, availability, project scope and other resources while in organisation M, the factors were the line manager, the scope of project, the project manager, and staff preference. In all organisations, the line manager was a principal actor for a project actor to be allocated to a team. The type of project characterised by size, scope or geography were other factors. Furthermore, there was no formal policy for team member selection or disbandment in all the organisations.

From the findings in organisation B and C it was highlighted that meetings play a central role in project work and three dimensions were identified; the frequency of meeting, the type of meeting and the outcome of meeting. Meetings were important for team working, for sharing knowledge (e.g. lessons learnt) and for project operational reasons (progress meetings etc.). From organisation K and M, it was indicated that the desired outcome from the meeting, should drive the type of meeting which in turn should determine the frequency of meetings. However, it was indicated in organisation M that some meetings were considered a waste of time and not purposeful.

6.2.2.3 Decision Making Theme

In organisation B and C, it was approached as project manager leadership and organisational capability as it was demonstrated at senior management level, project level and individual levels. However, only organisational capability is discussed here as project manager leadership is discussed under human capital. It was stated that good decision making was characterised by not waiting for information (time dimension), not being over bureaucratic (structural dimension) and talking the same language (quality dimension). This implied that decision making at the organisational level was impacted by time, quality and organisational hierarchy. Therefore, two measures of decision making were further investigated, the timeliness and quality of decision making considering individual capability and organisational

capability. While timeliness had to do with time taken to make decisions, quality of decision considered access to relevant information to make project delivery decisions.

Considering timeliness of decision making from a project level perspective, organisation K indicated expertise of decision maker, risk management, level of authorisation, behaviour of decision maker and availability were the top five important factors. In organisation M, it was indicated that costs, safety, expertise of decision maker, the organisation's project management methodology and the available information were considered as the top five. Considering the views of senior management in organisation K and M, expertise was considered first in organisation K while safety was considered first in organisation M which again is similar to that of the project level perspective in both organisations.

Looking at the quality of decision making at the project level, organisation K considered expertise of the decision maker, time implications, project changes, stakeholder interests and available information while in organisation M expertise of the decision maker, safety implications, cost implications, level of authorisation and people considered experts were indicated. It was observed that in both organisations, expertise of the decision maker was the most important factor. While senior management in organisation K and M had different views to that at the project level, there was a striking difference; in organisation K, there was no mention of cost implications, while in organisation M cost implication was mentioned.

Organisation K and M both considered the decision support system of the organisation with decision support mechanisms that include technology led (e.g. risk management system) and people led (e.g. stage gate meeting) mechanisms. In both organisation K and M, decision support measures around cost, quality, time, and risk management and contractor performance were very good or excellent. Furthermore, the findings indicated that information for decision making were stakeholder specific in both organisations, however it could not be determined to what extent.

From organisations K and M, it was indicated that the quality of decision making at the individual level was dependent on own knowledge and experience, however at team level there were inherent interdependencies with other project actors to make decisions in a timely manner. Decision making occurs at the organisational level manifested in senior management control, the project level where the project manager is accountable for project and project team members and is involved in authorisation (paper work), client and contractor management. At the individual level, team members are responsible for own task and jointly responsible for team task.

Without splitting decision making into dimensions of timeliness or quality, factors that affected individual decision making in organisation K and M from the project level perspective were found to be expertise, available information, time, and risks. At the organisational level factors that affected decision making were found to be the organisation hierarchy, level of authorisation and number of gates.

6.2.2.4 Communications Theme

In organisations B and C three types of reference to communication was observed covering a wide range of information associated with project work: formal meetings, electronic communications (formal and informal) and implied in working together in a team, across teams and across organisational hierarchy and was usually considered informal. It became apparent that formal top down or electronic communication was conceived as communications while communicating while working and sharing information in collaborative action during project execution was perceived as inherent. Therefore, communications mode such as of face to face and meetings for example were not identified as communication, even though in reference to these activities, the term communication was mentioned. However, high volume of e-communication was highlighted as a problem and in particular reference to determine what was relevant. Furthermore, in organisation C, the document management system was also identified as an imposed standardised way to communicate.

An indicator for communications which considered the most effective mode of communication across the different organisational levels showed that in organisation K the predominant mode to communicate in order of effectiveness was face to face, emails and meetings. In organisation M, emails, meetings and face to face were also indicated but in a different order to organisation K. In particular, in organisation K top down communication included newsletter, and in organisation M there was mention of policies and memos in the top mode of communications.

Considering the five dimensions of communications: mode, volume, frequency, timeliness and quality of communications, the findings indicated that timeliness of communication at the project and client level was rated as very good with mixed answers for communications at other levels in organisation K and M.

Across organisations B and C, it was indicated that decision making was reliant on timely information made available via communications from the relevant information source. Consequently, using timeliness as one measure of communication intangibles the findings from organisations K and M show that the organisational culture and structure were the most

important factors that influenced timeliness of communication. Other factors identified were management of interfaces, project size, interpersonal issues, and same language.

6.2.3 Corporate Alignment Themes

The data relevant for the third identified theme under organisational capital, corporate alignment theme is presented below with three components which were also identified: knowledge based alignment component, IT enabled alignment component and interface management alignment component.

6.2.3.1 Corporate Alignment Knowledge Based Theme

In organisation B, training delivery was outsourced as it was considered an expensive overhead when it was done in-house. However, the organisation had mechanisms in place to monitor training process e.g. using competence matrix and evaluating the training outcome. Types of training identified include Leadership training, Mandatory training, Health Safety and Environment (HSE) training, Legal and Compliance training and Training programmes e.g. Managerial Executive programme. From organisation B, it was also indicated that budgetary considerations and changes in the organisation such as a merger and acquisition influenced training provision.

In organisation C, different types of training were identified, general, specific and organisational approach training. It was gathered that the organisation was not hot on training as people had to be suitably trained already. Therefore, recruitment was very important as general human capital was critical as people had to have the right skills. The employees also recognised that due to the inherent nature of the project and consequently the organisation, project actors shouldn't have high expectations on training for solely career professional development except for project led training.

By considering the four primary modes of training initially identified: on the job training, classroom based training, consultant led training and online training from organisations B and C, on-the-job training was indicated to be the most effective in organisation K and M, however both organisations used a combination of all four and there was no agreement on the order of importance of the types of training in both organisations. In both organisations K and M, with regards to the most important training for individual project role, experience based training; general organisational process training; continuous professional development and project led training were indicated to be important in that order.

In organisation K and M, project actors indicated that it was important to have a say on their skills development and that the organisation should have the right attitude to training and be

genuinely interested in their professional growth. A key aspect of training delivery is employee voice alluded to in organisation B and C, which is, to what extent there is buy in by the project actors. In organisation K, it was indicated that employees say on training, the organisation's interest in professional growth, attitude to training were all important. While in organisation M, there was only consensus around the organisations interest in professional growth and attitude to training. In both organisations K and M, senior management agreed that all three were important.

With regards to current satisfaction with the organisation knowledge stock repository strategy, satisfaction with the organisation's interest in professional growth, attitude to training and qualifications captured was neutral to satisfied in organisation K and mixed answers in organisation M. For senior management in organisation K it was dissatisfaction to neutral and neutral in organisation M. However, it was qualified that organisation K had undergone restructuring of some of its knowledge areas from a business or sectorial level to a central function and undergoing teething problems. Furthermore, the findings in terms of post training provision showed that the type of training mandate impacts on the follow-on action of the organisation e.g. project led, immediate use on project etc. In the opinion of senior management post training mechanisms were about demonstrated competence from knowledge gained.

6.2.3.2 Corporate Alignment IT Enabled Theme

In organisation B, IT infrastructure was used for knowledge management and integration e.g. blogs and IT conference calls. It was also useful for monitoring training processes e.g. Oracle. It also informed how work was done as internet onsite was a standard feature i.e. extranet. However, there were also changes as a result as less project support staff required. It was indicated that a project actor was a knowledge worker who was multi-skilled, more valuable and more stressed. In organisation C, the base organisation imposed a standardised documentation management system which was obligatory for delivery project teams as it acted as a control mechanism for communication interface across the project. It also facilitated e-communication e.g. blogs, intranet and IT conference calls.

From the findings in organisation K and M it was apparent that IT influenced the mode, volume, frequency, timeliness and quality of communications. It was however highlighted in organisation K that it didn't make an organisation more efficient, as there could be communications overload if not targeted. In organisation K, it was mentioned that IT influenced how bids were developed and submitted as this was done online and made presentations effective e.g. modelling. In organisation M, it was highlighted that IT could promote bureaucracy as project work generated a lot of paper work, though IT allowed the generated

documents to be stored on a central server and made more accessible to the rest of the organisation. It was also pointed out in organisation M that IT was necessary to do project work in the UK, but wasn't so important in Spain. Another point raised in organisation M was that IT provided a platform for non-stop email communication which then blurred the line between work and life.

6.2.3.3 Corporate Alignment – Interface Management Theme

Interface management issues were alluded to in all the organisations. In organisation B, human and function interfaces were identified such as the interface between the work winning team and the executing teams, and that between the project site and the central function of the organisation. In organisation C, interface management was also highlighted and impacted on personnel issues, financial issues, scope and critical path issues but human interface was the most problematic as it was less methodological, difficult to teach and needs the ability to learn to adapt skills and agenda. However, in both organisation K and M there was no agreement at project level or senior management level which interface were the most critical with acknowledgement that human interface was the most common.

Interface management alignment components therefore identified from organisation B, C, K and M include human interface e.g. team interface (project delivery and non-project delivery teams); function interface (e.g. quality and risk management); system interface (e.g. project management business process interface and project management methodology interface); location interface (e.g. office based project-onsite based project interface, onsite-offsite interface); contractual agreement interface (e.g. commercial agreement interface across different stakeholders and the implications in practice) have been identified to affect project deployment.

6.3 Data Relevant for Human Capital

The data relevant for human capital is presented under individual knowledge theme and project leadership theme presented below. However critical factors were also identified that influenced human capital and therefore indirectly influenced how human capital can be converted to organisational capital and are also presented below.

6.3.1 Individual Knowledge Theme

From the findings in organisation B, C, K and M, knowledge and capabilities were used interchangeably and referred primarily to knowledge and knowledge management, project management knowledge, know-how and skills and it was personal or team complimentary. In

organisation B and C, individual knowledge was referred to when speaking of knowledge sharing and barriers to knowledge sharing. Different types of knowledge were articulated from core technical knowledge to project management knowledge or knowledge about people.

6.3.2 Project Leadership Theme

In organisation B and C, decision making was considered from the perspective of leadership of the project manager i.e. as an individual capability. This was characterised by the project manager being able to trade off on team members' capabilities managing their strengths and their weaknesses; to give feedback and guidance; to be available and to invest in people. The project manager was responsible for project delivery and was accountable for decisions taken. The project manager was identified as a project actor who demonstrated leadership qualities as an inherent part of the job role. A big part of leadership was also attributed to communications, carrying project stakeholders along and articulating how the project would be executed for example at stage gates, levels of authorisation etc. From organisation M, it was also highlighted that a project manager's role required more people skills and less technical skills. Mechanisms used to develop leadership characteristics included forums and leadership conferences. It was also indicated that leadership at project level determine the local project culture and leadership at the organisational level determine organisational culture

In organisation B and C, it was indicated that the leadership characteristics reflected in the base organisation was an indication of the summation of how leadership was perceived. Therefore, it was further investigating in organisation K and M. In organisation K, from the perspective of project team level, leading by example, coaching, participative decision making, showing concern and interacting with the team, encouraging and allocating resources characteristics were reflected. From the perspective of senior management, leading by example, showing concern and interacting with the team, encouraging and allocating were indicated to be reflected. In terms of the most prevalent in organisation K, leading by example was most common. In organisation M, from the perspective of project team level and senior management, leading by example, coaching, participative decision making, informing, showing concern and interacting with the team, encouraging and allocating resources indicated to be a reflection of leaders in the organisation.

However, leadership characteristics promoted against is the true summation of leadership in the base organisation. In organisation K, the most predominant factor that influences leadership promotion is the type of project followed by the size of the project. Other factors include informing leadership characteristics, allocating resources, timing and luck and encouraging leadership characteristics. In Organisation M, leading by example, participative decision-making leadership, encouraging leadership, timing and luck and size were indicated

as characteristics promoted against. It was also indicated that for a project manager it was less about technical knowledge and more about motivating and rewarding team members, about people skills and being on time and on budget.

6.3.3 Data Relevant for Factors that affect Human Capital

Two primary factors were also indicated to affect human capital and they are individual career factor and workload factor and discussed below.

6.3.3.1 Individual Career Theme

The findings indicated that each base organisation had a staffing strategy which included developing leadership skills (with corresponding knowledge and experience) and recruitment to leadership position. In organisation B, promotion was done internally, from down up and this influenced turnover which was low. However, the organisation's business model had changed from a strictly construction organisation to one that also offered services and this has had a major impact on how project actors feel in the organisation. Career uncertainty is exacerbated and this is impacting negatively on loyalty and turnover. In organisation C, people are moved around i.e. in project mobility for career development which had the effect of making people feel appreciated and motivated. The team working strategy employed in the past in organisation C allowed the partner organisations to have all the in-project mobility opportunities which had a negative impact. The base organisation's project people were demotivated, resulted in high turnover and negatively impacted team working.

From the findings in organisation K and M, from a project level perspective i.e. organisation led strategy (the organisation has control over this), the findings indicated that organisation leadership strategy is evidenced by clear career structure, clear guidelines on how to demonstrate the requirements, to be reassigned from one project to another, in project mobility opportunity and timing and luck. Considering the leadership strategy from a more subjective viewpoint, it was indicated that the recruitment route, role type, type of project, line manager, whether seniors like you or not and region's financial status are factors that could influence. Furthermore, the view point of senior management also considers the tier one contractors and the type of client.

From organisation K and M, it was also indicated that the base organisation's leadership strategy had a big impact on team working (structural and relational) and knowledge sharing. It also impacted on individuals' capabilities, leadership skills development, promotion, motivation to learn and share, ability to adapt and exposure, and feeling appreciated.

6.3.3.2 Work Load Theme

In organisation B and C, it was stated that stress was associated with project activities reporting time (cyclical), time constraints and project workload. The project environment was described as a stressful environment, however intrinsic to project work. It was found that the number of projects a project actor was involved in and the effect of the project life cycle on individual task and team tasks could cause stress.

From organisation B, the economic situation and how the organisation handled the situation was identified to act as a stressor. It was stated that though the economic situation was external to the base organisation, the base organisation's reaction and subsequent actions compounded the fear and uncertainty experienced by project actors.

In organisation M, it was highlighted that the organisational culture or attitude promoted the perception that a project actor being stressed was because of something the project actor didn't possess or due to project actor actions, therefore nobody in the organisation would openly admit to stress or its effects. In organisation K and M, again the attitude of the base organisation was called into question as stress was considered an interruption and only lip service paid to supporting project actors who were stressed.

From organisation K and M, with regards to stress, how the project actor assessed the stress they felt and the key drivers, how the base organisation's project management methodology supported stress reduction and perception of the organisation's position on stress were ways of discussing stress. The findings from organisation K and M also indicated that the project management methodology should support staff with regards to working to deadlines, dealing with several internal stakeholders, doing job to best ability, opportunity to recuperate and reflect, and dealing with challenges.

The findings in organisation K and M also highlighted three situations that affected perception of stress: a knowledge gap e.g. over qualified; role type and workload; and the type of workload (the cyclical nature of pressure coinciding with project lifecycle and task activities). In organisation K and M, the factors indicated to contribute to stress were differential in skills or experience of team members, the number of project interfaces, the number of projects allocated to at any one time and time resources. The findings also indicated that these factors will impact different organisations differently and therefore influence to varying degree depending on the base organisation. However, it is possible that some may be more predominant than others i.e. the key issues across teams in the base organisation. The findings also brought to light the fact that the perception of the attitude of the base organisation to stress is highly subjective.

6.4 Data Relevant for Social Capital

The data relevant for social capital is presented below under relationship dynamics theme, power tensions theme and access to knowledge and information theme.

6.4.1 Relationship Dynamics Theme

The relationship between the project manager and the project team, the whole team and other internal stakeholders was evaluated by soliciting the views of the project manager and project team members about these relationships. In organisation B and C, it was pointed out that the project manager was responsible for the team dynamics and project delivery e.g. if the project manager is adversarial the team will be adversarial. The project manager provided leadership and guidance, delegated and empowered others. A good relationship between the project manager and the project team was critical to working well together, however this was influenced by the idiosyncrasy of individual project managers. However, in organisation C, a senior manager was of the view that team members didn't have to like each other but just needed to work together. From organisation B and C, the findings indicated that the mechanisms for initiating and managing these relationships include meetings, face to face, emails, forums, telephone calls; IT enabled conference calls and inter-project activities. In organisation B and C, it was indicated that there was no prescribed team building requirement and was left to the discretion of project managers. Team building activities such team briefings, team bonding activities, human resource (hr) function, measures and performance were also indicated as the mechanisms used in organisation K. From organisation B, it was indicated that the relationship managing activities will be different if the client requested that their own project management system be utilised for project delivery instead of that of the base organisation. It was indicated that this will require a resource to be deployed to come to speed with the system who may also act as liaison individual for the purpose of meeting the client's request. From organisation B, it was indicated that with the contractor, a framework may be put in place to effectively manage the relationship while a preferred suppliers list may be used in working with suppliers. From organisation B, it was indicated that a Customer Satisfaction Manager conducts interviews and generates scores about what the base organisation does from the perspective of the client and feeds it back to senior management which in turn informs the organisations strategy.

From organisation B and C, it was also indicated that benefits accrue depending on the effectiveness of managing this relationship such as less overhead costs as skilled people are retained-reliable people and therefore more profitable.

It was found that the relationship between project teams varied from organisation to organisation and from site to site. In organisation B, the relationship between projects were described as practical, very social and got on very well. However, in organisation K, the position was that relationships between project teams were important if the projects were related and less important if the projects were not. In addition, in organisation K, it was indicated that culture was a factor that influenced team relationship as the local culture of each project was informed by the project manager's disposition. From organisation B, it was stated that people who have worked together on a previous project generally find it easier to work together again as they already have an established pattern of working and expectation of delivery. This may also be applicable to a base organisation and a client who has previously worked together; where there is an established pattern of work and expectation of delivery.

In organisation B, the relationship between the project team and central function was described as almost a culture of dislike which had a negative impact, but it was also highlighted that onsite project teams had autonomy and so were shielded. In organisation B, it was highlighted that the relationship across business functions were shocking i.e. cross selling because the costs proposed were often higher than in the open market and this also affected knowledge sharing. The factors that influenced relationship across business functions identified were the size of the organisation, group function, history (mergers and acquisitions) and budgets and targets (unhealthy competition).

With regards to the relationship with the client from organisation B and C, the project manager was identified as the interface manager but that the role could be delegated. It was also indicated that the relationship was driven by the project type and the contractual agreement. In organisation K, the relationship with the client was described as a high-level stakeholder engagement and not done at the project execution level, with the project manager dealing with the client interface. In addition, in organisation M, it was stated that the relationship with a client was formal, structured, and that the client would judge the organisation with everyone it interacted with. From the perspective of senior management in organisations B, C, K and M, the relationships with clients were multi-level with multiple points of contact across the organisation but were the primary responsibility of project managers however with the appropriate support mechanisms. From organisation B, C, K and M, it was indicated that leadership was important for culture of the base organisation that influenced relationship with the client. In addition, examples of relationship mechanisms used were community liaison

enablers to facilitate relationship between clients and local community, relationship management plan which includes surveys, feedback sessions, and regular high-level meetings.

In organisation B, the relationship between the base organisation and contractors was described e.g. as a master servant relationship or characterised by some amount of back scratching and deals. It was also highlighted that in most cases, these relationships were established relationships that go back over previous jobs. However, it was also indicated that the type of contractual agreement e.g. partnering agreement influenced the relationship. Another factor that influences the relationship is project manager expectations. The findings from organisation B also show that the project manager expects that the contractors know what they are doing, can deliver at a competitive price and most importantly handover without any problems. It was indicated in organisation C, that the type of contractual agreement e.g. partnering agreement influenced the relationship. It was also indicated that the base organisation could have direct relationship with tier 1 contractors and tier 2 contractors. But that there was less concern over suppliers compared to sub-contractors. From organisation B, C, K and M, the findings indicated that the relationship between project team and non-project team members was dependent on the organisational culture or project culture; the relationship could be friendly or adversarial, with clear or unclear understanding of different functions.

From organisation B, C, K and M, trust, mutual respect, shared values and belief were also referred to while describing the relationship between project manager and other project actors. Trust was identified as a key social resource; it was referred to as an essential enabler of working together in organisation B and C. In organisation B and C, external to the project team, trust was operationalised as collaboration, interdependence and looking out for each other. However internal to the project team trust was operationalised as reliability, reciprocity, autonomy, help and support, and capability. In both organisations K and M, it was indicated that trust could mean reliability, knowledgeability, capability, confidentiality, to have each other's back, and empowering people. From organisation M, it was stated that trust was earned not demanded and was demonstrated behaviour over time such as accountability, for example, how slippage was communicated in the past from the client's perspective influenced trust. From organisation B, C, K and M, it was indicated that skills and knowledge was a prerequisite for trust i.e. the project actor can be relied upon to do own task and team task.

Indicators for relationship dynamics were developed in terms of difference in language, culture, methodology following the insight from organisation B and C. In organisation K, it was indicated that there was a difference in language (literal and in project management terms),

individual project actor cultural differences and cultural differences across projects, methodological (including processes and techniques) differences and organisational philosophy differences and these impacted on collaborative action. However, there was mixed answers to the extent of difference from the perspective of project level and senior management. In organisation M, from the project level perspective and senior management, there was consensus that there was a very significant difference across project teams in terms of project management language. There was also consensus that there was quite a bit of difference in culture across project teams in the organisation.

6.4.2 Power Tensions Theme

Findings from organisation B indicated that in a contracting organisation from an organisational strategy perspective, the project actors are kept on the job by shareholders however, the project actor's focus is on project targets and not share price. The project actors' motivation is satisfying client requirement and not affected by share price.

From organisation B at the project level, the tensions were exhibited when comparing office based and onsite based project, where office based project actors were quite competitive and onsite based project actors showed more comradery- people cover for each other. There was also "us and them culture" where crossing over from project execution to management was perceived as betrayal.

From organisation B, it was also indicated that different teams had different and variable working conditions, project actors with different recruitments routes and pay conditions and naturally this introduces power tensions. There was also tension between members of the core construction delivery teams and the support core construction delivery teams.

Another power tension identified in organisation B was that posed by the supply chain i.e. the argument that contractors and suppliers held all the cards and therefore they were perceived as business risks with strategic implications. In the organisation C, there was tension between the base organisation and the partner and tier 1 contracting organisations e.g. due to staffing allocation- in project mobility. There was also tension between the base organisation and the utilities companies particularly with the support core construction teams. In organisation K, it was indicated that among the different organisations in the supply side of the single project client organisation, contracting organisations had different philosophies and procedures, different targets (profit and loss), different personal targets for future projects, different languages, and different cultures. These issues impacted differently on different individuals and it was said that it was "palpable, you can feel it".

In organisation B, at the individual project actor level it was indicated that power tensions existed experienced by project managers manifested by falling into silo thinking especially driven by cost considerations. Also, it was indicated that some project actors onsite who are mainly of trade background did not want to progress beyond site level so were less competitive, becoming construction manager is the goal. From the study, in organisation B, it was also indicated that project actors exhibited territorial behaviour, formed cliques and groups and had the tendency to agitate to work for a particular project manager particularly driven by the organisation's merger and acquisition. In organisation M, it was indicated that there was also there was tension between project individuals and the base organisation with regards to project exit strategy especially as roles become redundant along project lifecycle.

6.4.3 Access to Knowledge and Information Theme

In organisation B, reference was made to access to knowledge from knowledge champions but it was also highlighted that the attitude of project actors is influenced by their perception of the relevance of project knowledge based activities. Furthermore, it was stated that variability of project manager social capabilities also influenced access to knowledge and information. Lastly the organisation's infrastructure and culture also influenced access to knowledge and information.

In organisation C, it was highlighted that the number of stakeholders, the number of interfaces and variety of project actors influenced the access to knowledge and information. The organisational culture was also highlighted to influence access to knowledge and information. It was also highlighted that the team type influenced access to knowledge and information, that while the support function project teams were more likely to move around and cut across delivery project teams, the delivery teams i.e. core construction teams were more focused on the delivery of infrastructure and less likely to move around and consequently less likely to share knowledge widely. Access to knowledge and information between project teams and within teams was also highlighted.

In organisation K and M, the findings indicated that the base organisation's network influenced access to knowledge and information, and the quality of this knowledge and information. For individual project actors, the project team allocation influenced the quality of knowledge and information accessed. It was also indicated that intra-networking was highly valued by staff and the base organisation. However, it was not verified what 'value' meant to the organisation or the project individual.

6.5 Reputation Theme

From organisation B, it was also stated that one of the rationales for the merger and acquisition was to gain reputational benefits and contacts. Furthermore, it was pointed out that the organisation's behaviour during the recent economic down turn also affected project actor loyalty, how valued project actors felt and this caused high turnover and affecting staff retention.

From organisation C, it was also stated that reputation was intrinsic to everybody associated with the project. It was also indicated in organisation B that reputation could mean repeat business, good ranking/rating, goodwill and less litigation and competitive leverage i.e. creates opportunities. It was also indicated that reputation was built from track record and that reputation wins work and it cannot be bought. In organisation B, it was stated that some teams worked so well together that the client wanted them as a complete team on a different project. In organisation C, it was also indicated that reputation could mean that the project actor had demonstrated enhanced skills and capabilities, had been allocated more responsibilities, had demonstrated good time management skills and had the ability to adapt. It was also indicated that reputation could mean that the project actor had a good CV. It was explained that this was based on the recognition that future livelihood depended on successful delivery of the project and that personal reputation had personal value as it could be leveraged upon.

In organisation B, the following factors were also indicated to affect reputation: the organisational context (whether it was multinational or not; the geographical spread and its history and the type of team (office based or onsite based). From organisation C, it was also indicated that to generate reputation, the organisation had to employ the right people, collaborate with delivery partners that knew what they were doing and employ project managers who had done it before. In organisation C, it was also indicated that success of project management was the same as the success of the delivery of the organisation and it was not about shareholders. It was about project people (their roles- general and specific).

In organisation K and M, for individual rating on capabilities and knowledge, the range was fair to very good. Capabilities and knowledge at team level in organisation K and M ranged from fair to excellent and at organisational level it ranged from average to very good across all provided parameters.

6.6 Initial Discussion and Analysis

From simple observation of the data, the discussion is approached by first identifying what the data reveal about intangibles, the implications of the views of the senior management and that of project level project actors and the role that the project base organisation's background plays discussed in order below.

6.6.1 What the Data Reveals about the Intangibles

From the data, it was evident that the corporate knowledge ownership theme supports the generation of corporate knowledge ownership intangibles, a type of organisational capital as attention was drawn to types of knowledge. The types of knowledge were found to be project function specific (e.g. technical or commercial knowledge), project management knowledge (knowledge of people and knowledge of projects) and transient knowledge (e.g. team knowledge in a phase of a project etc.). The findings also drew attention to corporate ownership of knowledge and identified the attributes which characterise ownership of knowledge. The author established that the types of knowledge have implications for the ownership of the knowledge as it influenced the processes and systems put in place by the base organisation. The author is of the view that the types of knowledge and attributes of ownership of knowledge identified from the data fits with the dynamic knowledge perspective (Nonaka et al, 2000). Importantly, as project actors and project organisations work in multi-project environment, the type of knowledge generated is path dependent and socially complex.

In contrast, the way things are done was captured under the project management deployment structural themes and support the generation of project management deployment structural intangibles which are also types of organisational capital and can be considered to be the routines, or patterns of current practice and learning as stated by Teece and Pisano (1994). The data support the reasoning that the generation of project management methodology, team working, decision making and communications intangibles are captured in the data under the project management methodology theme, team working theme, decision making theme and communications theme. These project management deployment structural intangibles are from the organisation's project management routines and ways of doing things and therefore will also be path dependent and socially complex especially in the light of multi-project working environment with several stakeholders and project actors playing more than one role. Likewise, the data supports the reasoning that the generation of these intangible benefits are fundamentally influenced by the project type, the base organisation's role and the type of client. Consequently, a base organisation's approach and whether these routines have been standardised and the extent that they fit the changing internal and external environment at the project and organisational level determine the extent to which the intangible benefits or

disbenefits are derived. In particular, it was observed from the data that team working, decision making and communications intangibles have a strong human relational element and that the culture of the organisation which is embedded in the routines also come to play. From the data, it was also observed that team working, decision making and communications intangibles are also influenced by the client, type of project and the role of the organisation and the organisation's ability to change/adjust/ adapt on a per project basis with implications for individual projects and the base organisation as a whole.

Similarly, from the data under the alignment themes it was evident that the alignment intangibles a type of organisational capital is made up of knowledge, IT enabled and interface management components, and derived from what Porter (1998) described as support function activities which were identified from the data. The alignment intangibles include routine and current practices of the organisation with regards to support function activities. Consequently, knowledge alignment intangibles are derived from the understanding of the relationship between training provision of the base organisation and the generation of intangible benefits. IT enabled intangibles that are derived depend on the understanding of the relationship between IT and the other intangible benefits components and is closely related to what Teece and Pisano (1994) called "positions". The interface alignment intangibles draw attention to issues of configuration or how activities that generate intangibles interact; it draws attention to bottlenecks and inefficiency in coordination across activities, processes, people etc. The interplay of the routines evidenced from the data relevant to the generation of alignment intangibles support the reasoning that intangible benefits can either be reinforced or undermined. The data therefore supports the reasoning that the alignment intangibles plays a mediating role for the generation of organisational capital in the organisation, and therefore indirectly impacts on human capital and social capital.

In addition, similar to the data that identified types of knowledge at the corporate level, the data for the individual knowledge theme indicated that individual knowledge intangibles are also generated which falls under human capital. The data also indicated that individual knowledge intangibles are also dynamic because project actors work in multi-project environment with opportunity to engage with several stakeholders but more importantly because it is path dependent based on individual actor training, experiences (before start of tenure and after) and disposition. Likewise, from the data under the project leadership theme, project leadership intangible is generated and it is a type of human capital evident as individual, project and organisational level capabilities, and dependent on human interaction and decision making and influenced by the base organisation's processes, positions and paths.

Similarly, from the data relevant to social capital: the relationship dynamics theme, power tensions theme and access to knowledge and information theme, the data indicated that relationship dynamics, power tensions and access to knowledge and information intangibles are also generated. These derived intangible benefits of social capital are also socially complex dimensions of capabilities, dependent on human dimensions of interaction dependent on processes, positions and paths and strongly influenced by type of client and organisational culture. It was also indicated that the organisational culture is also variable across projects within the organisation with implications for central functions of the base organisation.

Lastly, the data under the reputation theme indicated that reputation intangibles were also generated. Furthermore, it was indicated that reputation intangible is different to organisational, human and social capital as the data demonstrated that perception was derived from interactions of different components that generated organisational, human and social capital with internal and external perspectives and personal and corporate perspectives as well. The data therefore supports the reasoning that reputation intangibles is derived from the socially perceived outcome based on the configuration of the base organisation's processes, positions and paths. The socially perceived outcomes are built around what is expected and what is experienced and should not fall below expectation both for internal and external stakeholders and can therefore be considered a hybrid intangible benefit. Consequently, reputation is also an organisational capability that can partly influenced and owned by the base organisation.

6.6.2 Implication of Variety of Participants

Whilst a variety of stakeholders participated across the four participating case organisations B, C, K and M, the data from organisation K and M threw more light on the understanding garnered from organisation B and C and therefore the difference in opinion for some components were more visible from the data from organisation K and M. As can also be observed, there was collective agreements for most of the aspects of the components of intangible benefits or complementary perspectives across the case organisations and the project level project actors and senior management. In addition, under some of the intangible benefits components from the data, the author identified some difference in views of project actors at the project level and senior management and these and their implications are highlighted below.

From the data relevant to the generation corporate knowledge ownership intangibles, there was a difference in opinion of senior management and project level project actors with regards to the main issues that influenced effectiveness of knowledge sharing and integration in the

base organisation and what factors most influenced how individuals contributed to knowledge capture in their organisation. Likewise, from the data relevant to the generation of project management methodology, there was consensus by senior management that the project management methodology was formal whilst project actors at the project level considered it to be composite. The author attributes this difference to the high-level view that management have compared to the more experiential view of project level actors. Similarly, from the data relevant to the generation of project decision making intangibles with regards to timeliness of decision making, senior management and project level project actors agreed on the first factor in organisation K and in organisation M and the author reasons that this is because timeliness was more affected by the organisational context. In addition, from the data relevant to the generation of communications intangibles, it was identified that there were different views of senior management to project level project actors with regards to the order of the most effective mode of communications across the different organisational levels. The author reasons that this is because of the high-level view that management have compared to the more experiential view of project level project actors. With regards to the data relevant to the generation of corporate alignment intangibles and specifically relevant to corporate alignment knowledge based intangible, it was identified that there was near consensus around employee voice with the organisation's interest in professional growth, attitude to training and qualifications and in both organisations K and M, senior management agreed that all three were important. The author attributes this to the fact that employee voice is influenced by project management deployment itself. In addition, with regards to current satisfaction with organisation knowledge stock repository strategy, project level project actors and senior management had different views and the author attributes this to the difference in views due to hierarchy. From the data relevant to the generation of corporate alignment IT intangibles, there was however no clear difference in opinion for senior management and project actors at the project level and the author attributes this to project management deployment and is therefore more generic. From the data relevant to the generation of corporate alignment interface management intangibles, it was indicated that there was no agreement at project level or senior management level both organisation K and M which interface was the most critical though the human interface was the most common. The author attributes this to project management deployment and therefore more generic.

From the data relevant to human capital, and specifically from the data relevant to the generation of project leadership intangibles, it was observed that there was more agreement about leadership characteristics reflected in the base organisation between senior management and project level actor in organisation M compared to organisation K. The author attributes this difference to the fact that the organisational context is the driver. In addition, from the data relevant to individual career factor, senior management considered tier one

contractors and type of client with regards to subjective leadership strategy not considered by project level project actors. The author reasons that this is because of the high-level view that management have and the experiential view that project level actors have.

With regards to the data relevant for the generation of relationship dynamics intangibles under social capital, there was consensus from the perspective of senior management that the relationship with clients were multi-level with multiple points of contact across the organisation with the main responsibility on project managers and the author considers this a high-level perspective. Indicators for relationship dynamics were developed in terms of difference in language, culture, methodology, however there were mixed answers to the extent of difference from the perspective of project level and senior management. The author attributes this difference to the high-level view that management have and the experiential view that project level actors have.

Consequently, from the analysis in this section focusing on the views of project level project actors and senior management, four types of scenarios were identified. The first scenario is one where there was agreement across organisations and organisational levels. The second scenario was one where the project level actors and senior management have different views regardless of the organisation. The third scenario is one where the views were similar in an organisation regardless of the organisational level whether senior management or project level. The last scenario is one where certain aspects of the intangible component is identified from only one organisational level. For the first scenario, the data support the reasoning that project management deployment is the critical factor. For the second scenario, the author attributes this difference to the high-level view that management have and the experiential view that project level actors have, therefore driven by organisational hierarchy. In the third scenario, the author argues that the data support the reasoning that the organisational context was the critical driver. It is also argued that for last scenario, similar to the second scenario, the data support the reasoning that the organisational level or hierarchy was the driver.

6.6.3 Implication of Organisational Background

From the data from the case organisations, it was demonstrated that organisational changes impacted on certain aspects of the components of intangible benefits. For example, under the data relevant for the generation of corporate alignment knowledge based intangibles, changes in organisation K was highlighted to be a factor in satisfaction with regards to organisation stock repository strategy. Also, under the data relevant for the generation of individual knowledge intangibles, in organisation B, the mergers and acquisition was also indicated to provide additional capability to the organisation in the form of expertise. Likewise, from the data relevant for factors that affect human capital, for the individual career factor it was

indicated in organisation B that the business model had changed informing career uncertainty and impacting negatively on loyalty and turnover. In addition, in organisation C the way the inproject opportunity was handled initially caused people to feel unappreciated and demotivated and it was revised which then had the effect of making people feel appreciated and motivated. Other examples identified from the data relevant to workload factor one of the factors that affect human capital, where in organisation B though external to the organisation, the economic situation and the reaction and subsequent actions of the organisation compounded career uncertainty and project actors feel unappreciated.

Similarly, from the data relevant to the generation of relationship dynamics intangibles of social capital, in organisation B, the relationship between project team and central function was described as a culture of dislike which had negative impact and the organisational history and size both function of merger and acquisition was indicated as driving factors. Likewise, from the data relevant to the generation of power tensions intangibles of social capital, in organisation B project actors exhibited territorial behaviour, formed cliques and groups driven by merger and acquisition. From the data relevant to the generation of access to knowledge and information intangibles, it was indicated in organisation B that another reason for the merger and acquisition was to gain reputational benefits and contacts.

Therefore, it is obvious from the findings that organisation B was the most affected by organisational changes because of the change of its business model and the merger and acquisition impacting on career uncertainty, relationship between project stakeholders, and relationship across organisational functions. However, the positive side of change of merger and acquisition was also highlighted to include access to expertise and contacts or relationship networks. Similarly, in organisation C, changes were made to address the way inproject mobility was approached with positive feedback. It can therefore be observed that organisational changes influence the way things are done and ultimately affect how people feel which can be positive or negative. It is also indicative that the impact of changes is more pronounced in the human capital and social capital components.

Therefore, the initial discussion and analysis demonstrate that knowledge is context-specific, relational, dynamic and humanistic (Nonaka et al, 2000). The author is of the view that the types of knowledge and attributes of ownership of knowledge identified fits with the dynamic knowledge perspective (Nonaka et al, 2000). Furthermore, as project actors and project organisations work in multi-project environment, the type of knowledge generated is also path dependent and socially complex. In contrast, the way things are done or the project management deployment structural intangibles can be considered to be the routines, or patterns of current practice and learning as stated by Teece and Pisano (1994). These intangible benefits: the project management methodology, team working, decision making and communications intangibles are derived from the organisation's project management routines

and ways of doing things. Again, they are path dependent and socially complex especially in the light of multi-project working environment with several stakeholders and project actors playing more than one role. Knowledge, IT enabled and Alignment intangibles are derived from what Porter (1998) described as support function activities. They include routine and current practices of the organisation with regards to support function activities. Individual knowledge is also dynamic because project actors work in multi-project environment with opportunity to engage with several stakeholders and opportunities to develop project leadership skills. Social capital is the relational expression of the intangible benefits derived from project management deployment and include relationship dynamics, power tensions and access to knowledge and information intangibles. The relationship dynamics intangibles focus on the views of relationship between project stakeholders and the value placed, power tensions intangible is focused on the tensions that exist between project stakeholders and access to knowledge and information intangibles focuses on the access to knowledge and information as a result of relationships and networks of relationships. Reputation is different to organisational, human and social capital as it emerged as a hybrid intangible benefit. This is because reputation also depends on the perception of the outworking of the same activities that drives the generation of organisational, human and social capital.

6.7 Summary

The findings support the reasoning that the empirically derived intangible benefits of project management deployment are types of knowledge and capabilities. In view of the initial analysis, no intangible benefit was considered more important than the other and this position is supported by extant literature as it has already highlighted that by the inherent nature of intangible benefits, the effect on competitiveness is path dependent and reliant on different combinations of intangible benefit components in view of organisational culture, structure etc. In addition, the reality of multi- project working with different projects and clients play a significant role in path dependence and causal ambiguity applies (Lippman and Rumelt, 1982). Therefore, intangible benefits are dynamic in nature especially as projects evolve over time (i.e. project lifecycle) with implications for stakeholders and the roles they play along the lifecycle in a multi project environment. In addition, the variety of participants drew attention to different scenarios driven by project management deployment itself, the organisation hierarchy within the organisation and the organisation's context. This supports the reasoning that some drivers of intangible benefits are generic whilst others will be more contextual at different levels within the organisation or at the organisational level. It was also demonstrated that the effect of changes was more visible in the human capital and social capital component of intangible benefits. It was also demonstrated that the more changes an organisation experienced, the more visible the effect will be good or bad.

Consequently, whilst no intangible benefit was considered more important than the other, the findings from the variety of participants highlight the multiple perspective of one component of an intangible benefit or the intangible benefit itself that needs to be considered and understood. This is fundamental in making the case for consideration of intangible benefits from project management deployment within the project based organisation. In addition, the findings from the effect of changes in the case organisations also draw attention to the effect on the human capital and social capital components of intangible benefits which can easily erode all the progress being made in the organisational capital components of intangible benefits. The findings on effect of change therefore points to the importance of the human and social capital components of intangible benefits when any organisation change occurs or is expected to occur. Consequently, the finding has enhanced the understanding of the “generates intangible benefits” box of the theoretical framework which will serve as input into developing the approach to the generation of intangible benefits.

In the next chapter of analysis, the focus will be to identify the drivers of the generation of intangible benefits across the types of case organisations and the insights from the initial discussion in this chapter will be carried forward.

Chapter 7 How Intangible Benefits Manifest in Practice

This chapter uses a deductive analytical approach to further analyse the data from the case organisations. The context to this chapter is first elucidated and the data is then analysed identifying the drivers of the different intangible benefits components already identified in the previous chapter. The findings are then discussed and the chapter summarised.

7.1 Context to this Chapter

In this chapter, further analysis is conducted on the data generated from the four participating case organisations with a focus on the project based organisation as the unit of analysis to identify the drivers of intangible benefits consequently operationalising the generation of the intangible benefits from project management deployment. This is consistent with the theoretical framework as it focuses on the “generate intangible benefits” box of the framework. Bearing in mind that in the previous chapter 6 the initial analysis focused on the generate intangible benefits box of the theoretical framework, with the initial analysis from observation highlighting the different intangible benefits generated and that they were types of knowledge and capabilities, the implications of the variety of participants and the effect of organisational changes. The data as captured in chapter 6 was analysed and refined identifying the drivers of intangible benefits. The drivers of intangible benefits are discussed below under the appropriate intangible benefits derived from project management deployment. The columns for each table for analysis is populated by the intangible benefit component, the identified drivers, the contracting organisations (organisation B and K), the single project client organisation (organisation C) and contracting organisation –supply side (organisation M). However only the table for corporate knowledge ownership intangibles (Table 7.1) is presented in this chapter, the other tables are presented in Appendix D but the contents and implications are discussed. The approach to populating the data in the tables was to identify the driver as it appeared chronologically in the data and are now discussed in the following sections.

7.2 Organisational Capital

To be consistent with chapter 6, organisational capital was decomposed into three components: corporate knowledge ownership intangible, corporate project management deployment intangibles and corporate alignment intangibles and discussed below.

7.2.1 Corporate Knowledge Ownership Intangibles

From the data knowledge types were indicated to include knowledge about project business and knowledge about people in the context of projects. It was also indicated that some knowledge types were more important for competitiveness.

From the data, it was indicated that both formal and informal knowledge mechanisms with people-led and technology led approaches were combined for knowledge management. Lessons learnt was a common mechanism for knowledge capture, sharing and integration across the contracting and single project organisations though with inconsistent approach to lessons learnt. Meetings were also highlighted as the main mechanism for lessons learnt to occur, however access to knowledge champions/experts were the most up to date and direct and accessible mechanism. The impact of national difference demonstrated by the difference between the UK and Spain was also highlighted as a factor in the approach to knowledge sharing and integration.

Similarly, from the data, a formal approach to knowledge management was indicated across the contracting and single project client organisations. The use of IT was common and usually referred to a knowledge management system or document management system.

From the data, different barriers to knowledge sharing were indicated and included people aspects (e.g. don't see the benefits), technology aspects (e.g. fit of IT infrastructure), geography aspects (e.g. distance between sites), location aspects (e.g. onsite or office based project tasks) and organisational culture aspects (e.g. not high enough on agenda of project teams).

Different learning routes were also indicated across the contracting organisation and the single project client organisation. Learning from other projects that is project to organisation learning, knowledge sharing within teams and between also demonstrates project actor to project actor or project actor to team or project team to team learning.

Different learning objectives were indicated in the contracting and single project client organisation. From the point of view of the single project client organisation there was reference to internal organisational purposes of knowledge e.g. auditing purposes and from the point that the single project client organisation and client, the difference in learning objectives of the different stakeholder organisation were highlighted. From the point of view of the contracting organisation, there was reference to winning work and competitive project execution which involves participation of competitor organisations.

Several factors that motivate project actors to be active at knowledge management were indicated from the data. It was indicated from the contracting organisation in the supply side of the single project client organisation that project level and senior management had different views whilst in the contracting organisation it was indicated that there was no consensus on the factor that most influenced individuals to contribute to knowledge capture in the base organisation. However, the system and time constraints were indicated in both organisations. Similarly, for the factor that most influenced project sharing, focus on the day job and time were the first two factors indicated in both organisations.

The benefits of knowledge management were indicated for improving ways of working, costs savings and improved project cycle time. Similarly, the cost of knowledge management was also indicated to include cost of not capturing and sharing knowledge, not placing a value and not justifying doing knowledge management.

From the analysis of data, seven drivers: knowledge types, knowledge sharing mechanisms, knowledge management systems, barriers to knowledge sharing/factors that motivate knowledge sharing, learning routes, learning objectives and direct benefits of knowledge management were identified from across the contracting and single project client organisations. This is shown in Table 7.1.

Table 7.1: Drivers for Corporate Knowledge Ownership Intangibles

Intangible benefit	Drivers of intangible benefits	Contracting organisation	Single Project Client organisation	Contracting Organisation-supply side
Corporate Knowledge Ownership Intangibles	1) Knowledge Types	X	X	X
	2) Knowledge sharing mechanisms	X	X	X
	3) Knowledge management system	X	X	X
	4) Barriers to knowledge sharing/ factors that motivate knowledge sharing	X	X	X
	5) Learning routes	X	X	X
	6) Learning objectives	X	X	X
	7) Benefits of knowledge management	x	x	x

As can be observed in Table 7.1, the seven drivers were identified in all the organisations. While knowledge types will be common, the other drivers are more affected by the context of the base organisation. The data demonstrates the relationship between the different drivers of corporate knowledge ownership intangibles as the type of knowledge influences the knowledge sharing mechanisms and knowledge management system. The barriers to

knowledge sharing and factors that motivate knowledge sharing are also impacted by the type of knowledge and the knowledge management system. Similarly, the learning route may impact on the knowledge sharing mechanisms and the barriers to sharing knowledge or motivation to sharing knowledge. The benefits of sharing knowledge and learning objectives is not only relevant for the base organisation but also for project individuals with implications for type of knowledge sharing mechanisms and knowledge management system in the case of the organisation and factors that motivate in the case of the project individual. Therefore, the findings also demonstrate that the seven drivers are important across the contracting and single project client organisation. The findings therefore support the reasoning that corporate knowledge ownership intangibles are critical and generic regardless of whether contracting or single project client organisation.

7.2.2 Corporate Project Management Deployment Structural Intangibles

Similar to section 6.2.2, the four main aspects: project management methodology intangibles, communications intangibles, team working intangibles and decision-making intangibles are discussed below regarding the identified drivers from the findings (refer to Appendix D) and they are discussed in the light of the findings from the contracting and single project organisation.

7.2.2.1 Project Management Methodology Intangibles

The findings from the contracting and single project client organisation indicated that all the organisations considered their methodology to be composite or formal combining different processes tools and techniques. The methodology also varied across the stakeholder organisations in the supply side. Different perception of the project methodology and different levels of autonomy of project managers were also indicated. It was also indicated that factors outside the control of project also influenced the project management methodology.

The findings from the contracting and single project client organisation also indicated that there were direct benefits of using a project management methodology such as well as using the appropriate project management methodology.

The project management methodology employed in the UK was considered more formal compared to that employed in Spain with the level of paper work and bureaucracy used as indicators.

From the analysis of the data three drivers: methodology, direct benefits and national differences were identified from across the contracting and single project client organisation as shown in Table D1.1. As can be observed in Table 7.2, the project management methodology was indicated across all the organisations indicating that it was critical for the

generation of project management methodology intangibles and therefore generic regardless of type of organisation. In addition, the driver direct benefits were only referred to in the single project client organisation and contracting organisation in the supply side of the single project client organisation which supports the reasoning that whilst project management methodology is critical it is deployed contextually. The national difference driver drew attention to the effect of national differences on the project management methodology.

7.2.2.2 Team Working Intangible

From the data, it was indicated that project manager and team member selection could involve several stakeholders in the selection process. Furthermore, for the selection process, it was indicated that that there was also the need for the consideration of the knowledge, experience and mix/composition of project actors.

From the data, it was also indicated that there were factors influenced team member selection including resource availability, the line manager and the type of project (characterised by size, scope and geography).

From the data, the project actor roles were also indicated as an important component of teamworking as project actors had multiple roles with different lines of authority for those roles. In addition, depending on the type of organisation, some roles became redundant along the project lifecycle or became necessary at different phases of the lifecycle. Similar to team selection, the context whether contracting or single project client organisation drives role selection and lines of authority.

From the data, different types of teams were identified from the organisations: delivery teams, non-delivery teams and work winning team. The work winning teams were in the feasibility and planning phase and the delivery and non-delivery teams were located in the execution phase.

The importance of meetings for team working, for sharing knowledge (e.g. lessons learnt) and for project operational reasons (progress meetings etc.) were indicated. Therefore, meetings were the main coordination mechanism as the project got underway to refine task and manage task interdependencies and interfaces. It was indicated that the corresponding meeting type should occur with the right frequency to achieve right outcome.

From the analysis of data five drivers: team selection process, project actor roles, factors, meetings and types of teams were identified from across the contracting and single project client organisation as shown in Table D1.2. As can be observed from Table 7.3, the five drivers were indicated cross the contracting and single project client organisation, however factors

that influence team member selection were only identified from the contracting organisations and play a mediating role and therefore indirectly impact on the other drivers of team working intangibles. In addition, the factors driver indicates that it is only be relevant for contracting organisations or more information was required from the single project client organisation. The findings therefore support the reasoning that team working intangibles are generic regardless of whether contracting or single project client organisation however experienced contextually.

7.2.2.3 Decision Making Intangibles

From the data, it was indicated that decision making was an organisational capability as it was demonstrated at senior management level, project and individual levels.

The context of a contracting or single project client organisation predetermines the individual project actor capabilities and strongly influences decision making at the management and project level.

Good decision making was characterised in three dimensions: time, structural and quality.

Considering the decision support system of the organisation, decision support measures fed into technology led and people led mechanisms supported decision making.

From the findings from the contracting and single project client organisation, it was indicated that information required for decision making by different stakeholders were prepared in the right format to support stakeholder decision making.

From the analysis of data, five drivers: demonstrated organisational capability (timeliness/quality), demonstrated individual project actor capability, organisational disposition to decision making, decision making information and fit of decision support system were identified from across the contracting and single project client organisation as shown in Table D1.3. As can be observed from Table D1.3, demonstrated organisational capability and individual project actor capability is common across all the organisations whilst organisational disposition to decision making, decision making information and fit of decision support system were indicated in the contracting organisations. However, the last three drivers were derived by refining the first two drivers.

Therefore, the findings support the reasoning that organisational and individual capabilities are the critical drivers for generating decision making intangibles and therefore generic across types of organisations. The organisational disposition to decision making, decision making information and fit of decision support system were indicated only in the contracting organisations and therefore suggest that it may only be relevant to contracting organisations

or more data required from the single project client organisation or single project client organisation however experienced contextually.

7.2.2.4 Communications Intangibles

From the data, three types of communications were referred to and were perceived differently. The findings also indicated that communications covered a wide range of information associated with project.

The role of IT in communication was also highlighted.

Furthermore, from the findings three predominant modes of communications was identified: face to face, meetings and emails.

Considering timeliness of communication, it was also indicated that the organisational culture and structure were the most important factors that influenced timeliness of communication.

From the analysis of data, four drivers: types of communications, role of IT, modes of communications, timeliness of communications were identified from across the contracting and single project client organisation as shown in Table D1.4. As can be observed from Table D1.4, the four drivers were indicated across all the organisations and therefore demonstrate that they are critical for the generation of communications intangibles. However, the driver role of IT was not indicated in the contracting organisation supply side which is expected due to national differences between UK and Spain already highlighted. Therefore, the findings support the reasoning that communications intangibles are generic regardless of whether contracting or single project client organisation though experienced contextually, however national difference can influence the role of IT.

7.2.3 Corporate Alignment Intangibles

Similar to section 6.1.3, three components: corporate alignment – knowledge based intangible, corporate alignment- IT enabled intangibles and corporate alignment- interface management intangibles have been identified from the findings.

7.2.3.1 Corporate Alignment Knowledge Based Intangibles

From the data, it was indicated that there were mechanisms put in place to monitor training process.

From the data two factors that affected the type and mode of training provided was budgetary considerations and major events like a merger and acquisition.

Furthermore, the data from the single project client organisation indicated that the training provision was limited.

From the data, types and modes of training were indicated.

From the data, it was indicated that project actors needed to have a voice with regards to their skills development with expectations on the base organisation.

From the data, the different participants indicated different levels of satisfaction with their organisation's knowledge repository strategy.

From the analysis of data, five drivers: training provision mechanisms, types and modes of training, factors that influence training provision, project actor voice, project actor satisfaction were identified from across the contracting and single project client organisation as shown in Table D1.5. As can be observed from Table D1.5, the first two drivers were indicated in a contracting organisation and single project client organisation whilst the last three drivers were only indicated in the contracting organisations which is consistent with the data from the single project client organisation that it is not hot on training and project actors have less expectation except for project led training. Therefore, the findings demonstrate that the training provision mechanisms and types and modes of training are relevant for the contracting and single project client organisation but more critical for contracting organisations.

7.2.3.2 Corporate Alignment- IT Enabled Intangibles

From the data, it was demonstrated that IT influenced in three main dimensions: knowledge management, communications and ways of working but with consequences as actors are considered project workers and therefore less project support staff provided thus.

From the data, it was also indicated that there were limitations of IT such as promotion of bureaucracy, overdependence of IT systems and the impact on work-life balance.

From the data, it was indicated that the cultural disposition of a country affected organisational culture and hence the IT infrastructure required with implications for project with multinational stakeholders.

From the analysis of data, three drivers: sphere of influence, limitations, national cultural disposition were identified from across the contracting and single project client organisation as shown in Table D1.6. As can be observed from Table D1.6, the first driver sphere of influence was indicated across all the organisations, whilst the second driver limitations were indicated by the contracting organisations after further enquiry and consistent with the driver sphere of influence by extending the understanding of the driver. The findings therefore

demonstrate that that the sphere of influence is critical for the generation of corporate alignment IT enabled intangibles while the limitations and national cultural disposition are driven by context. In addition, the driver limitations indicate the generation of intangible disbenefits due to bureaucracy, over dependence on IT systems and negative impact on project actors' due to effect of work life balance.

7.2.3.3 Corporate Alignment- Interface Management Intangibles

From the data, different types of interfaces were identified and the author observed that interface management issues were common to the contracting and single project client organisations but experienced differently across the organisations.

The data also indicated that the criticality of interface issues was indicated.

From the analysis of data, two drivers: types of interface issues and criticality of interface were identified from across the contracting and single project client organisation as shown in Table D1.7. As can be observed from Table D1.7, different types of interfaces were indicated in the contracting and single project client organisation. However, the criticality of interface issues was only highlighted in the single project client organisation. The findings therefore support the reasoning that corporate alignment interface intangibles are more critical for single project client organisation.

7.3 Human Capital

Similar to the findings discussed chapter 6, human capital is decomposed into individual knowledge and project leadership intangible.

7.3.1 Individual Knowledge Intangibles

From the data, it was indicated that knowledge referred to personal and team complimentary knowledge. Personal knowledge included all the types of knowledge as described in section 7.1.1. From the analysis of data, a driver types of knowledge were identified from across the contracting and single project client organisation as shown in Table D1.8. As can be observed from Table D1.8, types of knowledge were indicated across all the organisations and therefore indicating that it is critical for the generation of individual knowledge intangibles and demonstrate that individual knowledge intangibles are generic regardless of whether it is a contracting or single project client organisation generated by individual project actors.

7.3.2 Project Leadership Intangibles

From the data, project leadership is focused on the project manager capabilities

From the data, mechanisms employed for developing leadership characteristics were also indicated.

From the data, it was indicated there were differences between leadership characteristics reflected in the base organisation and leadership characteristics promoted against in the base organisation.

From the analysis, three drivers: project manager capabilities, developing leadership characteristics and difference between leadership reflected and promoted were identified from across the contracting and single project client organisation as shown in Table D1.9. As can be observed from Table D1.9, the first two drivers: project manager capabilities and developing project leadership capabilities were indicated in the contracting and single project client organisation whilst the third driver difference between leadership reflected and promoted against in the organisation was reflected in the contracting organisation after further enquiry and consistent with developing leadership characteristics. Therefore, the findings indicate that project manager capabilities and developing project leadership capabilities are critical for the generation of project leadership intangibles and support the reasoning that project leadership intangibles is generic regardless of whether contracting or single project client organisation.

7.3.3 Factors that affect Human Capital

The findings identified factors similar to the factors identified from extant literature in section 4.3.2.4; however, the empirically derived factors drew attention to the impact of project actors' innate desire to be recognised and rewarded for hard work i.e. to have career success. Within the context of the findings, the factors are divided into individual career progression and work load factor discussed below.

7.3.3.1 Individual Career Factor

From the data, it was indicated that the main driver for individual career factor is the staffing and promotion strategy evidenced in leadership development and recruitment to leadership position with implication for project actors' motivation, teamworking, their loyalty and turnover.

From the data, it was indicated that organisational changes such as business model change impacted on motivation. In addition, from the data, the operational decision about access to inproject opportunity in the single project client organisation also impacted on motivation and turnover

It was also indicated that there were objective and subjective factors. The relationship between organisational change and career factor was also highlighted with negative or positive impacts on project actors

From the data, the base organisation's leadership strategy was also indicated to impact on the individual project actor capabilities, motivation to learn etc.

From the analysis of data, four drivers: staffing and promotion strategy, effect of changes, factors (objective & subjective), impact of staffing and promotion strategy were identified from across the contracting and single project client organisation as shown in Table D7.10.

As can be observed from Table D7.10, the first driver staffing and promotion strategy was indicated in the contracting and single project client organisation demonstrating that it is critical individual career factor that mediates the generation of human capital. However, effects of organisational changes were not indicated in all the contracting organisations but in the single project client organisation. Similarly, the last two drivers were only indicated in the contracting organisations after further enquiry and consistent with the driver staffing and promotion strategy by extending the understanding of the driver. Therefore, the findings support the reasoning that the other three drivers were more applicable to contracting organisations or more data was required from the single project client organisation.

7.3.3.2 Work Load Factor

From the data, it was indicated that project activities were identified as stressors.

From the data, it was indicated that the organisations attitude to stress (internal) or reaction and subsequent action to economic down turn (external) can also act as stressors.

From the data, the support role that the project management methodology plays to mitigate stress encountered by project actors were indicated.

From the data factors that affected the assessment of stress by project actors and factors that contributed to stress were also highlighted.

From the analysis of data, three drivers: project related stressors, organisational related stressors, factors that affected the stress assessment, support of project management methodology were identified from across the contracting and single project client organisation as shown in Table D7.11.

As can be observed from Table D7.11, the first driver project related stressors were indicated in the contracting and single project client organisation however the other three drivers were indicated in the contracting organisations after further enquiry and they are consistent with the driver project related stressors as they extend the understanding of the driver. Therefore, the

findings support the reasoning that whilst project related stressors were generic and therefore critical for work load factor, the organisational related stressors, factors that affected the stress assessment and support of project management methodology were more relevant to contracting organisations or more data from single project client organisation.

7.4 Social Capital

Similar to section 6.3, social capital is divided into three components: relationship dynamics intangibles, power tensions intangibles and access to knowledge and information intangibles. These three aspects are discussed with reference to the identified drivers below.

7.4.1 Relationship Dynamics Intangibles

From the data, the project manager was identified as a principal actor for relationship dynamics.

From the data relationship building and managing mechanisms were indicated.

From the data, the different configuration of relationship between stakeholders were demonstrated.

From the data, it was indicated that collaborative action between stakeholders required social resources trust, mutual respect, shared values and belief.

From the data, it was indicated that there were differences in the measures of the ease of collaborating between stakeholders

From the analysis of data relevant to the generation of relationship dynamics intangibles, six drivers: project manager, relationship mechanisms, direct benefits, configuration of relationships between stakeholders, social resources, ease of collaboration were identified from across the contracting and single project client organisation as shown in Table D7.12

As can be observed from Table D7.12, the drivers: configuration of relationships between stakeholders and social resources were indicated across all the organisations whilst the drivers: project manager, relationship building mechanisms and direct benefits were also indicated in the contracting and single project client organisation demonstrating that they are relevant to contracting and single project client organisation. Therefore, configuration of relationships between stakeholders, social resources, project manager, relationship mechanisms and direct benefits are critical for the generation of relationship dynamics intangibles. The ease of collaboration was indicated in both contracting organisations after further enquiry and consistent with the drivers: relationship mechanisms, configuration of relationships between stakeholders and social resources as they extend the understanding of

the outcome of the drivers and subsequently supports the reasoning that the driver is relevant to contracting organisations or more information is required from the single project client organisation.

7.4.2 Power Tensions Intangibles

From the data, there were tension between strategic and operational focus and between management and operational roles.

From the data, it was indicated that there was tension between office based and onsite based projects.

From the data, it was indicated that there were tensions between teams based on subjective factors such as recruitment route and type of project team

From the data, it was indicated that there was tension between the contracting organisation and the organisations in the supply chain. In addition, it was indicated that there were stakeholder organisation strategic tensions based on difference in the organisations identity (e.g. difference in philosophies and procedures).

From the data, it was indicated that individual project actor tensions.

From the data, the impact of organisational change was also highlighted.

In addition, the tensions between the project individual and the project based organisations was also highlighted.

From the analysis of data, six drivers: strategic and operational tensions, organisational working based tensions, team based tensions, supply chain tension, individual career based tensions, organisational led individual based tensions were identified from across the contracting and single project client organisation as shown in Table D7.13.

As can be observed from Table D7.13, the driver supply chain tension was indicated in the contracting and single project client organisation, therefore supporting the reasoning that this is critical for the generation of power tension intangibles. The organisational led individual based tensions were indicated in two contracting organisations and this supports the reasoning that these drivers are relevant to contracting organisations. Whilst the strategic and operational tensions, organisational working based tensions, team based tensions and individual career based tensions are relevant to contracting organisation, are contextual and thus relevant for an organisation or more information is required from the single project client organisation.

7.4.3 Access to Knowledge and Information Intangibles

From the data, it was indicated organisational formal route to access to knowledge was indicated.

From the data, factors that influence access to knowledge and information were also highlighted.

From the data, it was indicated that there was difference stakeholder configuration of access to knowledge and information.

The role of the organisations network and the project individual network in influencing access to knowledge and information was also highlighted.

From the analysis of data, four drivers: organisational formal route, factors that influence access to knowledge and information, stakeholder configuration access, networks available were identified from across the contracting and single project client organisation as shown in Table D7.14.

As can be observed from Table D7.14, the drivers: stakeholder configuration access and networks available were indicated across all the organisations and therefore support the reasoning that they are generic and critical for the generation of access to knowledge and information intangibles. In addition, from the findings, the driver organisational formal route was indicated in the contracting organisation and therefore supports the reasoning that the driver was more relevant to contracting organisations. Lastly the factors were indicated in the contracting organisation and therefore support the reasoning that they act as mediating drivers impacting on other drivers and relevant to contracting organisation, contextual thus relevant for an organisation or that more information from the single project client organisation required.

7.5 Reputation Intangibles

The data indicated that one of the rationales for the merger and acquisition was to gain reputational benefits and contacts.

It was also indicated that the project actor's view of the organisation was changed due to the organisations behaviour during the economic downturn.

From the data, proxies for reputation were also indicated with different perspectives from the contracting organisation and single project client organisation associated with the base organisation, project teams and individual project actors.

Lastly from the data, factors that affected reputation were also indicated.

From the analysis of data, five drivers: direct benefits, organisation-led internal reputation, proxies of organisational reputation, project- actor led reputation and factors that affect reputation were identified from across the contracting and single project client organisation as shown in Table D7.15.

As can be observed from Table D7.15, the drivers: proxies of organisational reputation, project actor-led reputation and factors were indicated in the contracting and single project client organisation. The findings therefore support the reasoning that proxies of organisational reputation and project actor led reputations are generic and critical for the generation of reputation intangibles, whilst the factors that affect reputation are mediating drivers and have an indirect impact on the other drivers of reputation intangibles. In addition, the drivers: direct benefits and organisation- led internal reputation were only indicated in the contracting organisations and therefore support the reasoning that these drivers are relevant for contracting organisations, are contextual to an organisation or that more information was required from the single project client organisation.

7.6 Discussion

In this section, what the analysis of the data reveals about the drivers of intangible benefits are first discussed. The implication of organisational background is also discussed. Lastly the empirically derived intangible benefits are compared to the theoretically derived intangible benefits and the themes identified from intellectual capital.

7.6.1 What the Data Reveals about Drivers of Intangible Benefits

Sixty-seven drivers of intangible benefits were identified from the data relevant for generating intangible benefits and of the sixty-seven drivers, four of which were factors that mediate the generation of teamworking intangibles, corporate alignment knowledge intangibles, access to knowledge and information intangibles, and reputation intangibles. The analysis also reveals that all the drivers for corporate knowledge ownership intangibles, team working intangibles communications intangibles, individual knowledge intangibles and project leadership intangibles are critical across the contracting and single project client organisation. In addition, the findings reveal the critical driver for project management methodology intangibles as the project methodology itself, the critical drivers for decision making intangibles as organisational and individual capabilities and training provision mechanisms and type and modes of training as the critical drivers identified for corporate alignment knowledge based intangibles. In addition, the sphere of influence was identified as critical driver for corporate alignment IT enabled intangibles; types of knowledge as critical driver for individual knowledge intangibles, and project manager capabilities and developing project leadership capabilities as drivers of project leadership intangibles. Furthermore, configuration of relationships between

stakeholders, social resources, project manager, relationship building mechanisms and direct benefits were also identified as critical drivers for relationship dynamics intangibles; supply chain tension as the critical driver for power tensions intangibles; stakeholder configuration access and networks available as drivers for access to knowledge and information intangibles, and proxies of organisational reputation and project actor led reputations as critical for generating reputation intangibles.

The findings therefore demonstrate that whilst some drivers of intangible benefits are generic regardless of whether contracting or single project client organisation, the drivers for the other intangible benefits are partly relevant for both contracting and single project client organisations, partly relevant for contracting organisations or for a contracting organisation. However, fundamentally, regardless of whether it is a contracting or single project client organisation, or the intangible benefits component is generic or not, the generation of the intangible benefits will be experienced in the context of the project based organisation. From inspection of the findings, the corporate knowledge ownership intangibles and the human capital components are generic.

7.6.2 Implication of Organisational Background

In view of the identified drivers of intangible benefits and bearing in mind that the analysis in this chapter is focused on the project based organisation as the unit of analysis, the effect of organisational change on the generation of intangible benefits is considered. The findings indicate that organisational change such as mergers and acquisition impacts on corporate alignment knowledge based intangibles, relationship dynamics intangibles, power tensions intangibles and reputations intangibles. Likewise, organisational changes such as a change in business model of a project based organisation impacts on the individual career factor. In addition, organisational changes such as inproject mobility impacts on power tensions intangibles and the individual career factor. Therefore, the findings reveal that organisational changes such as merger and acquisition is the most disruptive, the in-project mobility change the next most disruptive with the change to the business model the least disruptive. Consequently, the findings support the reasoning that the impact of major organisational changes be highlighted when intangible benefits are considered.

7.7 Summary

In view of the theoretical framework developed in chapter 5, this chapter has focused on the empirically derived intangible benefits and sixty-seven drivers of intangible benefits were identified from the data from the case organisations. The findings reveal that whilst some

drivers of intangible benefits are generic regardless of whether contracting or single project client organisation, other drivers are partly relevant for both contracting and single project client organisations, partly relevant for contracting organisations and partly relevant for a contracting organisation. The findings demonstrated that the corporate knowledge ownership intangibles and the human capital components are generic while other intangible benefits components are contextual to varying degrees. In addition, the findings reveal that organisational change is disruptive to the generation of intangible benefits from project management deployment, that the disruptive effect of change increases on a continuum depending on type of change and impact evident in the “generate intangible benefits” box of the theoretical framework.

Consequently, the finding has enhanced the understanding of the “generates intangible benefits” box of the theoretical framework which will serve as input into developing the approach to the generation of intangible benefits. However, in the next chapter the empirically derived intangible benefits will be compared to the theoretically derived intangible benefits and intellectual capital in order to enhance the understanding of the link between the generation of intangible benefits and the generation of intellectual capital and validate the link in the earlier developed theoretical framework. Consequently, establishing the basis to develop the logic model to the generation of intangible benefits from project management.

Chapter 8 Logic Model to the Generation of Intangible Benefits

This chapter develops the logic model to the generation of intangible benefits. The context to this chapter is first elucidated. The empirically derived intangible benefits from earlier chapters are first compared to the intellectual capital themes from an earlier chapter in the literature reviewed. Furthermore, the empirically derived intangible benefits and theoretically derived intangible benefits from earlier chapters are also compared. The logic model is then developed, and the implication of the logic model including for project management deployment and competitiveness is explored and the chapter summarised.

8.1 Context to this Chapter

In view of the theoretical framework developed in chapter 5, this chapter focuses on understanding the link between the generation of intangible benefits and the generation of organisational capital, human capital and social capital leading to organisational competitiveness (hereafter called the Link) and the implications for developing the approach to the generation of intangible benefits from project management deployment. The focus on the Link is critical to a coherent understanding of how the generation of intangible benefits contributes to competitiveness which will lay the foundation on which the approach to the generation of intangible benefits will be developed so as to allow for the assessment of the current state of the intangible value stream of a project based organisation and consequently to expose the opportunities to effect appropriate changes to generate and exploit the intangible benefits generated.

Consequently, the focus on the Link consolidates on the understanding garnered from extant literature and the theoretical and empirical findings. The comparison between what was found empirically to what was found theoretically is used to establish and validate what is now known about intangible benefits and the process of generation of intangible benefits. Therefore, references will be made to chapter 6 and 7, where the empirically derived findings have been presented, references will also be made to chapter 5, where the theoretically derived findings have been presented and chapter 3 where intellectual capital, fundamental to the understanding of competitiveness in the context of this research, was discussed as part of the literature reviewed. By consolidating the understanding derived from these chapters, an enhanced understanding of intangible benefits and relationship between the components of intangible benefits will serve as a strong basis for developing the logic to the generation of intangible benefits. Consequently, the developed logic model should demonstrate the understanding of the relationship between the intangible benefits identified and the processes of generating each intangible benefit individually and collectively in a coherent manner with implication for competitiveness in different types of project based organisations.

8.2 Linking the Empirically Derived Findings to Theoretically Derived Findings

As stated in section 8.1, there is need to consolidate what is now known about intangible benefits. In order to do this, a link between the empirically derived and theoretically derived findings is made by comparison of the empirically derived intangible benefits (see chapter 7) with the themes identified from intellectual capital (see chapter 3) and comparison of the empirically derived intangible benefits (chapter 7) with the theoretical derived intangible benefits (chapter 5) will now be discussed in section 8.2.1 and 8.2.2 respectively below.

8.2.1 Comparison of the Empirically Derived Intangible Benefits with the Themes Identified from Intellectual Capital

The comparison of the empirically derived intangible benefits with the themes identified from intellectual capital is necessary in developing a coherent understanding of what is now known about intangible benefits derived from project management deployment. This is because the extent of similarity or dissimilarity is a demonstration of the extent to which intangible benefits derived from project management deployment impacts on competitiveness (see section 3.4). The comparison of the empirically derived intangible benefits derived from chapter 7 with the themes identified from intellectual capital derived in chapter 3 are shown in Table 8.1 populated with the intellectual capital component in the first column, identified themes from intellectual capital in the second column and the empirically derived intangible benefits in the third column. As can be observed from Table 8.1, considering organisational capital component of intellectual capital, knowledge management as organisational capital is closely related to corporate knowledge ownership intangibles. Owning organisational capital is closely related to corporate knowledge ownership intangibles, corporate knowledge ownership intangibles and corporate alignment knowledge based intangibles. Similarly, measurement of organisational capital is closely related corporate knowledge ownership intangibles, project management methodology intangibles, team working intangibles, decision making intangibles, communications intangibles, corporate alignment knowledge based Intangibles, corporate alignment IT enabled Intangibles and corporate alignment interface based intangibles. Cost of organisational capital is closely related to corporate knowledge ownership intangibles.

Table 8.1: Comparison of the Empirically Derived Intangible Benefits with the Themes Identified from Intellectual Capital from Literature review

Intellectual Capital Component	Identified Themes from Intellectual Capital	Empirically Derived Intangible Benefits
Organisational capital	3.3.1.1 Knowledge Management as Organisational Capital	7.6.1.1 Corporate Knowledge Ownership Intangibles
	3.3.1.2 Owning Organisational Capital	7.6.1.1 Corporate Knowledge Ownership Intangibles/ 7.6.1.6 Corporate Alignment Knowledge Based Intangibles
	3.3.1.3 Measurement of Organisational Capital	7.6.1.1 Corporate Knowledge Ownership Intangibles 7.6.1.2 Project Management Methodology Intangibles 7.6.1.3 Team Working Intangibles 7.6.1.4 Decision Making Intangibles 7.6.1.5 Communications Intangibles 7.6.1.6 Corporate Alignment Knowledge Based Intangibles/ 7.6.1.7 Corporate Alignment IT Enabled Intangibles 7.6.1.8 Corporate Alignment Interface Based Intangibles
	3.3.1.5 Company's Reputation (Internal and External)	
	3.3.1.4 Costs of Organisational Capital	7.6.1.1 Corporate Knowledge Ownership Intangibles
Human capital	3.3.2.1 Employee Knowledge, Skills and Talent	7.6.1.9 Individual Knowledge Intangibles 7.6.1.10 Project Leadership Intangibles
	3.3.2.2 Changing Employee-Organisational Relationships 3.3.2.3 Individual Career Aspiration 3.3.2.4 Employee Retention	7.6.1.11 Individual Career Factor 7.6.1.12 Work Load Factor
	3.3.2.5 Measurement of Human Capital	7.6.1.9 Individual Knowledge Intangibles 7.6.1.10 Project Leadership Intangibles 7.6.1.11 Individual Career Factor 7.6.1.12 Work Load Factor
Social capital	3.3.3.1 Two Different Approaches to Social Capital	7.6.1.13 Relationship Dynamics Intangibles 7.6.1.14 Power Tensions Intangibles 7.6.1.15 Access to Knowledge and Information Intangibles

	3.3.3.2 Benefits of Social Capital	7.6.1.15 Access to Knowledge and Information Intangibles
	3.3.3.3 Trust	7.6.1.13 Relationship Dynamics Intangibles
	3.3.3.4 Measuring Social Capital	7.6.1.13 Relationship Dynamics Intangibles 7.6.1.14 Power Tensions Intangibles 7.6.1.15 Access to Knowledge and Information Intangibles
Hybrid (Organisational/human & Social Capital)		7.6.1.16 Reputation Intangibles

Similarly, with regards to human capital, employee knowledge, skills and talent is closely related to individual knowledge intangibles and project leadership intangibles. In addition, changing employee-organisational relationships, individual career aspirations and employee retention grouped are closely related to individual career factor and work load factor. Furthermore, measurement of human capital is closely related individual knowledge intangibles, project leadership intangibles, individual career factor, work load factor

For social capital, it can be observed that the two different approaches agree with relationship dynamics intangible benefits, power tensions intangible benefits, and access to knowledge and information intangible benefits. In addition, benefits of social capital are closely related to access to knowledge and information and trust is closely related to relationship dynamics. Likewise measuring social capital is closely related to relationship dynamics intangibles, power tensions intangibles, and access to knowledge and information intangibles. Lastly reputation which is identified as organisational capital in the theoretically derived intellectual capital theme is revealed to be hybrid from the empirically derived intangible benefits.

8.2.2 Comparison of the Empirically Derived Intangible Benefits with the Theoretical Derived Intangible Benefits

Similar to section 8.2.1, the comparison of the theoretical and empirically derived findings is critical to developing a coherent understanding of what is now known about intangible benefits derived from project management deployment. This is because it is expected that the empirical findings should extend the understanding derived from the theoretical findings demonstrating reality in practice. Accordingly, the themes identified from extant project management literature and the corresponding intangible benefits identified theoretically are mapped against organisational, human and social capital, that is, the comparison of the theoretical and

empirically derived findings have been mapped out in Table 8.2 with the key to Table 8.2 captured in Table 8.3.

As shown in Table 8.2, improved regulatory compliance was identified from extant literature and from the insight garnered from the empirical findings will be influenced predominantly by the corporate knowledge intangible component (what the organisation knows), project management methodology intangible component (how the organisation goes about conducting project delivery), the knowledge and experience of project individuals including project leadership skills that is human capital components. This is true for both the contracting and single project client organisations. The empirical findings also support the reasoning that improved regulatory compliance will also be influenced by factors such as the organisational culture and willingness and behaviour of project individuals. Similarly, the attainment of strategic objectives which was also identified from extant literature is different for contracting and single project client organisations from the insight garnered from the empirical findings. The empirical findings on attainment of strategic objectives also imply that if there was misalignment, intangible dis-benefits could also be generated.

As shown in Table 8.2, strategic alignment was identified from extant literature and from the insight garnered from the empirical findings is primarily concerned with the corporate alignment intangible benefits derived from the fit of training provision, IT infrastructure provision and interface management from the organisation's point of view. From the view point of project individuals, the effects of the corporate alignment intangibles in combination with the factors that influence human capital align the behaviours and actions of project actors.

As shown in Table 8.2, better project decision making was identified from extant literature and from the insight garnered from the empirical findings is captured in decision making intangibles primarily derived from the organisation's disposition to decision making. Particularly expertise of the decision maker is dependent on the individual knowledge and leadership skills and therefore also influence decision making. Furthermore, the accessible corporate knowledge and information influences the decision making of the decision makers and therefore corporate knowledge ownership intangibles and communications intangibles are also important. Lastly, access to knowledge and information intangibles because of networks from stakeholder relationships also influence decision making.

As shown in Table 8.2, improved general use of resources was identified from extant literature and from the insight garnered from the empirical findings is primarily related to components from organisational capital: corporate knowledge ownership intangibles, decision making intangibles; the two components from human capital: individual knowledge intangibles, project leadership intangibles; and one component of social capital: access to knowledge and

information intangibles. The author reasons that improving the general use of resources will require the combination of knowledge both at the organisational and individual level and decision making at the organisational and individual level and how they inform how the organisation does project business.

As shown in Table 8.2, political capital was identified from extant literature and from the insight garnered from the empirical findings political capital in the context of this research is manifested in power tensions intangibles.

As shown in Table 8.2, bureaucratisation was identified from extant literature and from the insight garnered from the empirical findings is to do with the extent to which the project management methodology increases bottlenecks especially with regards to communications, team working and decision making. The author also reasons that bureaucratisation is also affected by the leadership strategy i.e. rewards and recognition and the implications for decision making and communications. Power tensions in the view of the author can also contribute to bureaucratisation based on different stakeholder agendas.

As shown in Table 8.2, standardisation and lack of creativity were identified from extant literature and from the insight garnered from the empirical findings it is to do with the extent to which the project management methodology and project leadership strategy influences creativity. In addition, as shown in Table 8.2 conflicts was identified from extant literature and from the insight garnered from the empirical findings and it fits with the relationship dynamics and power tensions intangible benefits components of social capital. Therefore, conflicts demonstrate deficiency in social resources e.g. the effect of mistrust, distrust etc. and the effects will also manifest in communications intangible, team working intangible, decision making intangibles, project leadership and interface management alignment intangibles.

As shown in Table 8.2, lack of ownership of project management was identified from extant literature and from the insight garnered from the empirical findings, it is due to the lack of appreciation of the role of project management in project execution and is dependent on the corporate knowledge ownership intangibles, project management methodology intangible, team working intangible, decision making intangible communications intangible and corporate knowledge based alignment intangibles. It can also be influenced by human capital and influenced by factors that influence human capital. The author also reasons that the relational dimensions of project execution that is the social capital components also play an influencing role on lack of ownership of project management.

As shown in Table 8.2, intangible liabilities were identified from extant literature and from the insight garnered from the empirical findings, it refers to the cost of developing intangible

benefits i.e. to identify, monitor and manage the generation of intangibles benefits. Therefore, there are associated costs to generate organisational capital, human capital and social capital and reputation (internal and external). These costs will involve organisational resources such as financial investments in infrastructure and mechanisms and personal resources such as time and effort. The project environment is not inherently agreeable with additional costs not directly associated with traditional perspective of project management deployment as projects are time, cost and schedule driven, however for organisations to remain competitive it is imperative to do a cost benefits analysis to determine what will be invested into the intangible value chain. However, there are other non-financial costs which are captured in all the intangible benefits components identified across organisational, human and social capital. For example, intangible liabilities points to the proactivity required from senior management and project actors to create and capture knowledge or put the right relationship building and managing mechanisms in place in the base organisation.

As shown in Table 8.2, new understanding/knowledge gained was identified from extant literature and from the insight garnered from the empirical findings refers to individual knowledge which is dependent on doing own job and learning on the job (i.e. learning by doing) and knowledge based alignment intangibles that is training provisions that influence knowledge and behaviour. New understanding/knowledge gained also refers to corporate knowledge ownership intangibles which are also dependent on the extent that individual knowledge can be codified and engrained in the organisation. Lastly new understanding/knowledge gained also refers to access to knowledge and information intangibles as a consequence of relationship. Similarly, as shown in Table 8.2 more effective human resources was also identified from extant literature and from the insight garnered is dependent on organisational, human and social capital and internal reputation particularly taking into consideration the factors that influence human capital. In addition, as shown in Table 8.2, motivation/personal satisfaction was identified from extant literature and from the insight garnered is derived from internal and external reputation generated by meeting individual project actor career aspirations which include increase in individual knowledge needs, leadership needs and satisfying project actor career aspirations etc. Therefore motivation/personnel satisfaction also refers to the factors that affect human capital. Furthermore, the way the project business is conducted also serves as motivation/personnel satisfaction, therefore project management deployment intangibles

Table 8.2: Comparing Theoretical Derived Findings to Empirically Derived Findings

Themes	Intangible Benefits	Organisational capital	Human capital	Social capital	Reputation
Government/Society Related	1. Improved regulatory compliance	Oc1,Oc2	Hc1, Hc2		
Organisational Related	2. Attainment of strategic objectives	Oc1 Oc2, Oc3, Oc4, Oc5, Oc6	Hc1, Hc2	Sc1, Sc2, Sc3	R
	3. Strategic alignment 4. Better project decision making 5. Improved general use of resource 6. Political capital	OC6 Oc4, Oc5 Oc1, Oc2, Oc4 Oc1	Hcf Hc1, Hc2 Hc1, Hc2 Hc1, Hc2	Sc3 Sc3 Sc1, Sc2, Sc3	R
	Intangible Dis-benefit				
	7. Bureaucratisation 8. Standardisation and lack of creativity/Routinisation 9. Conflicts e.g. lack of trust 10. Lack of ownership of project management 11. Intangible liabilities	Oc2, Oc3, Oc4, Oc5 Oc2 Oc3, Oc4, Oc5, Oc6c Oc1, Oc2, Oc3, Oc4, Oc5, Oc6 Oc1, Oc2, Oc3, Oc4, Oc5, Oc6	Hc2 Hc2 Hc2 Hc1, Hc2, Hcf Hc1, Hc2, Hcf	Sc2 Sc1, Sc2 Sc1, Sc2, Sc3 Sc1, Sc2, Sc3	R
Employee Related	12. New understanding/knowledge gained 13. More effective human resources	Oc1, Oc6a Oc1, Oc2, Oc3, Oc4, Oc5, Oc6	Hc1 Hc1, Hc2	Sc3 Sc1, Sc2, Sc3	R
	14. Motivation/personnel satisfaction	Oc1, Oc2, Oc3, Oc4, Oc5, Oc6	Hc1, Hc2, Hcf		R
Organisation-Market Related	15. New product/service streams	Oc1, Oc2	Hc1	Sc3	R
	16. Improved competitiveness	Oc1, Oc2, Oc3, Oc4, Oc5, Oc6	Hc1, Hc2, Hcf	Sc1, Sc2, Sc3	R
	17. More strategic contractual agreements leveraging on strengths e.g. moving towards fixed price contracts	Oc1, Oc2, Oc3, Oc4, Oc5, Oc6	Hc1, Hc2, Hcf	Sc1, Sc2, Sc3	R
	18. Goodwill	Oc1, Oc2, Oc3, Oc4, Oc5, Oc6	Hc1, Hc2, Hcf	Sc1, Sc2, Sc3	R

Table 8.3: Key to Table 8.2

Key	Intangible Benefit	Key	Intangible Benefit
Oc1	Corporate knowledge Ownership intangible	Hc1	Individual Knowledge/Teamworking/Complementary
Oc2	Project Management Methodology Intangible	Hc2	Project Leadership Intangible
Oc3	Teamworking Intangible	Hcf	Individual career factor and Workload factor
Oc4	Decision making intangible	Sc1	Relationship Dynamics Intangible
Oc5	Communications intangible	Sc2	Power Tensions intangible
Oc6a	Knowledge-based Alignment intangible	Sc3	Access to Knowledge and Information intangible
Oc6b	IT- enabled Alignment intangible	R	Reputation
Oc6c	Interface Management Alignment intangible	R &G	Reputation and Goodwill

and alignment intangibles are also included. Lastly internal reputation is also an indication of personnel satisfaction.

As shown in Table 8.2, new product/service stream was identified from extant literature and from the insight garnered from the empirical findings is dependent on the balance between bureaucracy and standardisation and lack of creativity/routinisation which points to the role of project management methodology intangible benefits. In addition, new product /service stream is also dependent on what the organisation knows i.e. corporate knowledge ownership intangibles and individual knowledge. Lastly new product/service stream is dependent on the access to knowledge and information intangibles as a consequence of project relationships.

As shown in Table 8.2, improved competitiveness was identified from extant literature and from the insight garnered from the empirical findings is a primary strategic objective of contracting organisations and dependent on organisational capital, human capital, social capital and reputation. Furthermore, the tensions that exist in the supply chain of the single project client organisation as the contracting organisations reconcile their strategic mandate of competitiveness with that of the single project client organisation. Similarly, as shown in Table 8.2, more strategic contractual agreement was identified from extant literature and from the insight garnered can be achieved with reputation (internal and external), corporate knowledge ownership and individual knowledge and leadership skills. In addition, as shown in Table 8.2, goodwill was identified from extant literature but from the insight garnered from the

empirical findings is dependent on reputation (internal and external) which is derived from a combination of different components that generate organisational, human and social capital.

8.2.3 What the Data Reveals about Intangibles

In view of section 8.2.1 where the empirically derived intangible benefits was compared first to the derived intellectual capital themes identified from literature reviewed and section 8.2.2, where the empirically derived intangible benefits was compared to the theoretically derived intangible benefits, the findings in both sections demonstrate that the empirically derived intangible benefits have operationalised and contextualised the intangible benefits so that they are easily recognisable in practice. From the discussion in section 8.2.1, similarities were established between the derived intellectual capital themes identified from literature reviewed and the empirically derived intangible benefits grounding the argument that the generation of intangible benefits from project management deployment contributes to competitiveness. Similarly, from the discussion in section 8.2.2, the empirical findings extended the understanding derived from the theoretical findings demonstrating reality in practice. This was demonstrated as the findings from the empirical study highlighted that organisational capital was made up of alignment intangible benefits which was not highlighted in the theoretically derived intangible benefits. Furthermore, social capital was referred to by lack of the relational resources trust as a cause of conflict; hence it could be argued that social capital was embedded in the theoretically derived intangible benefits, however, the empirical findings operationalised social capital so that where and how it manifests in the organisation is now known. More importantly the inherent nature of social capital which is often overlooked or underestimated whilst the less relational dependent project management activities are undertaken have been highlighted. In addition, from the empirical findings, reputation was also found to be a hybrid intangible requiring intangible benefits that contribute to organisational, human and social capital in different combinations to contribute to internal and external reputation. Primary factors were also identified that have a high impact on the intangible benefits derived from project management including the factors that influence human capital and the organisations set up for management of projects. Lastly, the empirical findings also highlighted the impact of major events on the generation of intangible benefits and drawn attention to the need to review the intangible benefits strategy whether major events are planned or unplanned.

Furthermore, from the comparison of the theoretical and empirical findings in general, it was observed that from the theoretical findings it was difficult to understand the relationship between the different intangible benefits; however, the empirical findings clearly show the

relationship between the different contributors to organisational, human, social capital and reputation in a logical and coherent manner, therefore highlighting how they manifest in project based organisations. In addition, it was observed that the theoretical findings did not specify where along the project lifecycle the benefits were accrued. However, identifying the intangible benefits generated in the execution phase of the project lifecycle highlight the role that the project lifecycle plays in the generation of intangible benefits and draws attention to the possibility that the different phases of the project lifecycle may impact on the type and the extent of the generation of types of intangible benefits. Most importantly, the findings from the comparison of the theoretical and empirical findings are consistent with the theoretical framework demonstrating that the theoretical framework is robust and a strong basis upon which the logic model to the generation of intangible benefits can be developed.

Subsequently, armed with a better understanding of how intangible benefits manifest in practice including the drivers of intangible benefits and the relationships between intangible benefits components, argumentative interpretation was used based on the activities of project management deployment (please see section 2.1) to develop the logic model for the generation of intangible benefits derived from project management deployment.

8.3 Developing the Logic Model

To develop the logic to the generation of intangible benefits generated from project management deployment, in line with the theoretical framework (see section 5.4), the author combines the new insight garnered in the previous section 8.2 and the understanding from the findings from the theoretical (chapter 5) and empirical (chapter 6 and 7) approaches. The empirical findings have been demonstrated to operationalise the intangible benefits derived from project management deployment. The author, however, recognised that the context of the research was significant, that is the fact that the research findings were derived from the perspective of construction management (case organisations are from construction industry) primarily focused on the project execution phase of the project lifecycle. In addition, it was also recognised that the logic model had to be consistent with the theoretical framework (see section 5.4). Consequently, the drivers of intangible benefits discussed in chapter 7 were equally indicated to be the drivers of intangible benefits in the logic model. Furthermore, the logic model was developed by working through the relationship between the different intangible benefits that had been identified to be generated with the understanding of their interdependencies and shown diagrammatically in Figure 8.1.

The logic model assumes that the intangible benefits generation process starts with the organisation engaging in project execution. The first activity of the organisation in the

execution phase is the project manager and team member selection and accompanied by three other drivers: project actor roles, meetings and types of teams drive the generation of team working intangibles. The project manager and the team members engage with the organisation's project management methodology to manage the project execution. Three drivers: methodology, expected benefits and national difference will drive the generation of project management methodology intangibles. The project manager and project team members also communicate different types of information and four drivers: types of communications, role of IT, modes of communications and timeliness of organisational communication will drive the generation of communications intangibles. As part of project management process, the project manager and project team members also make decisions on own task and as a team and five drivers: demonstrated organisational capability (timeliness/quality), demonstrated individual project actor capability, organisational disposition to decision making, decision making information, fit of decision support system will drive the generation of decision making intangibles as a result.

In engaging in the project execution, the project manager and project team members generate knowledge which can be captured, retrieved, shared and integrated into the organisation through organisation function, project teams and project individuals and therefore accrues as individual knowledge intangibles and what the organisation knows as corporate knowledge ownership intangibles. Seven drivers: knowledge types, knowledge sharing mechanisms, knowledge management system, barriers to knowledge sharing/ factors that motivate knowledge sharing, learning routes, learning objectives, and benefits of knowledge management drive the generation of corporate knowledge ownership intangibles. From Figure 8.1, the logic model depicts that corporate knowledge ownership intangibles, project management methodology intangibles, team working intangibles, decision making intangibles and communications intangibles are components of organisational capital. The logic model also indicates that the extent to which corporate knowledge ownership intangibles, project management methodology intangibles, team working intangibles, decision making intangibles and communications intangible are all generated is mediated by the corporate alignment intangibles: knowledge based intangible, IT enabled intangibles and interface management intangibles. Five drivers: training provision mechanisms, types and modes of training, factors that influence training provision, project actor voice, project actor satisfaction drive the generation of corporate alignment knowledge based intangibles. Three drivers: sphere of influence, limitations, national cultural disposition drive the generation of corporate alignment IT enabled intangibles. Lastly, two drivers: types of interface issues and critical interface issues drive the generation of corporate alignment interface management intangibles.

To accrue corporate ownership intangibles, project actors first accrue individual knowledge. The reasoning is that it is people who generate new knowledge and this accrues as human capital. One driver: types of knowledge will drive the generation of individual knowledge. Similarly, project individuals also develop leadership capabilities due to their own technical expertise and as part of a team. Three drivers: project manager capabilities, developing leadership characteristics, difference between leadership reflected and promoted drive the generation of project leadership intangibles. The logic model also indicates that the human capital generated is mediated by the individual career and the workload factors. The individual career factor has four drivers: staffing and promotion strategy, effect of changes, factors (objective & subjective), impact of staffing and promotion strategy whilst the workload factor has four drivers: project related stressors, organisational related stressors, factors, support of project management methodology and these drivers mediate the increase of the generation of human capital.

Simultaneous to project management deployment structural activities, the project actors in their teams develop relationship dynamics intangibles, power tension intangibles and access to knowledge and information intangibles as social resources are required for collaborative action as people engage in project delivery. Six drivers: project manager, relationship building mechanisms, direct benefits, configuration of relationships between stakeholders, social resources, ease of collaboration drive the generation of relationship dynamics. Similarly, six drivers: strategic and operational tensions, organisational working based tensions, team based tensions, supply chain tension, individual career based tensions, and organisational led individual based tensions drive the power tensions intangibles. In addition, four drivers: organisational formal route, factors, stakeholder configuration access, (and refer to learning routes under organisational capital), networks available (and refer to learning routes under organisational capital) drive the generation of access to knowledge and information intangibles.

Lastly, reputation considered a hybrid intangible benefit is generated by different combinations of components that make up organisational capital, human capital and social capital. Five drivers were identified to drive reputation: direct benefits, organisation-led internal reputation, proxies for organisational reputation, project actor-led multi-level view of reputation, factors. These drivers have implications for reputation at different levels of the organisation and perception of different stakeholders.

As is depicted in Figure 8.1, organisational, human and social capital all feed into organisational competitiveness (please see sections 2.3). Organisational competitiveness feeds back into project deployment via mechanisms that fit into corporate knowledge

ownership intangibles and corporate alignment knowledge based intangibles. That is what is learnt from how the organisation does project business is feedback into what the organisation should know and what project actors should know which then serves as input into generating intangible benefits from project management deployment. The feedback loop is a critical element of the logic model as without, it is impossible to monitor and purposefully adjust the base organisation's approach to generating intangible benefits from project management deployment.

Looking at the interrelationship between the different intangible benefit components that are generated from deploying project management, the findings support the reasoning that an increase in project management methodology intangible should cause an increase in team working intangibles because it informs the drivers; team member selection, project actor roles,

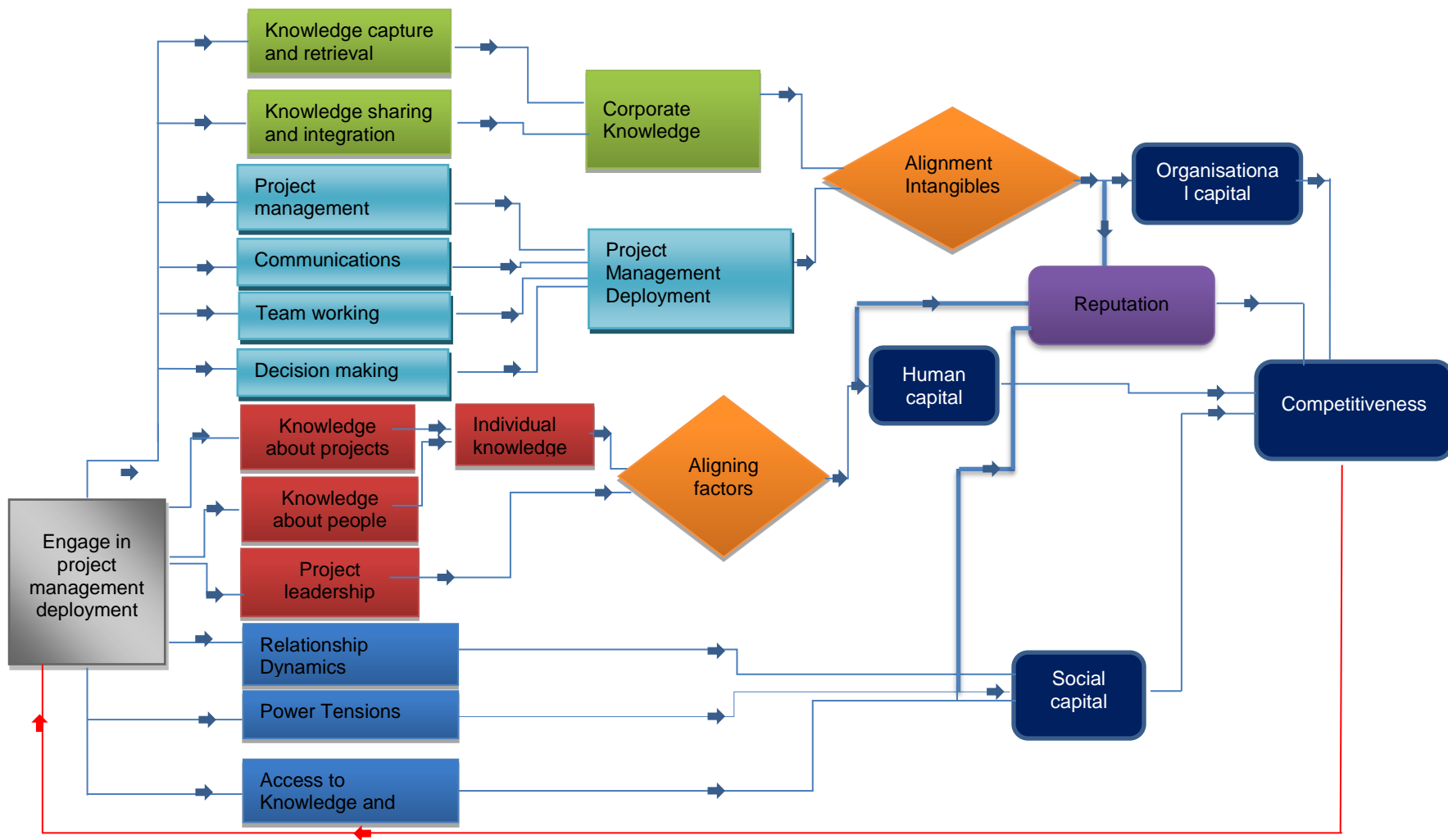


Figure 8.1: Logic Model for Generation of Intangible Benefits

and types of teams. An increase in project management methodology intangible should also cause an increase in decision making because it informs some drivers: organisational disposition to decision making, decision making information, and fit of decision support system. An increase in project management methodology should also cause an increase in communications intangible because it impacts the type, mode and volume of communications.

Team working intangibles should cause an increase in decision making and communications intangible because the right people are allocated to the project and particular task i.e. the requisite capabilities are available with an appreciation for the need to communicate effectively i.e. with the requisite types of communication for ease of decision making and collaborative action.

Looking at the interrelationship between the two components of human capital, an increase in individual knowledge should cause an increase in project leadership because it informs types of knowledge. Similarly, an increase in project leadership should cause an increase in individual knowledge because of increase in individual capability.

Looking at the interrelationship between components of social capital, an increase in relationship dynamics intangible should cause a decrease in power tensions intangible and vice versa as project stakeholders are better able to communicate own position and effectively compromise to meet objectives. While an increase in relationship dynamics should cause an increase in access to knowledge and information intangible i.e. network resources by increasing the available social resources especially trust.

The relationship between reputation and the components that make up organisational, human and social capital is harder to simplify. This is because different combinations of different components that generate organisational, human and social capital generate internal and external reputation. However, the findings support the reasoning that if the organisation is perceived to do what it said it will do and meets the expectation of project actors, it will generate more internal reputation. If the organisation says it will deliver what it said it will and meets the expectation of project stakeholders, shareholders and the public, it will generate more external reputation. However, in both scenarios, components of organisational, human and social capital are involved. Therefore, the challenge is balancing to what extent the different interests are met on a per project basis. This is important because a base organisation is only as good as the last project in the context of reputation.

In the light of the foregoing about the relationships between intangible benefits components, the author reasons that the opposite can occur i.e. dis-benefits can also accrue instead of benefits. For example, a decrease in human capital will cause a decrease in corporate knowledge ownership intangibles. First because there is just less learning occurring and the

organisation can only know as much as its people. Secondly because it suggests that people are demotivated and unwilling to share what they know. Therefore, the logic model can equally be used to identify the generation of intangible disbenefits.

The author also recognises that the logic model allows for varying contributions from components that make up organisational, human and social capital, therefore the logic model allows for varying increase in organisational, human or social capital. The author therefore argues that the logic model accommodates the potential trade-offs between the intangible benefits components and indirect relationships as a result. This position is consistent with the empirical findings as the different case organisations demonstrated varying degrees of generating the different drivers of intangible benefits. Therefore, the logic model has demonstrated a coherent understanding of the relationship and interdependencies of the different intangible benefits.

In the light of the fact that project based organisations work in a multi project environment, the logic model also corroborates the argument that intangible benefits are path dependent and socially complex as this logic model can be applied to all the projects the portfolio of a base organisations. In the case of the contracting organisation, path dependence and social complexity manifest in the fact that the contracting organisation can play different roles on different projects with different clients and different supply chains and project actors can play multiple roles on different projects. In the case of the single project client organisation, path dependence and social complexity manifest in the subprojects and the implications for project actor roles, the supply chain and the client. Therefore, the extent to which a base organisation understands its own context in the light of the implications for contracting and single project client organisations will determine how it drives the generation of intangible benefits. In the next section, the implication of the logic model in relation to discussions in earlier chapters 6 and 7, to project management deployment and competitiveness and to extant project management is discussed.

8.4 Discussion

The implication of the logic model will be discussed first by considering the implication for key points raised in the discussion of earlier chapters, the link to project management deployment and competitiveness and the logic model in relation to extant project management literature.

8.4.1 Implication for Key Points Raised in Discussions in Chapter 6 and 7

In section 6.6.2, three drivers were identified from the views of the variety of stakeholders: project management deployment, organisational hierarchy and organisational context and in relation to the logic model, supports the reasoning that there should be no assumption about the application of the logic model when used to develop approach to the generation of intangible benefits as there is the need to be mindful of multiple lens that can be used by users of the approach. In addition, in section 6.6.3, it was indicated that a combination of organisational changes was more impactful than only one organisational change and that the effect of change could be positive or negative with the effect more pronounced in the human capital and social capital components. The implication in relation to application of the logic model in developing the approach to the generation of intangible benefits is that types of organisational changes need to be identified and particular attention given to the human and social capital components.

In addition, in section 7.6.1 it was found that the drivers for corporate knowledge ownership intangibles and human capital components were generic and therefore in relation to the application of the logic model it is expected that a more generalised approach (with mechanism and processes in common) to corporate knowledge ownership intangibles and human capital components can be taken across a base organisations portfolio of projects compared to the drivers of the remaining components of organisational capital and that of social capital. Similarly, in section 7.6.2, the three types of organisational change identified and indicated to be disruptive to varying degrees have implications for the application of the logic model as it supports the reasoning that the degree of disruption will be in consonant with the extent of distortion to the logic model, that is the contributing intangible benefits components and corresponding drivers of intangible benefits.

8.4.2 The Logic Model, Project Management Deployment and Competitiveness

In section 8.3, the logic model for the generation of intangible benefits was developed which addresses the need for a coherent understanding of how the generation of intangible benefits contributes to competitiveness and will serve as the basis for developing the approach to the generation of intangible benefits discussed in the penultimate chapter. However, there is also the need to consider the implication of the logic model for project management deployment and project management deployment and competitiveness. Accordingly, in line with the definition of project management deployment in section 2.3, the expectation is that the

application of the logic model in the Approach influences how project management deployment is approached in a project based organisation by considering the drivers of intangible benefits corresponding to the appropriate intangible benefits components. That is, the application of the logic model should influence the decisions the project based organisation makes and the activities and processes used in executing the decisions making the changes observable. This will have implications for the grouping of organisational focus factor and people focused factor that have been identified earlier in the literature reviewed with consequences of path dependence, casual ambiguity and social complexity (Barney, 1991). In addition, the yardstick for measuring competitiveness in line with the discussion in section 2.3.1 which is to comparatively do better than the competition also applies. Consequently, it is expected that a change to the logic model effected by the changes made by the project based organisation influencing the different drivers of intangible benefits via the processes, activities and actions of the project based organisation should materially impact the yardsticks of competitiveness.

Consequently, the application of the logic model highlights that if organisations that deploy project management are unable to identify the intangible benefits derived from their project management deployment, they are unable to appreciate the relationship between the different components and unlikely to see and appreciate the implications for competitiveness. Consequently, a lot of the value that can be derived occurs without the organisation's awareness and some may be lost in the process, implying that the benefits are not exploited.

8.4.3 The Logic Model in Relation to Existing Thinking in Project Management

To consider the logic model in relation to extant project management thinking, the different parts that make up the logic model and the logic model as a whole is contrasted to relevant extant project management literature considered in this research. The logic model is set off by project management deployment activities that are currently recognised by the leading bodies of knowledge (see Section 2.3) generating the earlier identified corresponding intangible benefits generated (see chapter 6) driven by the drivers of intangible benefits (see chapter 7) also earlier identified. The interrelation of the different intangible benefits and the different drivers of intangible benefits and the link to competitiveness have also been developed in the logic model. In contrast, whilst there are overlaps between the criticism of the RPM and CPM, about project management, the differences were also pointed out (see 2.1.3) however, the arguments of the CPM are more relevant for the role of the logic model. This is demonstrated by the CPM themes of project actor wellbeing, the implication of success and failure both at project and organisational levels and the implication for project actors and power which are

also reflected in the intangible benefits and their drivers and therefore critical for the logic model. Likewise, whilst the group of benefits that are categorised as intangible benefits are recognised and defined in extant project management literature (see section 2.4.1), there has been limited consideration of the intangible dimension of benefit realisation management (see section 2.4.2). It can therefore be argued that the logic model addresses some of the criticism of the RPM and CPM and BRM literature by providing a logical and coherent approach to understanding the generation of intangible benefits and the role it plays in contribution to competitiveness. Therefore, the logic model can serve as a starting point to addressing the gap of inadequate consideration of intangible dimensions of project management deployment especially as the logic model also provides a practice led approach to consideration of intangible benefits. This supports the reasoning that the logic model can be used a theoretical lens to reorganising extant project management literature in a coherent theory of the intangible dimension of project management. Consequently, the intangible benefits and the drivers of intangible benefits have been identified in this research including the logic of their interrelation and the corresponding contribution to competitiveness and this is not currently identifiable in extant project management.

8.5 Summary

In view of the theoretical framework developed in chapter 5, this chapter has focused on understanding the link between the generation of intangible benefits and the generation of organisational capital, human capital and social capital leading to organisational competitiveness. The comparison between what was found empirically to what was found theoretically was used to establish and validate what was now known about intangible benefits and the process of generation of intangible benefits. Consequently, it was demonstrated that the empirical findings extended the understanding derived from the theoretical findings. Reputation was also indicated to be a hybrid intangible benefits component and not just manifested in the organisational capital dimension. The focus on the Link consolidated on the understanding garnered from extant literature and the theoretical and empirical findings. Thus, by using the identified drivers and the better understanding of the relationship between the different components of intangible benefits, the logic to the generation of intangible benefits was developed consistent with the earlier developed theoretical framework.

As a consequence of the developed logic model, from earlier discussions in chapter 6, the reasoning was supported that there was the need to be mindful of the multiples lens and types of organisational changes due to the implications for the development of the approach to the generation of intangible benefits. Similarly, from earlier discussions in chapter 7, the reasoning was supported that a more generalised approach to corporate knowledge ownership intangibles and human capital components across a base organisation's portfolio of projects

was possible. In addition, the reasoning was supported that the degree of disruption of organisational change will be in consonant with the extent of distortion to the logic model. In relation to extant project management, it was demonstrated that the logic model can be used as a theoretical lens to reorganising extant project management literature into a coherent theory of the intangible dimension of project management.

It is therefore the expectation that the application of the logic model in building the approach to the generation of intangible benefits should influence project management deployment with implication for organisational competitiveness. This is because the logic model highlights the fact that if organisations that deploy project management are unable to identify the intangible benefits derived from their project management deployment, are unable to appreciate the relationship between the different components, they are also unlikely to see and appreciate the implications for competitiveness. Consequently, a lot of the value that can be derived occurs without the organisation's awareness and some may be lost in the process, implying that the benefits are not exploited.

In the next chapter, the project based organisation is focused upon to better understand the role of context in the generation of intangible benefits from project management deployment as part of the information to support the development of the approach to the generation of intangible benefits in the subsequent chapter.

Chapter 9 Types of Organisations and Relationship with Intangible Benefits

This chapter discusses the findings from using an inductive analytical approach to investigate the extent to which the context of the project based organisation impacts the generation of intangible benefits derived. The context to this chapter was first elucidated. Each intangible benefits component of organisational, human and social capital including reputation was discussed by comparing the data from the contracting organisations to that of the single project client organisation using attributes of intangible benefits. The implications for the type of project based organisation and the comparison of the deductive and inductive analytical approaches were discussed, followed by the reflection on key points raised in discussions of earlier chapters and the chapter summarised.

9.1 Context to this Chapter

This chapter is divided into two main parts, the first presents the data for the inductive analytical approach and the second, the discussion section after which the chapter is summarised. The content of each section and the rationale are briefly explained in this section. The first part of this chapter, in line with the theoretical framework, focuses on the context of the contracting and single project client organisation. The inductive approach already mentioned in the methodology chapter (see section 4.2.3) now applied in this chapter seeks to gain additional understanding about how intangible benefits manifest in practice by using a second analytical lens. This is based on the rationale that whilst the deductive lens used in chapter 7 emphasised the drivers of intangible benefits, the inductive lens uses the identified attributes of intangible benefits to shed more light on the influence of context by comparing the contracting and single project client organisation therefore adding to the understanding of how intangible benefits manifest in practice, hence maximising the findings from the data and ensuring a robust approach. The attributes of intangible benefits were themes identified directly from the data acting as if no theoretically derived intangible benefit themes existed. The tables used for analysis are populated by considering the intangible component in the first column, the identified attributes in the second column, the contracting and single project client organisation in the third and fourth columns. Similar to chapter 7, only the table for corporate knowledge ownership intangibles (Table 9.1) are presented in this chapter, the other tables are presented in Appendix D1.2 but the contents and implication are discussed.

Similarly, the second part of this chapter, the discussion section as earlier stated, is made up of four sections (sections 9.6.1 to 9.6.4) with the first section discussing the findings and implication of the analyses from the first part of the chapter, in the context of the contracting and single project client organisation. The second section discusses the findings from the comparison of deductive and inductive analytical approaches by discussing the similarities or dissimilarities and their implications to validate and establish what more is now known about intangible benefits. Whilst in the third section, the key points raised from the discussions in earlier chapters will also be reflected upon in the light of the new insight gained from the inductive analytical approach and the findings from the comparison of the deductive and analytical approaches. The fourth section reflects on the chapter summaries of chapters 6, 7, 8 and 9 to establish how the findings developed across the chapters and identify the key considerations to be taken forward. The inclusion of the discussions of the findings from the comparison of the deductive and inductive analytical approaches and the reflection of the implications of the reflections based on the key points raised from the discussions in earlier chapters and compilation and reflection on summaries of chapters 6,7,8 and 9 ties together the robust analytical approach pursued in this research in final preparation for the development of the approach to the generation of intangible benefits in the next chapter.

9.2 Organisational Capital

To be consistent with chapter 7, organisational capital was decomposed into three components: corporate knowledge ownership intangible, corporate project management deployment intangibles and corporate alignment intangibles and discussed below.

9.2.1 Corporate Knowledge Ownership Intangibles

For corporate knowledge ownership intangibles six attributes are considered: the strategic purpose/learning objectives, outlook on knowledge management, incentive to invest, ownership benefits, extent of fit of mechanisms and organisational culture. Considering the strategic purpose of knowledge management, the data supports the reasoning that contracting organisations had a strategic purpose to be competitive and sustainable, while the single project client organisation was unique and more concerned with legacy and therefore had a strategic objective to meet the project objective and close. This reasoning is aligned to the school of thought that argues that on a large project, the commission phase is the end of the project lifecycle and maintenance is considered facility management.

Table 9.1: Attributes of Corporate Knowledge Ownership Intangibles

Intangible Components	Attributes	Contracting Organisation	Single Project Client Organisation
Corporate knowledge ownership intangibles	1. Strategic purpose/learning objectives	Competitive and sustainable To use knowledge gained on other projects across different sectors, regions i.e. long-term outlook	Meet project objectives and close - More in-project outlook Delivery partners and T1 Contractors have contracting organisation's learning objectives which conflicts with single project client's learning objectives
	2. Outlook on knowledge management	Long term outlook	In-project outlook
	3. Incentive to invest	More incentive to invest in infrastructure	Less incentive to invest in infrastructure
	4. Ownership benefits	More benefits accrue to organisation	- Much more benefits accrue to individuals - Benefits also accrue to Delivery partners and T1 contractors (mediated by whether direct staff, partner staff or T1 Contractor staff)
	5. Extent of fit of mechanisms (meetings, reviews, forums, corridor conversations)	Frequency, type and outcome	Frequency, type and outcome
	6. Organisational culture (to encourage knowledge sharing)	Variable (driven by types of projects, clients and contractors)	Variable (driven purely by best practice and types of sub projects and contractors)

Similarly, as shown in Table 9.1, in terms of outlook on knowledge, the data support the reasoning that contracting organisations had a long-term outlook on knowledge and its management, while the single project client organisation had a more in-project outlook. The long-term view of the contracting organisation was predicated on the fact that contracting organisations exist beyond the duration of any one project (in theory) and the knowledge developed can be used in the organisation subsequently. However, in the single project client organisation, the knowledge itself carried beyond the project in the individual project actors involved, the partner organisations and the tier 1 contractors that were involved (contracting

organisations) as knowledge management was carried out by the single project client organisation during the duration of the project and the onus was on the public sector to take ownership. In addition, the insight from earlier chapters support the reasoning that the different stakeholder organisations involved in the project delivery should also want ownership of knowledge management. This directly links with the next attribute incentive to invest as shown in Table 9.1 and the data supports the reasoning that for the contracting organisation there was a natural incentive to invest in knowledge management in line with the long term outlook as it should benefit the whole organisation, but for the single project client organisation which was public sector led, there was incentive to invest but for legacy purposes from the view point of the client different to the view point of the other stakeholder organisations. This is because for all other stakeholder organisations involved (contractors and sub-contractors) there was less incentive to invest primarily because of the issue of ownership (in legal and physical terms) already alluded to.

Discussing Table 9.1, the data supports the reasoning that in the contracting organisations knowledge ownership benefits accrue more to the project based organisation compared to project individuals. However, in single project client organisation, the knowledge ownership benefits accrue as legacy benefits from the view point of the client mediated by the type of project stakeholder (direct employee of single project client organisation, or partner/tier 1 contractor staff). In addition, the knowledge ownership benefits also accrue more to direct employees of the single project client organisation because project actor roles are determined by the project lifecycle and therefore project actors are more likely to leave the project at some point on the project compared to those who are necessary for all phases of the project lifecycle. Therefore, direct employees of the single project client organisation accrue more personal leveraging benefits and can negotiate for new opportunities on that basis.

In both contracting and single project client organisation the data supports the reasoning that whatever mechanism was used, the fit of the frequency, type and outcome impacted on the generation of corporate knowledge ownership intangibles. Similarly, the organisational culture is expected to be different regardless of whether contracting or single project client organisation, however an organisation's disposition to knowledge sharing and integration is expressed in an organisations knowledge management infrastructure and can therefore be inferred. In the case of contracting organisations, the data supports the reasoning that organisational culture is variable across different project types and contract types. In a single project client organisation, organisational culture is often driven by best practice and innovation primarily because it is often unique and very large requiring innovative solutions to

deliver. In addition, for the single project client organisation, the organisational culture can also be variable across sub-projects but as the projects are linked to one overall deliverable the extent of variability is limited compared to the contracting organisation.

9.2.2 Project Management Deployment Intangibles

The four main components of project management deployment intangibles: project management methodology intangibles, communications intangibles, team working intangibles and decision-making intangibles are discussed below using attributes identified from the case data.

9.2.2.1 Project Management Methodology Intangibles

With regards to project management methodology intangible as shown in Table D2.1, three attributes: methodology, the language/culture and the fit for purpose were considered. The data supports the reasoning that whilst the contracting organisation could employ a wider spectrum of project management methodology, the single project client organisation didn't use a standard approach but what works. That is the contracting organisations used a mix of methodology, formal, composite and concurrent while single project client organisation used composite.

The data from the case organisations support the reasoning that it can be argued that contracting organisations have a more structured approach (dependent on project type and contract type) compared with single project client organisation which is a mix of structured and flexibility (usually unique project, more practical focused) i.e. therefore less structured overall.

However, the data supports the reasoning that the attributes fit for of language and fit of purpose was variable across the contacting and single project client organisations. This is because for contracting organisations, there is the possibility of variable fit (across different types of projects, size of projects) whilst for the single project client organisations the variability will be across sub projects (e.g. core and non-core construction).

9.2.2.2 Team Working Intangibles

For team working intangibles, as shown in Table D2.2 two attributes: team member selection business process and team work design were considered.

In both the contracting organisation and single project client organisation, it was found that the team member selection business process involved three aspects: the process itself, the stakeholders and the strategy. While in contracting organisation the number of stakeholders considered may be less with less political implications, in single project client organisation it

will be more with more political implications. Similarly, while in the contracting organisation, the strategy is more likely to be in the interest of the base organisation, in the single project client organisation, there are conflicting interests: that of the base organisation, that of partner organisation(s) and that of the tier 1 contractors. Therefore, the strategy used in the single project client organisation must be more robust than what is required by the contracting organisation. The data therefore support the reasoning that the team member selection business process is common with contextual implications.

From the data, similar roles and responsibilities structure was found in the contracting and single project client organisation. The data also indicate that the organisation's structure and processes e.g. hierarchical structure, project team types and roles and responsibilities have a direct impact on team work design. This therefore implies that in contracting and single project client organisation, the type of project manager, project type, sector and how roles and responsibilities are defined influences the team working intangibles therefore contextual.

9.2.2.3 Decision Making Intangibles

As shown in Table D2.3 for decision making intangible, two attributes: decision making disposition of the organisation and the fit of the decision support systems were considered. With regards to decision making disposition of the base organisation, the data support the reasoning that contracting organisations will be perceived differently depending on the type of project, client and role that they take on. In the case of the single project client organisation, the decision-making disposition will be perceived in the light of the singular project.

In both the contracting and single project client organisation, the fit of the decision support system is dependent on both formal and informal approaches aligned to the contextual needs of each type of organisation. The data therefore support the reasoning that bureaucracy and misinformation may be variable based on the volume and types of projects a contracting organisation embarks on. Whilst a single project client organisation may have issues with bureaucracy and miscommunications due to the number of stakeholders and interfaces, a single project client organisation is more likely to have.

9.2.2.4 Communications Intangibles

For communications intangibles, two attributes: communications strategy and communications infrastructure as shown in Table D2.4 were considered. The data supports the reasoning that for contracting organisations, the communications strategy will be required on a per project basis with overarching organisation wide strategy for effective central function.

The data also supports the reasoning that for the single project client organisation, it is expected that there will be a project wide strategy with implications for sub projects.

With regards to the communications infrastructure, the data indicate similar mechanisms are used in the contracting and single project client organisation. However, the data supports the reasoning that the infrastructure provision is individual project led with aspects imposed by organisational wide strategy. For the single project client organisation, the communications infrastructure will be project wide provision; however, there are implications for the challenges posed by the unique characteristics of the project. These challenges are not just because of the physical characteristics but also driven by the number of stakeholders and interfaces involved.

9.2.3 Corporate Alignment Intangibles

Three components of corporate alignment intangibles: corporate alignment knowledge based intangible, corporate alignment IT enabled intangibles and corporate alignment interface management intangibles are discussed below.

9.2.3.1 Corporate Alignment Knowledge Based Intangibles

As shown in Table D2.5 for corporate alignment knowledge based intangible, three attributes: staff expectation, training needs and training delivery infrastructure were considered. It was found that the staff expectation/attitude to training was different in contracting organisation and single project client organisation organisations. In the contracting organisations, staff expectation on training and development was much higher compared to the single project client organisation primarily because of the nature of the project and the barrier to entry for single project client organisation organisations i.e. highly skilled people with relevant experience. Therefore, the data supports the reasoning that for effective knowledge management in the base organisation, regardless of whether it is a contracting or single project client organisation, there is the need for appreciation of the expectations of project actors which are contextual.

From the data, the training requirement for the contracting organisation was broader compared to the single project client organisation which had project led specific needs.

Training delivery infrastructure is involved with the processes and systems to identify the project management gaps e.g. use of employee voice, the training delivery itself, post training

processes. In the contracting organisations and the single project client organisation, the training delivery infrastructure is a combination of the types of training, modes of training and post training feedback in the light of the training needs. The data support the reasoning that the fit of the training delivery infrastructure to the needs of the organisation in the light of its learning objectives and meeting the expectation of its people generates intangible benefits.

9.2.3.2 Corporate Alignment IT Enabled Intangibles

For corporate alignment IT enabled intangible, one attribute fit of IT provision as shown in Table D2.6 was considered. The data indicated that IT influenced how things were done and where work was done regardless of whether it was a contracting or single project client organisation. However, IT also has its limitations and therefore needs to be mitigated.

9.2.3.3 Corporate Alignment Interface Management Intangibles

With regards to corporate alignment interface management intangible, two attributes: extent of impact and fit of mechanisms as shown in Table D2.7 were considered. The data indicated that interface issues were more predominant and problematic in single project client organisation compared to contracting organisation. In the context of the single project client organisation, it is driven primarily by the inherent nature of the project, multiple stakeholders and interfaces. Considering the fit of mechanisms, again in single project client organisation, interface issues are more likely to be treated as high risk and so mechanisms are more likely to be put in place to address them compared to in contracting organisation. Therefore, the data support the reasoning that interface management alignment is more critical in the context of single project client organisation. Furthermore, the data supports the reasoning that interface management alignment may also be critical for contracting organisations depending on contextual factors such as the type of project and clients.

9.3 Human Capital

Human capital similar to section 7.3 is divided into two components individual knowledge and project leadership discussed in detail below.

9.3.1 Individual Knowledge Intangibles

As shown in Table D2.8 one attribute knowledge about people/about projects and team working knowledge was considered for individual knowledge. The data indicated that new knowledge was generated by project actors regardless of whether it was a contracting or single project client organisation.

Furthermore, the data indicated that due to the inherent nature of the single project client organisation, high levels of knowledge, skills and experience will be developed because of the fact that the project is large and unique, high number of stakeholders involved and multiple interfaces. The data therefore support the reasoning that there will be an increase in knowledge about people, projects and team working knowledge in contracting and single project client organisation; however, the increase is driven by context of the type of organisation. This reasoning is also consistent with the data about training requirement and expectations around training for the contracting organisations and single project client organisation already discussed in section 6.2.3.

9.3.2 Project Leadership Intangibles

With regards to project leadership, two attributes: generation of leadership skills and the promotion strategy were considered as shown in Table D2.9. The data indicated that regardless of whether it was a contracting organisation or single project client organisation, project actors developed leadership skills mediated by their personality as a result of project management deployment. This is with the understanding that leadership can be manifested horizontally within the team and vertically within the organisation. Therefore, the data supports the reasoning that while leadership skills will be increased regardless of whether it is a contracting or single project client organisation, the benefits that accrue will be dependent on the appreciation and recognition of its worth by the base organisation.

From the data, the expectation for vertical promotion in the single project client organisation was much less compared to that in the contracting organisations. Therefore, in the contracting organisation vertical promotion was more likely to be consistent with expected career progression while in the single project it was likely to be a new role. Therefore, the data supports the reasoning that the project leadership development in the base organisation should be aligned to the promotion strategy that fits the base organisation's context. This implies that the promotion strategy is contextual with different considerations for contracting organisations and the single project client organisation.

9.3.3 Factors that affect Human Capital

As shown in Table D2.10, three attributes for factors: opportunities for career progression, career progression structure and stress were considered for factors that affect human capital. The data indicated that project actors were motivated by vertical promotion and in the contracting organisations there were variable promotion opportunities while in the single project client organisation only in-project opportunities were available dependent on generalist background. Therefore, in both the contracting and single project client organisation context there were opportunities to motivate project actors by meeting the career aspirations of project

actors. Therefore, the data supports the reasoning that the career aspirations of project actors were driven by contextual realities and that the extent to which the career aspirations were met was dependent on the recognition and appreciation by the base organisation.

With regards to career progression structure, the data indicated that in contracting organisation there was a mixture of structured and unstructured career progression while in single project client organisation there was an acceptance that it was not a permanent role and promotion was unlikely. Therefore, the data support the reasoning that the career progression structure and expectation are consistent with the contextual realities of the contracting and single project client organisation and the recognition by the base organisation of this point informs the impact on human capital derived.

With regards to stress, in all the contracting organisations and single project client organisation, different attitudes to stress were indicated. However, it was also found that there was a project stress cycle consistent with project lifecycle which was common to both contracting organisation and single project client organisation. Therefore, the data supports the reasoning that the fit of the organisational attitude/policy to stress to the expectation and needs of the organisation determine the impact it will have on project actors and therefore mediating the human capital derived.

9.4 Social Capital

Similar to section 9.3, social capital was decomposed into three aspects: relationship dynamics intangibles, power tensions intangibles and access to knowledge and information intangibles. The different attributes are discussed under each component below.

9.4.1 Relationship Dynamics Intangibles

For relationship dynamics, two attributes: type of relationships and organisational infrastructure were considered as shown in Table D2.11. The data indicated in both the contracting and single project client organisation that numerous relationships existed between project stakeholders such as relationship between team members, project and non-project staff, the client and the base organisation or the project manager, relationship with tier 1 contractors etc.

Therefore, the data supports the reasoning that regardless of type of organisation social resources (trust, mutual understanding, shared values, shared norms and behaviour) facilitate collaborative action. The relationship dynamics derived is influenced by the extent to which social resources are generated and maintained/actively managed to facilitate collaborative action.

With regards to the organisational infrastructure, the data indicated that the contracting and single project client organisation had different mechanisms in place to build and manage relationships between stakeholders. Therefore, the data supports the reasoning that the organisation's understanding/appreciation of the value of different relationships is embedded in its culture and infrastructure. This also implies that the culture and infrastructure needs to fit the contextual realities of the contracting and single project client organisation.

9.4.2 Power Tensions Intangibles

As shown in Table D2.12, three attributes: external stakeholders leveraging power, internal stakeholders leveraging power and base organisation leveraging power were considered for power tensions intangible. From the data, the external stakeholders leveraging power were exhibited by the client and the partners/supply chain. From the data from the contracting and single project client organisation, it was indicated that the client was influential with regards to what contractors and supplier to sign on and in the case of the single project client organisation, the client also had influence over utilities companies. The data supports the reasoning that the client has legitimate leveraging power and this is experienced by the influenced party in the compromises they have to make to aid collaborative action.

The supply chain/partners also have leveraging power as in the case of the contracting organisation. From the data, it was indicated that because there were a few large EME firms, they were considered a business risk for the contracting organisations as there was less choice. In the case of the single project client organisation a different perspective to leveraging power of the supply chain/Partners was exhibited. The data indicated that the large contractors in the supply side had initially negotiated to access all the in-project opportunities which caused friction with the project actors directly employed by the single project client organisation. The data therefore support the reasoning that the power tensions presented by the supply chain/partners can be experienced in different ways driven by the contextual realities of the contracting and single project client organisation.

The data indicated that in contracting and single project client organisation, internal stakeholders leveraging power included the tensions in relationship due to project individuals balancing their individual aspiration against team and organisational aspirations. The data also indicated that in the contracting and single project client organisation, there were tensions between project teams which also influenced collaborative actions. Lastly from the data from the contracting and single project client organisation, the project manager also exhibited authority, autonomy and political influence which influenced the actions of project stakeholders as they try to balance their aspirations against the project manager's expectations. The data therefore supports the reasoning that internal stakeholders also experience tensions that arise

from the legitimate leveraging power as a function of their role, knowledge, experiences and skills which influence relationships and consequently collaborative action.

The data indicated that the base organisation had legitimate leveraging power in engaging with its employees based on the economic power and internal reputation while dealing with external stakeholders relied on its reputation. In the case of the single project client organisation, the legitimate leveraging power arises due to its unique political and economic implications and its reputation.

9.4.3 Access to Knowledge and Information Intangibles

For access to knowledge and information, two attributes: network range and leverage were considered as shown in Table D2.13. The data indicated that the organisational network for the contracting and single project client organisation were determined by the portfolio of projects and influenced by the project actors' individual network. Therefore, the data supports the reasoning that the contracting organisation is likely to have a wider network range compared to the single project client organisation and therefore imply that the infrastructure put in place must fit with the network requirements.

The data from the contracting and single project client organisations also indicated that leverage on access to knowledge and information could be personal or organisational. The data supports the reasoning that there is more opportunity for project actors to maximise personal leverage in the single project client organisation compared to the contracting organisation and this is consistent with the reasoning that as a consequence of the inherent nature of the single project client organisation (multiple stakeholders, various interfaces, implication of project lifecycle and project actor tenure and unique project), project actors are more likely to benefit personally.

In addition, the data supports the reasoning that organisational leverage may be exhibited by the supply chain organisations such as partners and tier one contractors. Furthermore, the data supports the reasoning that, the extent or organisational leverage is dependent on the extent of recognition and appreciation of the access to knowledge and information intangibles because of relationship developed. Regardless of personal or organisational leverage, the data also support the reasoning that the type of network and role in network (e.g. sink, redundant etc.) are important in accessing the benefits that can be derived from access to knowledge and information because of relationships.

9.5 Reputation Intangibles

As shown in Table D2.14, four attributes: organisation external perspective, organisation internal perspective, personal reputation and reputation concerns were considered for reputation. The data indicated that for the contracting organisations, reputation was considered in terms of reliability and confidence in brand, good level of service, demonstrated credibility, track record repeat business, good rating and less litigation. In the case of the single project client organisation, reputation is considered only in terms of project delivery as the project management delivery and reputation are intrinsically linked. Therefore, the data supports the reasoning that the organisational reputation is derived from the contextual realities of the contracting and single project client organisation.

From the data in the contracting and single project client organisation, the organisation's internal perspectives consider the perspectives of internal stakeholders and in both cases project actor wellbeing and opportunities for career progression.

From the data in the contracting and single project client organisation, personal reputation was derived as a result of perception of individual project actor work, however similar to section 9.3.3 project actors from the single project client organisation derive more benefits while the base organisation derives more benefit in the case of the contracting organisation.

Lastly, the data indicated that in the case of the contracting organisations, shareholders are more concerned about reputation and its implications while in the case of the single project client organisation, the taxpayer is more concerned about reputation and its implications. Therefore, the data supports the reasoning that while reputation is generated in the contracting and single project client organisation, the drivers are contextual and therefore reflect the contextual realities of the contracting and single project client organisation.

9.6 Discussion

In the earlier sections, the data was presented for the inductive analytical approach and in this section, the data is analysed and the implication of context of contracting and single project client organisation is discussed first. In addition, as explained in the section 9.1, the comparison of the findings from the deductive and inductive analytical approaches are also discussed to establish similarities or dissimilarities and their implications. Lastly, the implication for the key points raised in earlier chapters are reflected upon in the light of the new insight and also presented.

9.6.1 Implication of Context of Contracting and Single Project Client Organisation

In the earlier sections, a total of thirty-eight attributes of intangible benefits identified directly from the data were presented. However, in order to establish what is now known about intangible benefits, the implication of the context of the contracting and single project client organisation is discussed by comparing the findings of the contracting and single project client organisation. The comparison of attributes of corporate knowledge ownership intangibles generated in the contracting and single project client organisation presented mixed results (see Table 9.1) for predictable reasons. The contrasting results point to the fact that while organisational knowledge is generated, regardless of whether it is a contracting or single project client organisation, the onus is on the base organisation to put a management system in place that fits with its context to achieve its strategic objectives. In addition, the outlook on knowledge management, incentive to invest and ownership benefits also point to the fact that the contracting organisation and single project client organisation have differences. The similar results point to the fact that the extent of fit of mechanisms and organisational culture regardless of whether it is a contracting or single project client organisation is contextual. The comparison of the attributes of project management methodology intangibles in the contracting and single project client organisation also presented mixed results (contrasting on one attribute and similar on two attributes as shown in Table D2.1) for predictable reasons. The contrasting results point to the fact that context drives the methodology employed while the similar results points to the fact that there are aspects of project management methodology that are common regardless of whether it is a contracting or single project client organisation. The comparison of attributes of the team working intangible in the contracting and single project client organisation presented similar results as shown in Table D2.2 for predictable reasons. The similar results point to the fact that business processes and team work design are common regardless of whether it is a contracting or single project client organisation. The comparison of the attributes of decision making intangible in the contracting and single project client organisations presented similar results (see Table D2.3) for predictable reasons. The similar results point to the fact that organisations make decisions on similar aspects of project management deployment and have similar mechanisms as part of the support system, however there is the need of fit to the context of contracting and single project client organisation. The comparison of the attributes of communications intangible in the contracting and single project client organisation presented similar results (see Table D2.4) for predictable reasons. The results point to the fact that regardless of whether it is a contracting or single project client organisation, communications strategy and infrastructure should fit the context.

The comparison of the attributes of corporate knowledge alignment intangible in the contracting and single project client organisation presented mixed results (contrasting on two attributes and similar on one attribute as shown in Table D2.5) for predictable reasons. The contrasting attributes point to the fact that the context drives project actor expectations and training needs whilst the similar attributes point to the fact that regardless of whether it is a contracting or single project organisation, the training delivery infrastructure are similar. The comparison of the attributes of IT enabled alignment intangible in the contracting and single project client organisation presented similar results (see Table D2.6) for predictable reasons. The similar results point to the fact that regardless of whether it is a contracting or single project client organisation, the fit of the IT infrastructure to the requirements of the project based organisation was important. The comparison of the attributes of interface alignment intangible in the contracting and single project client organisation presented contrasting results (See Table D2.7) for predictable reasons. The contrasting results point to the fact that due to the inherent nature of the single project client organisation interface issues are more critical to project delivery.

The comparison of attributes of individual knowledge intangible in the contracting and single project client organisation (as shown in Table D2.8) presented similar results for predictable reasons. The similar result points to the fact that while new individual knowledge is created; the type of new knowledge is driven by the context of the contracting or single project client organisation.

The comparison of project leadership intangible in the contracting and single project client organisation presented mixed results (contrasting on one attribute and similar on one attribute as shown in Table D2.9) for predictable reasons. The similar results point to the fact that regardless of whether it is a contracting or single project client organisation, project leadership skills are developed. The contrasting result points to the fact that the promotion strategy is driven by the context of the contracting or single project client organisation.

The comparison of attributes of factors that influence human capital in the contracting and single project client organisation presented mixed results (contrasting on two attributes and similar on one attribute as shown in Table D2.10) for predictable reasons. The contrasting results point to the fact that opportunities for career progression and career progression are driven by the context of the contracting and single project client organisation. The similar result points to the fact that in both the contracting and single project client organisation, stress was common and there was no agreed organisational policy on stress.

The comparison of attributes of relationship dynamics intangible in the contracting and single project client organisation presented similar results (See Table D2.11) for predictable reasons.

The similar results point to the fact that regardless of whether it is a contracting or single project client organisation, relationships are developed between stakeholders, and different mechanisms will be put in place to support the relationships.

The comparison of attributes of power tensions intangible in the contracting and single project client organisation presented mixed results (contrasting on one attribute and similar on two attributes as shown in Table D2.12) for predictable reasons. The similar results point to the fact that while the external and internal stakeholders had leveraging power regardless of whether it was a contracting or single project client organisation, the drivers were contextual. The contrasting result points to the fact that the base organisation's leveraging power are consistent with its context and manifests as such.

The comparison of attributes of access to knowledge and information in the contracting and single project client organisation presented similar results (see Table D2.13) for predictable reasons. The similar results point to the fact that the drivers are contextual for network range and leverage.

The comparison of attributes of reputation in the contracting and single project client organisation presented similar results (see Table D2.14) for predictable reasons. The similar results point to the fact that while certain expectations are common in contracting and single project client organisation, the drivers of perception are contextual and therefore manifest as such.

Based on the foregoing discussion, there are three possible scenarios that exists across the contracting and single project client organisation. In the first scenario across the contracting and single project client organisation, the comparison of the relevant attributes of team working intangibles, decision making intangibles, communications intangibles, individual knowledge intangibles, access to knowledge and information intangibles and reputation intangibles all presented similar results due to predictable reasons. In addition, in the second scenario across the contracting and single project client organisation, the comparison of the relevant attributes of corporate knowledge ownership intangibles, project management methodology intangibles, corporate alignment knowledge based intangibles, factors that affect human capital and power tensions intangibles presented mixed results for predictable reasons. However, in the third scenario, only the comparison of the attributes of corporate alignment interface management intangibles across the contracting and single project client organisation presented contrasting result for a predictable reason. In the first case, the findings demonstrate that there are common attributes that manifest in similar ways in the contracting and single project client organisation, but driven by contextual drivers. In the second scenario, there are attributes that manifest in different ways in the contracting and single project client organisation driven by

contextual drivers. In the last scenario, the findings demonstrate that the attribute is more critical for the single project client organisation compared to the contracting organisation. Therefore, the findings support the reasoning that some intangible benefits are generic while some are contextual but they both have contextual drivers. The findings therefore support the reasoning that the attributes of intangible benefits demonstrate that there is need to consider both generic and contextual dimensions of project based organisations to ensure that the systems, mechanisms and processes put in place fit the context of the project based organisation. Consequently, the findings add to the understanding of the organisation box in the theoretical framework.

In the next section, the inductive analytical approach presented in this chapter will be compared to the deductive analytical approach presented in chapter 7 to establish similarities and dissimilarities and the implications for the theoretical framework and the development of the Approach.

9.6.2 Comparing the Findings from the Deductive and Inductive Analytical Approaches

The comparison of the sixty-seven drivers of intangible benefits identified from the deductive analytical approach (Drivers) presented in chapter 7 and the thirty-eight attributes of intangible benefits presented in this chapter identified from using the inductive analytical approach (Attributes) across the intangible benefits components in the context of the contracting and single project client organisations presented three scenarios. The comparison demonstrated that there was a clear difference between the Drivers and Attributes of corporate knowledge ownership intangible benefits, corporate alignment IT enabled intangible benefits and corporate alignment interface based intangible benefits with the Attributes extending the understanding derived from the Drivers. In the second scenario, the comparison demonstrated that the Drivers and Attributes of project management methodology intangible benefits, communications intangible benefits, corporate alignment knowledge based intangible benefits, relationship dynamics intangible benefits, access to knowledge and information intangible benefits and reputation intangible benefits were similar to the extent that some Drivers make up some Attributes with other Drivers clearly different from the Attributes and consequently also extending the understanding derived from the Drivers. In the last scenario, the comparison demonstrated that the Drivers and Attributes for team working intangible benefits, decision making intangible benefits, individual knowledge intangible benefits, project leadership intangible benefits, the factors that influence human capital (individual career and work load factors) and power tension intangible benefits are completely similar as the Drivers make up the Attributes, however extending the understanding of the intangible benefits component in each case.

Consequently, the first scenario establishes the case that the Attributes have shed new light and extended the understanding of corporate knowledge ownership intangible benefits, corporate alignment IT enabled intangible benefits and corporate alignment interface based intangible benefits. Similarly, the second scenario establishes the case that the Attributes whilst extending the understanding derived from the Drivers, partially shed new light on project management methodology intangible benefits, communications intangible benefits, corporate alignment knowledge based intangible benefits, relationship dynamics intangible benefits, access to knowledge and information intangible benefits and reputation intangible benefits. Likewise, the third scenario whilst not shedding new light, extends the understanding of team working intangible benefits, decision making intangible benefits, individual knowledge intangible benefits, project leadership intangible benefits, factors that affect human capital and power tensions intangible benefits. However, from inspection of the different scenarios, it was observed that the three components of human capital fall into the third scenario. This is interesting observation because the comparison reveals that the Drivers and Attributes for corporate knowledge ownership intangible benefits are clearly different whilst the Drivers and Attributes of three human capital components are clearly similar. Thus, the reasoning is supported that corporate knowledge ownership intangible benefits are more complex with organisation wide implications compared to that of the human capital components that may be variable across projects in the base organisation and hence sufficiently identified by the deductive analytical approach. Furthermore, with a focus on the development of the Approach, the reasoning is supported that more emphasis should be placed on the scenario with Drivers and Attributes that are clearly different, in this case scenario one. By observation, corporate knowledge ownership intangible benefits are clearly the greater consideration especially in the light of the fact that corporate knowledge ownership intangible benefits is made up of contributions from other intangible benefits components.

Therefore, the implication for the development of the approach to the generation of intangible benefits is that the deductive and inductive analytical approaches demonstrate that there is need to consider the intangible benefits as well as the project based organisation as context. In addition, the implication of the findings is that there needs to be consideration of the Drivers and Attributes of the intangible benefits components in line with the three scenarios. More importantly, the deductive and inductive analytical approaches achieve analytical triangulation with similar findings but different expressions particularly demonstrated in scenarios one and two. In the next section, the key points from earlier chapters will be reflected upon in the light of the new understanding so that any new insight can also be carried forward to inform the development of the Approach.

9.6.3 Implications for Key Points raised in Discussion in Chapters 6, 7 and 8

In view of the discussion in sections 6.6.2 and 7.6.1, the discussion in section 9.6.1 support the reasoning that there needs to be a general consideration of the impact of the three drivers identified from the views of the variety of stakeholders: project management deployment, organisational hierarchy and organisation context on the generic and contextual dimensions of project based organisations. In addition, in view of the discussions in sections 6.6.2 and 7.6.1, the discussion in section 9.6.2 support the reasoning that the impact of the three drivers identified from the views of the variety of stakeholders: project management deployment, organisational hierarchy and organisation context on the generation of corporate knowledge ownership intangible components are more important compared to the other components of intangible benefits with organisation wide implications. Furthermore, with the three types of organisational changes discussed in sections 6.6.3 and 7.6.2, the findings in section 9.6.2 support the reasoning that the impact of organisational changes on corporate knowledge ownership intangible benefits components will also be more important compared to the other components of intangible benefits and also with organisation wide implications.

Likewise, in addition to the discussions in section 8.4.2, the implication for the logic model, project management deployment, and project management deployment and competitiveness are discussed in view of the discussions in sections 9.6.1 and 9.6.2. Accordingly, the findings in section 9.6.1 supports the reasoning that a more standardised approach to the generic dimension and a more tailored approach to the contextual dimensions of a project based organisation is required. The rationale being that the project based organisation can more easily manage the generic dimension and better predict the contribution to competitiveness with implications for the logic model and project management deployment. Similarly, the findings in section 9.6.2 supports the reasoning that the consideration of the attributes of intangible benefits of the corporate knowledge ownership intangibles also sheds more light on the general deliberation with regards to making decisions in the project based organisation with a knock on effect on the activities and processes used in executing the decisions and therefore influencing the logic model by influencing the extent of contribution of different components of intangible benefits. Likewise, the influence on the logic model is also demonstrated as the findings add to the understanding that corporate knowledge ownership intangibles are also critical for the feedback loop of the logic model to ensure that the organisation learns and can make the necessary changes (organise its resources) as a result of the new learning and therefore impacts on project management deployment and consequently, with implications for the yardsticks for measuring competitiveness.

Similar to discussions in section 8.4.3, with regards to existing thinking in project management, the findings from the inductive analytical approach together with that of the deductive analytical

approach achieve analytical triangulation and demonstrates a robust approach to establishing that the intangible benefits from project management deployment are generic and contextual with the need to also consider the project based organisation as context. In addition, the findings from the inductive analytical approach also presents a new way of considering knowledge management and the benefits that project based organisation can derive by making a logical connection between six distinct aspects (attributes of intangible benefits) that are often treated in isolation or in groups but never considering the six distinct aspects in a logical and coherent manner.

9.6.4 The Key Considerations to be Taken Forward

From observation of the chapter summaries of chapters 6, 7, 8 and 9 as shown in Table 9.2, the key findings are around seven themes: thirty eight percent of the points are about intangible benefits, twenty one percent of the points are about project based organisations, seventeen percent of the points are about the types of changes, eight percent about the variety of stakeholders and the link, four percent about project lifecycle and knowledge management. In order to demonstrate how the findings have developed across chapters 6, 7, 8 and 9, the author presents the key findings in Table 9.2 explained in the following section with each paragraph discussing each theme and the implication discussed in the last paragraph of the section.

Table 9.2 Key Points from Summaries of Chapter 6, 7, 8 and 9

Chapter	Theme: Intangible Benefits
Chapter 6	<ul style="list-style-type: none"> The findings support the reasoning that the empirically derived intangible benefits of project management deployment are types of knowledge and capabilities.
Chapter 6	<ul style="list-style-type: none"> The initial analysis supports reasoning that no intangible benefit was considered more important than the other in line with extant IC literature.
Chapter 7	<ul style="list-style-type: none"> The findings reveal that whilst some drivers of intangible benefits are generic regardless of whether contracting or single project client organisation, other drivers are partly relevant for both contracting and single project client organisations, partly relevant for contracting organisations and a contracting organisation.
Chapter 7	<ul style="list-style-type: none"> The findings demonstrated that the corporate knowledge ownership intangibles and the human capital components are generic while other intangible benefits components are contextual to varying degrees.
Chapter 8	<ul style="list-style-type: none"> Contended that the empirical findings extended the understanding derived from the theoretical findings and this was demonstrated because the alignment intangible benefits components had been identified as enablers whilst social capital was explicitly identified as the ever present, often overlooked relational dimension to project working whilst the better understood, non-relational aspects of project work were undertaken.
Chapter 8	<ul style="list-style-type: none"> the reasoning is supported that a more generalised approach (with mechanism and processes in common) to corporate knowledge ownership intangibles and human capital components can be taken across a base organisation's portfolio of projects compared to the remaining drivers of the components of organisational capital and that of social capital.

Chapter 9	<ul style="list-style-type: none"> ▪ The findings about corporate knowledge ownership intangible benefits extends the understanding of intangible benefits especially in the light of initial analysis that no intangible benefits were more important as discussed in section 6.5. The findings support the reasoning that from an organisation’s point of view, corporate knowledge ownership intangible benefits are the most critical as human capital though generic can only be owned by the project based organisation in the form of corporate knowledge ownership intangible benefits
Chapter 9	<ul style="list-style-type: none"> ▪ add to the understanding that corporate knowledge ownership intangibles are also critical for the feedback loop of the logic model to ensure that the organisation learns and can make the necessary changes (organise its resources) as a result of the new learning and therefore impacts on project management deployment and consequently, with implications for the yardsticks for measuring competitiveness
Chapter 9	<ul style="list-style-type: none"> ▪ It was also demonstrated that corporate knowledge ownership intangibles are also a critical intangible benefit component with implications for project management deployment, generating intangible benefits and yardsticks of competitiveness with consequences for the approach to the generation of intangible benefits.
	Theme: Link
Chapter 8	<ul style="list-style-type: none"> ▪ focused on understanding the link between the generation of intangible benefits and the generation of organisational capital, human capital and social capital leading to organisational competitiveness. It was demonstrated that the focus on the link is critical to a coherent understanding of how the generation of intangible benefits contributes to competitiveness which will form the foundation on which the approach to the generation of intangible benefits will be developed.
Chapter 8	<ul style="list-style-type: none"> ▪ using the identified drivers and the better understanding of the relationship between the different components of intangible benefits, the logic to the generation of intangible benefits was developed consistent with the earlier developed theoretical framework.
	Theme: Variety of Stakeholders
Chapter 6	<ul style="list-style-type: none"> ▪ the variety of participants drew attention to different scenarios driven by project management deployment itself, the organisation hierarchy within the organisation and the organisation’s context. This supports the reasoning that some drivers of intangible benefits are generic whilst others will be more contextual at different levels within the organisation or at the organisational level.
Chapter 8	<ul style="list-style-type: none"> ▪ the reasoning was supported that there was the need to be mindful of the multiples lens whilst building on the logic model to develop the approach to the generation of intangible benefits.
	Theme: Types of Changes
Chapter 6	<ul style="list-style-type: none"> ▪ Identified types of changes and it was also demonstrated that the effect of changes was more visible in the human capital and social capital component of intangible benefits.
Chapter 7	<ul style="list-style-type: none"> ▪ In addition, the findings reveal that organisational change is disruptive to the generation of intangible benefits from project management deployment and occurs in the “generate intangible benefits” box of the theoretical framework.
Chapter 8	<ul style="list-style-type: none"> ▪ three types of organisational changes were indicated and the reasoning was supported that in relation to building on the logic model in developing the approach to the generation of intangible benefits, types of organisational changes

	need to be identified and particular attention given to the human and social capital components.
Chapter 8	<ul style="list-style-type: none"> the reasoning is supported that the degree of distortion to the logic model will be in consonant with the extent of disruption due to organisational change.
	Theme: Project Lifecycle
Chapter 8	<ul style="list-style-type: none"> identifying the intangible benefits generated in the execution phase of the project lifecycle highlighted the role that the project lifecycle plays in the generation of intangible benefits and draws attention to the possibility that the different phases of the project lifecycle may impact on the type and the extent of the generation of types of intangible benefits.
	Theme: Project Based Organisation
Chapter 9	<ul style="list-style-type: none"> regardless of type of project based organisation or contextual drivers, certain manifestations occur the same way, certain manifestations occur differently whilst others may only occur if it is critical for a particular type of organisation.
Chapter 9	<ul style="list-style-type: none"> the findings support the reasoning that project based organisations can take a generalised approach to the manifestations that occur regardless of type of organisation or contextual drivers whilst a more tailored approach will be required for the scenario where different manifestations occur regardless of type of project based organisation or contextual driver or if only critical to a type of project based organisation
Chapter 9	<ul style="list-style-type: none"> Comparison of the sixty-seven drivers of intangible benefits from the deductive analytical approach and thirty-eight attributes of intangible benefits from the inductive analytical approach demonstrated that intangible benefits are generic and contextual establishing that analytical triangulation arrives at the same outcome.
Chapter 9	<ul style="list-style-type: none"> Importantly, the deductive and inductive analytical approaches demonstrated that there was need for the consideration of the intangible benefits and the project based organisation as context.
Chapter 9	<ul style="list-style-type: none"> supports the reasoning that a more standardised approach to the generic dimension is required whilst a more tailored approach to the contextual dimensions of a project based organisation is required.
	Theme: Knowledge Management
Chapter 9	<ul style="list-style-type: none"> Lastly, the findings from the inductive analytical approach presents a logical connection between the six distinct aspects of knowledge management identified thus contributing to extant project management knowledge management literature.

Discussing the theme intangible benefits, it was indicated in chapter 6 that intangible benefits were types of knowledge and capabilities with the reasoning that no intangible benefits were more important than the other based on the initial analysis in line with extant IC literature. The understanding was extended by the findings in chapter 7 that the drivers of intangible benefits were generic and contextual to varying degrees and that corporate knowledge ownership intangibles and human capital components were generic while other intangible benefits

components were contextual to varying degrees. The understanding was also further enhanced by the findings in chapter 8 as the empirical findings extended the understanding derived from the theoretical findings and this was demonstrated because the alignment intangible benefits components had been identified as enablers whilst social capital was explicitly identified as the ever present, often overlooked relational dimension to project working whilst the better understood, non-relational aspects of project work were undertaken. The findings from chapter 8 also extended the understanding as it was reasoned that a more generalised approach to corporate knowledge ownership intangibles and human capital components could be taken across a base organisation's portfolio of projects compared to the remaining drivers of the components of organisational capital and that of social capital. Furthermore, the understanding about intangible benefits was extended by the findings in chapter 9 with corporate knowledge ownership intangible benefits identified as a critical component of intangible benefits especially in the light of initial findings that no intangible benefits was more important as discussed in section 6.5. The findings about corporate knowledge ownership intangible benefits supported the reasoning that from an organisation's point of view, corporate knowledge ownership intangible benefits were the most critical component as human capital though generic could only be owned by the project based organisation in the form of corporate knowledge ownership intangible benefits. The findings from chapter 9 also supported the reasoning that corporate knowledge ownership intangible benefits were critical for the feedback loop of the logic model and therefore impacted on project management deployment and consequently had implications for the yardsticks for measuring competitiveness consequences for the development of the approach to the generation of intangible benefits.

Discussing the theme link, it was indicated that the link between the generation of intangible benefits and the generation of organisational capital, human capital and social capital leading to organisational competitiveness was enhanced by using the identified drivers and the better understanding of the relationship between the different components of intangible benefits to develop the logic to the generation of intangible benefits which was consistent with the theoretical framework.

Discussing the theme project based organisation, it was indicated in chapter 9, it was indicated that regardless of type of project based organisation or contextual drivers of intangible benefits, the manifestations were generic and contextual to varying degrees similar to the findings on the drivers of intangible benefits demonstrating complementarity of findings in reality. In addition, the findings supported the reasoning that project based organisations could take a generalised approach to generic manifestations whilst a more tailored approach would

be appropriate in the case of manifestations that were contextual to varying degrees. Consequently, the comparison of the findings from the deductive and inductive analytical demonstrated that intangible benefits were generic and contextual establishing that analytical triangulation arrived at the same outcome however with a better understanding of corporate knowledge ownership intangible benefits as a critical intangible benefit derived from project management deployment. Importantly, the findings from the deductive and inductive analytical approaches demonstrated that there was need for the consideration of the intangible benefits and the project based organisation as context with a more standardised approach to the generic dimension whilst a more tailored approach to the contextual dimensions was required.

Discussing the theme organisational changes, three types of changes were indicated in chapter 6 and it was demonstrated that the effect of changes were more visible in the human capital and social capital components of intangible benefits. The understanding was then extended by findings in chapter 7 as the findings revealed that organisational changes were disruptive to the generation of intangible benefits from project management deployment. The understanding was further enhanced from the findings in chapter 8 as it was reasoned that the types of organisational changes needed to be identified with particular attention given to the human and social capital components. It was also reasoned that the degree of distortion to the logic model will be in consonant with the extent of disruption due to organisational change with implication for developing the approach to the generation of intangible benefits

Discussing the theme variety of stakeholders, it was indicated in chapter 6 that the variety of participants drew attention to different scenarios driven by project management deployment itself, the organisation hierarchy within the organisation and the organisation's context. This supported the reasoning that some drivers of intangible benefits were generic whilst others were more contextual at different levels within the organisation. The implication was expanded by the findings in chapter 8 as the reasoning was supported that there was the need to be mindful of the multiples lens whilst building on the logic model to develop the approach to the generation of intangible benefits.

Discussing the theme project lifecycle, it was indicated in chapter 8 that identifying the intangible benefits generated in the execution phase of the project lifecycle highlighted the role that the project lifecycle played in the generation of intangible benefits and drew attention to the possibility that the different phases of the project lifecycle may impact on the type and the extent of the generation of types of intangible benefits.

Discussing the theme knowledge management, the findings from chapter 9 indicated that the findings from the inductive analytical approach presented a logical connection between six

distinct aspects of knowledge management identified thus contributing to extant project management knowledge management literature.

In view of the discussion of the seven themes above, the findings from chapters 6, 7, 8 and 9 established that the theoretical and empirical approaches with the use of the deductive and inductive analytical approaches as part the empirical approach was appropriate in investigating the intangible benefits derived from project management deployment. The findings also demonstrated that the empirical findings built on the understanding derived from the theoretical findings and that the findings from the inductive analytical approach validated and extended the findings from the deductive analytical approach. Furthermore, from observation of the themes, intangible benefits, project based organisation and the link are relevant for the development of the Approach, organisational change and variety of stakeholders are more relevant for the application of the Approach whilst project lifecycle and knowledge management can be considered as general insights. The reasoning is consistent with the theoretical framework as the two themes with the highest percentages, intangible benefits and project based organisation feature in the theoretical framework and logic model whilst organisational changes and views of stakeholders are critical factors that influence the logic model and consequently the five themes are important for the approach to the generation of intangible benefits. The findings will be taken forward as the approach to the generation of intangible benefits will be developed in the next chapter.

9.7 Summary

In view of the theoretical framework developed in chapter 5, this chapter has focused on the project based organisation by comparing the data from the contracting and single project client organisation to gain additional understanding of how intangible benefits manifest in practice using a second analytical approach, an inductive analytical approach. Thirty-eight attributes of intangible benefits were identified by acting as if no theoretically derived intangible benefits themes existed and were compared across the contracting and single project client organisation. The findings support the reasoning that regardless of type of project based organisation or contextual drivers, the manifestations were generic and contextual to varying degrees. Consequently it was reasoned that project based organisations can take a generalised approach to generic manifestations whilst a more tailored approach will be required for contextual manifestations. The findings are consistent with the findings from chapter 7 and go further to establish that whilst focusing on the types of intangible benefits generated, there is also the need to focus on the project based organisation as context.

In addition, this chapter validated and extended the understanding of what is known about intangible benefits from the deductive analytical approach as the comparison of the sixty seven drivers of intangible benefits from the deductive analytical approach and thirty eight attributes of intangible benefits from the inductive analytical approach demonstrated that intangible benefits are generic and contextual establishing that analytical triangulation arrives at the same outcome however with a better understanding of corporate knowledge ownership intangible benefits as a critical intangible benefit derived from project management deployment.

Similarly, this chapter reflected on the key points raised in the discussions of earlier chapters in the light of the insight garnered in this chapter and it was demonstrated that the views of the variety of stakeholders and organisational changes were critical factors that will influence the approach to the generation of intangible benefits. In addition, corporate knowledge ownership intangible benefits were identified as a critical intangible benefits component with implications for the logic model, for project management deployment, generating intangible benefits and yardsticks of competitiveness with consequences for the approach to the generation of intangible benefits. Lastly, the findings from the inductive analytical approach presented a logical connection between the six distinct aspects of knowledge management identified thus contributing to extant project management knowledge management literature.

Furthermore, as this is the last chapter before approach to the generation of intangible benefits is developed in the next chapter, the findings from chapters 6, 7, 8 and 9 were reflected upon to demonstrate how the findings have developed over the chapters validating and extending the understanding about the generation of intangible benefits from project management deployment. In the next chapter, the approach to generation of intangible benefits will be developed confident that the findings about intangible benefits were arrived at via a robust analytical approach. Therefore, the approach to the generation will be developed guided by the theoretical framework and equipped with the findings from the theoretical and empirical approaches to investigating the generation of intangible benefits from project management deployment.

Chapter 10 Approach to Generation of Intangible Benefits Derived from Project Management Deployment

The context to the chapter is first elucidated and then building on work from earlier chapters, the author's version of the combination of the two leading project management bodies of knowledge, the PMBOK and the APMBOK is mapped onto the logic model to develop the approach to the generation of intangible benefits derived from project management deployment. The application of the approach was illustrated using the contracting organisation, single project client organisation and the contracting organisation in the supply side of the single project client organisation and the chapter summarised.

10.1 Context to this Chapter

This chapter builds on the findings from the theoretical and empirical approaches to investigating the intangible benefits from project management deployment to develop the approach to the generation of intangible benefit from project management deployment. From the theoretical approach presented in chapter 5, the theoretical framework was developed from the understanding derived and served as a guide for the empirical approach. Consequently, in view of the theoretical framework, chapter 6 and 7 focused on the understanding of the "generates intangible benefits" box of the theoretical framework with chapter 6 presenting the data and initial analysis of the data and with more detailed analysis of the data with sixty-seven drivers of intangible benefits identified from the data presented in chapter 7. Similarly, in view of the theoretical framework, chapter 8 focused on the "Link" of the theoretical framework by focusing on understanding the link between the generation of intangible benefits and the generation of organisational capital, human capital and social capital leading to organisational competitiveness and consequently, the logic model to the generation of intangible benefits was developed. Chapter 9 focused on the "project based organisation" of the theoretical framework by adding to the understanding of the context of the project based organisation with thirty-eight attributes of intangible benefits identified from the data by acting as if no theoretically derived intangible benefits themes existed. Furthermore, in chapter 9, the findings from the deductive and inductive analytical approaches were compared to validate and establish what more was known about intangible benefits and the implications for developing the approach to the generation of intangible benefits from project management deployment. In addition, by compiling all the summaries from chapters 6,7, 8 and 9 in chapter 9, it was identified that the themes of intangible benefits, project based organisation and the Link were critical for the development of the Approach, whilst the themes organisational changes and variety of stakeholders were more critical for the application of the Approach with the themes of project lifecycle and knowledge management as general insights.

As a consequence of the work done in earlier chapters and in line with the theoretical framework, the approach to the generation of intangible benefits is developed in the next section whilst the theoretical demonstration of the application of the approach in practice is discussed afterwards.

10.2 Project Management Deployment Generated Intangible Benefits Approach

With the findings from the theoretical and empirical approaches as the foundation for the development of the approach to the generation of intangible benefits as explained in section 10.1, direct reference is first made to the theoretical framework featuring intangible benefits, the project based organisation and the Link (the logic model). The author reasoned that the development of the approach needed to start by first by identifying the project management deployment activities of the project based organisation. Consequently, as certain aspects were better captured by the PMBOK or the APMBOK, the two-leading project management BOKs were combined to identify the key features of project management activities. The combined BOK was mapped to the logic model, and an approach to facilitate and maximise the intangible benefits derived from project management deployment was developed and shown in Figure 10.1. The approach is made up of three columns, arrows that show linkages and direction and two boxes depicting competitiveness and the project based organisation.

In the deploy project management column as shown in Figure 10.1, the PMBOKs ten knowledge areas and the construction extension (see appendix D) are explicitly referred to and in addition, certain aspects of the APMBOK (see appendix D) have been included to make a combined BOK framework, all organised in the red and blue box. The project management context referred to in the PMBOK in section 1 chapter 2 is combined with the APMBOKs chapter 1 (Project management in context) and section 6 (Organisation and Governance) and this is shown by the larger black box. In addition, the author also recognises that aspects of section 6 of the APMBOK in particular draws attention to structural team working intangibles and therefore this is included as a critical aspect of stakeholder management activities in the red box and the author emphasises that stakeholder management activities captures all relational dimensions of project working. Similarly, aspects of Technology Management section 4.4 in the APMBOK is combined with the human resource management knowledge area of the PMBOK and referred to as the HRM activities in the red box and also included with the other project management knowledge areas of the PMBOK and shown as other project management knowledge activities in the blue box. In addition, aspects of People and the

Profession Section 7 of the APMBOK are also included to the Human resource management knowledge area of the PMBOK referred to as the HRM activities and the stakeholder management knowledge area of the PMBOK shown as stakeholder management activities, both in the red box. Therefore, the deploy project management column as shown in Figure 10.1 has three main boxes: red and blue boxes contained in a larger black box and smaller boxes contained in the red box. The red and blue box reflects a subtle grouping of project management deployment activities along the lines of soft and hard dimensions (see section 2.4.1).

The intangible benefits column contains fourteen boxes showing the different intangible benefits components. The corporate knowledge ownership intangible refers to the drivers of intangible benefits (see section 7.2.1) and the attributes of intangible benefits (see section 9.2.1). Similarly, project management methodology intangible refers to the drivers of intangible benefits (see section 7.2.2.1) and the attributes of intangible benefits (see section 9.2.2.1). Similarly, team working intangible refers to the drivers of intangible benefits (see section 7.2.2.2) and the attributes of intangible benefits (see section 9.2.2.2). Similarly, decision making intangible refers to the drivers of intangible benefits (see section 7.2.2.3) and the attributes of intangible benefits (see section 9.2.2.3). Similarly, communications intangible refers to the drivers of intangible benefits (see section 7.2.2.4) and the attributes of intangible benefits (see section 9.2.2.4). Similarly, corporate Alignment- knowledge based intangible refers to the drivers of intangible benefits (see section 7.2.3.1) and the attributes of intangible benefits (see section 9.2.3.1). Similarly, corporate Alignment- IT Enabled intangible refers to the drivers of intangible benefits (see section 7.2.3.2) and the attributes of intangible benefits (see section 9.2.3.2). Similarly, corporate Alignment- Interface Management intangible refers to the drivers of intangible benefits (see section 7.2.3.3) and the attributes of intangible benefits (see section 9.2.3.3).

Individual knowledge intangible as shown in Figure 10.1 refers to the drivers of intangible benefits (see section 7.3.1) and the attributes of intangible benefits (see section 9.3.1). Similarly, project leadership intangible refers to the drivers of intangible benefits (see section 7.3.2) and the attributes of intangible benefits (see section 9.3.2). Factors that affect human capital refer to the drivers of intangible benefits (see section 7.3.3) and the attributes of intangible benefits (see section 9.3.3) and this is embedded in human capital.

Relationship dynamics intangible as shown in Figure 9.1 refers to the drivers of intangible benefits (see section 7.4.1) and the attributes of intangible benefits (see section 9.4.1). Similarly, power tensions Intangible refers to the drivers of intangible benefits (see section 7.4.2) and the attributes of intangible benefits (see section 9.4.2).

Similarly access to knowledge and information intangible refers to the drivers of intangible benefits (see section 7.4.3) and the attributes of intangible benefits (see section 9.4.3). Similarly, reputation intangible refers to the drivers of intangible benefits (see section 7.5) and the attributes of intangible benefits (see section 9.5).

It has been previously mentioned in section 1.4 that empirically validating competitiveness is beyond the scope of this thesis, however it was theoretically populated in sections 2.1.1 and section 2.3.1. As shown in Figure 10.1, the links between deploy project management and intangible benefits components and the links between the intangible benefits components and intellectual capital are shown by arrows. As already stated, the deploy project management column have three groupings: individual boxes within red box, the red box and blue box. For the individual boxes within red box the engage in HRM activities drives team working and corporate alignment knowledge based intangible. Similarly, the engage in project stakeholder management activities drives project leadership, relationship dynamics, power tensions, access to knowledge and information and corporate alignment knowledge based intangible. In addition, the engage in communication management activities drives project leadership, communication and decision making and the engage in risk management activities drives decision making. The links between the individual boxes in the red box and the intangible benefits column draw attention to the specific contribution of the specific project management deployment activities. For the red box, the engage in HRM activities, engage in project stakeholder management activities, engage in communication management activities, and engage in risk management activities drives individual knowledge intangibles, corporate knowledge ownership intangibles, reputation, project management methodology intangibles, corporate alignment knowledge based intangibles, corporate alignment IT based intangibles and corporate alignment interface management. Whilst for the blue box, engage in other project management knowledge area activities drives individual knowledge intangibles, corporate knowledge ownership intangibles, reputation, project management methodology intangibles, corporate alignment IT enabled intangibles and corporate alignment interface management intangibles. The links between the red and blue box draw attention to the fact that groupings of project management deployment activities also contribute the generation of certain intangible benefits even though individual components in the individual components also influence specific intangible benefits as already discussed above.

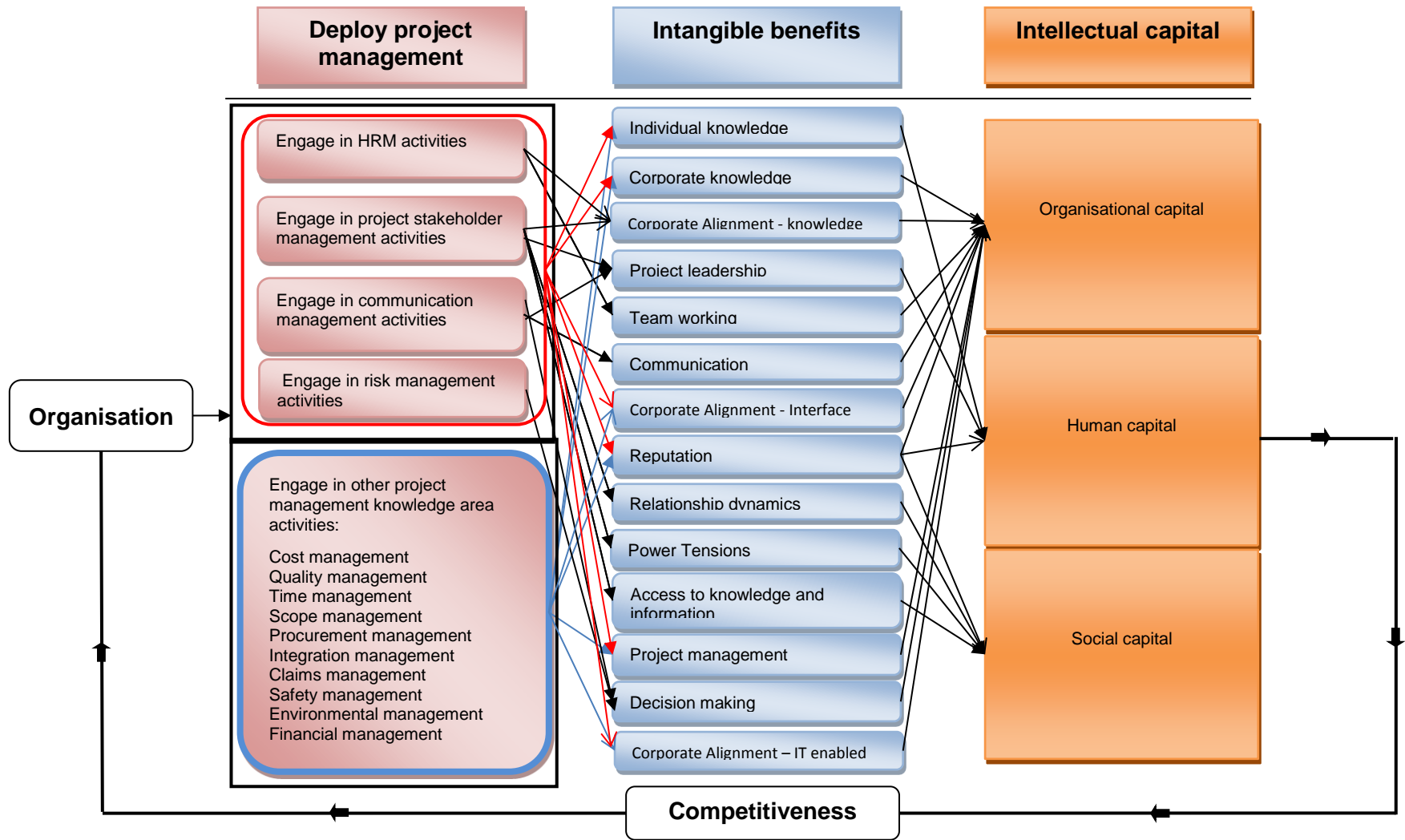


Figure 10.1: Project Management Deployment Intangible Benefits Generation Approach

For the intangible benefits column as shown in Figure 10.1, the individual knowledge intangibles and project leadership intangibles and reputation drives human capital. In addition, corporate knowledge intangibles, team working intangibles, communication intangibles, project management methodology intangibles, decision making intangibles, corporate alignment knowledge based intangibles, corporate alignment IT enabled intangibles, corporate alignment interface management and reputation drives organisational capital. Lastly the relationship dynamics intangibles, power tensions intangibles and access to knowledge and information and reputation drives social capital. The links between the intangible benefits column and the intellectual capital column are more straightforward as they are consistent with that of the logic model and earlier discussions. However, reputation is depicted only as an intangible benefit component and shown to contribute to the generation of organisational, human and social capital. By showing reputation in this manner, the author acknowledges that reputation derived from project management deployment manifests as organisational capital, human capital and social capital as reputation is mapped as internal and external reputation across the individual, team and organisational levels.

The application of the Approach is discussed theoretically in the next section. In addition, the implication of the types of changes and the variety of stakeholders will also be discussed including the general insights of project lifecycle and knowledge management.

10.3 Theoretical Demonstration of Application of Approach in Practice

The approach to the generation of intangible benefits from project management deployment has been described in the preceding section however the application in practice is explored theoretically in the light of the three scenarios encountered in the case organisations. This demonstration applies the understanding derived from earlier chapters 6, 7, 8 and 9 and will make direct references to the findings in section 9.6.4 of the previous chapter. The first demonstration is that of the contracting organisation from the perspective of the contracting organisation, and the second and third, that of the single project client organisation from the perspective of the single project client organisation and that of a contracting organisation in the supply side of the single project client organisation. In addition, whilst the organisations considered work in a multiproject environment, only one hypothetical project is considered to illustrate the application of the approach. This implies that the approach as shown in Figure 10.1 is general and to reflect the reality of project based organisations in the construction industry that have a portfolio of projects, contextualisation is required. To demonstrate the application of this approach in practice, the first step is to discuss for each scenario the context,

strategic objectives and key considerations to establish the basis on which the approach is applied. The next step is to contextualise using a generic model shown in Figure 10.2, discussing each scenario with reference to the approach to the generation of intangible benefits shown in Figure 10.1.

10.3.1 Contracting Organisation

The first scenario considered is that of the contracting organisation and the context as shown in Table 10.1 highlights the fact that a contracting organisation has several projects of different types and sizes that may span different sectors; however, all the projects have a common strategic objective which is organisational survival. In order to pursue organisational survival, the strategic objective of the contracting organisation is to learn and use the new knowledge in new projects across the organisation and as a result to be competitive.

Table 10.1 Contracting Organisation

Context	Strategic Objectives	Key Considerations
<ul style="list-style-type: none"> - Several projects, different types and sizes, different sectors - All projects have a common strategic aim (organisational survival) 	<p>To learn and use new knowledge in new projects across organisation and to be competitive (use new knowledge as leverage)</p>	<p>External: Methodology for each project delivery driven by contractual agreement i.e. client led (external)</p> <p>Internal: How project management is deployed (central or non-central functions)</p> <p>With implications for:</p> <ul style="list-style-type: none"> - Corporate knowledge ownership intangibles infrastructure (Knowledge capture, retrieval, sharing and integration mechanisms) - Other organisational capital components infrastructure (mechanisms and processes) - Enabler intangibles infrastructure IT infrastructure, communications infrastructure and interface management infrastructure) - Generic Human capital components infrastructure (mechanisms and processes)

		<ul style="list-style-type: none"> - Social capital components infrastructure - Reputation intangibles infrastructure
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In addition, the key considerations have both internal and external dimensions. The external perspective draws attention to the fact that the project management methodology used on a per project basis was client led as it was driven by the contractual agreement. The internal perspective draws attention to how project management is deployed whether as a central function or non- central function with implications for corporate knowledge ownership intangibles infrastructure (knowledge capture, retrieval, sharing and integrating mechanisms), other organisational capital intangibles (mechanisms and processes), enabler intangibles infrastructure (knowledge based infrastructure, IT infrastructure and interface management infrastructure), human capital components infrastructures for individual knowledge intangibles and project leadership intangibles and social capital components infrastructure for relationship dynamics, power tensions and access to knowledge and information intangibles and reputation intangibles infrastructure.

At point 1 of Figure 10.2, the contracting organisation puts in place the project deployment infrastructure that aligns with the client requirement which will involve activities as described in the column titled deploy project management in Figure 10.1 and the drivers and attributes of intangible benefits will be considered. The drivers of intangible benefits to be considered include the generic drivers and drivers that are relevant for contracting organisations in general and attributes of intangible benefits that include manifestations that are generic and contextually appropriate as discussed in chapter 7. Therefore, it can be argued that at point 1 of Figure 10.2, the contracting organisation has greater influence over project management deployment aligned to the client's requirement consequently input both from external (from client) and internal (own organisation) are required. The project deployment infrastructure will have implications for intangible benefits as shown in the intangible benefits column in Figure 10.1 and the drivers of intangible benefits and the attributes of intangible benefits will therefore be considered. In contrast, at point 2 of Figure 10.2, only the internal (own organisational) mechanisms will determine the extent to which organisational, human and social capital accrues to the contracting organisation leading to competitiveness. The mechanisms put in place at point 2 are also with reference to the drivers and attributes of intangible benefits.

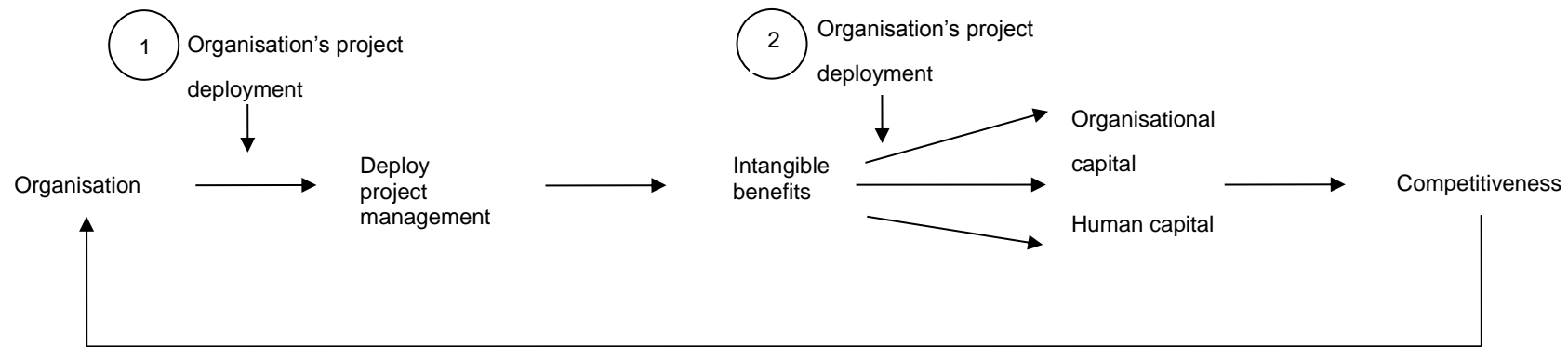


Figure 10.2: Generic Organisation

Figure 10.2 illustrates a generic organisation scenario with two points labelled 1 and 2 to indicate points of intervention from the perspective of intangible benefits. At point 1, the organisation puts in place the project deployment infrastructure. The deploy project management as shown in Figure 10.2 implies project lifecycle considerations and possibilities of changes including IT provision changes, or business model changes, or even a change of the principal project actor with implications for the generation of intangible benefits and consequences for point 2. In addition, point 2 in Figure 10.2 refers to the close of the project or a point in time where assessment is made about the intangible benefits accrual to the base organisation. Point 2 therefore highlights the effects of change on human capital and social capital by highlighting the mechanisms the organisation has put in place and how it will adjust if there are organisational changes or the need to capture new knowledge about project business and project people. Lastly the mechanisms put in place to manage stakeholder relationship and consequently the relationship network and its characteristics and the adjustments to be made if it is an organisational change or if it is a close of project will also be highlighted. The new knowledge and resultant capabilities both individual and organisational should increase competitiveness and these mechanisms put in place at point 1 and 2 have implications for the generation and capture of organisational capital, human capital and social capital and reputation. Lastly the feedback loop indicates that the capture organisational, human and social capital is feedback and into the base organisation and the cycle begins again with the corporate knowledge ownership intangibles playing the primary role.

10.3.2 Single Project Client Organisation

The second scenario considered is that of the single project client organisation and the context is shown in Table 10.2. The context highlights the fact that the single project client organisation has several sub projects of different types and sizes. The strategic aim for public sector projects is legacy with implications for the strategic objective which is to generate and disperse industry best practice.

Table 10.2: Single Project Client Organisation (Base Organisation Side)

Context	Strategic Objectives	Key Considerations
<ul style="list-style-type: none"> - Several sub projects in one sector, different types and sizes - All projects have a common aim to meet objective of overall project with the strategic aim as legacy 	<p>To generate and disperse best practice – open source</p>	<ul style="list-style-type: none"> - Methodology for project (sub project) delivery driven by contractual agreement between single project client organisation and partners and contractor organisations - Determination of which aspects of project management is deployed as central or non-central functions - Operation phase included or not (issues with ownership and transfer of key resources- personnel and knowledge and knowledge based products) <p>Internal: How project management is deployed (central or non-central functions)</p> <p>With implications for:</p> <ul style="list-style-type: none"> - Corporate knowledge ownership intangibles infrastructure (Knowledge capture, retrieval, sharing and integration mechanisms) - Other organisational capital components infrastructure (mechanisms and processes) - Enabler intangibles infrastructure (IT infrastructure,

		communications infrastructure and interface management infrastructure) - Generic Human capital components infrastructure (mechanisms and processes) - Social capital components infrastructure - Reputation intangibles infrastructure
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The key consideration highlights three major areas, the fact that the project methodology will be driven by the contractual agreement between the single project client organisation and the partner and contractor organisations. In addition, the aspects of project management that require a centralised or non-centralised approach will also be decided. Lastly, whether the operation phase is included or not also needs to be considered as it has implications for ownership and transfer of key resources, that is, the project actors, knowledge and knowledge based products. All key considerations discussed have implications for corporate knowledge ownership intangibles infrastructure (the mechanisms for knowledge capture, retrieval, sharing and integration), other organisational capital intangibles (mechanisms and processes), the enabler intangibles infrastructure intangibles (knowledge based infrastructure, IT infrastructure and interface management infrastructure), human capital components infrastructures for individual knowledge intangibles and project leadership intangibles and social capital components infrastructure for relationship dynamics, power tensions and access to knowledge and information intangibles and reputation intangibles infrastructure. Consequently, in the case of the second scenario, the single project client organisation with respect to point 1 in Figure 10.2, draws attention to the fact that the single project client organisation needs to consider the project deployment infrastructure that will be in place with consideration for the multiple stakeholders and multiple interfaces with consideration of the key areas discussed above. The decisions taken will have implications for the extent of autonomy of the different sub projects and consequently extent of autonomy for the organisations in the supply chain. Similar to the first scenario, the project deployment infrastructure will have implications for intangible benefits derived as shown in the intangible benefits column in Figure 10.1 and the drivers of intangible benefits and the attributes of intangible benefits will therefore be considered. The drivers of intangible benefits will include the generic drivers and that specifically related to the single client project organisation and attributes of intangible benefits that include manifestations that are generic and contextually appropriate as discussed in chapter 7. At point 2 of Figure 10.2, only the single project client organisation's mechanisms with consideration of the key areas discussed will determine the extent to which organisational, human and social capital accrues and in line with the findings

in chapter 8, a more generalised approach to corporate knowledge ownership intangibles and human capital components can be taken. The mechanisms put in place at point 2 of Figure 10.2 are also with reference to the drivers and attributes of intangible benefits but mediated by the final outcome as there are two possibilities in the case of the single project client organisation. The first outcome is that the project team members that are directly employed by the single project client organisation are disbanded with its own implications for accrual of intangible benefits. The second outcome is that the project team members are absorbed into the operations phase with a different set of implications for accrual of intangible benefits. Whilst in the first outcome, the human capital element and parts of the access to knowledge and information component of social capital is lost to the general public, in the second outcome, more of the human capital and access to knowledge and information component of social capital is retained by the client. In addition, regardless of the outcome, the organisational capital element is equated to knowledge as legacy at project close because the single project client organisation ceases to exist. Consequently, knowledge ownership intangibles play critical role for the feedback loop depending on the option. Knowledge as legacy can also be used by the client to inform selection of preferred bidder on future procurement and ensure that performance targets use the right assumptions. In addition, it is unlikely that there will be major changes such as change in IT provision or business model, what is more likely is change in a principal project actor which may have implications for the generation of intangible benefits.

10.3.3 Supply Side Single Project Client Organisation- Contracting Organisation

The third scenario to be considered is a contracting organisation in the supply side of the single project client organisation. As shown in Table 10.3, the context draws attention to the fact that different contracting organisations with specialist skills and know how will participate in the supply side of the single project client organisation. In addition, the sub projects will

Table 10.3: Supply Side Single Project Client Organisation- Contracting Organisation

Context	Strategic Objectives	Key Considerations
<ul style="list-style-type: none"> - Different participating organisations i.e. type 1 contracting organisations) with specialists' skills and know how - Core construction and support core construction teams (deal with utilities interphase) - Project aim is to work to a common goal of delivering major project 	<p>To learn and use new knowledge in new projects across organisations and to be competitive (use new knowledge as leverage)</p>	<ul style="list-style-type: none"> - Institutional differences (different profit and loss targets, different future projects target etc.) - Cultural differences - Project management methodology for project (sub project) delivery driven by contractual agreement between SPV and partners and contractor organisations

		<ul style="list-style-type: none"> - Implications of aspects of project management deployed as central or non-central functions <p>With implications for:</p> <ul style="list-style-type: none"> - Corporate knowledge ownership intangibles infrastructure (Knowledge capture, retrieval, sharing and integration mechanisms) - Other organisational capital components infrastructure (mechanisms and processes) - Enabler intangibles infrastructure (IT infrastructure, communications infrastructure and interface management infrastructure) - Generic Human capital components infrastructure (mechanisms and processes) - Social capital components infrastructure - Reputation intangibles infrastructure
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involve core construction and support core construction projects and the associated teams however with a common aim of delivering one major project. The strategic objective for the participating contracting organisations is similar to that of the contracting organisation in scenario 1 which is to learn and use the new knowledge in projects across the organisation and to be competitive. It had already been demonstrated in earlier chapters that the strategic aim of the contracting organisations in the supply side was contradictory to that of the single project client organisation leading to power tensions. In addition, the key considerations point to the fact that the participating organisations have institutional and cultural differences compounded if the organisations are from different countries and speak different languages. Furthermore, the participating organisations have their own established approaches to project management deployment and will have to be adaptive to meet the requirement of the single project client organisation which again generates power tensions. In addition, in order to manage the interface management issues and institutional and cultural differences, the single project client organisation imposes a central function on certain aspects of project

management deployment and the key considerations highlighted have implications for corporate knowledge ownership intangibles infrastructure (the mechanisms for knowledge capture, retrieval, sharing and integration), other organisational capital intangibles (mechanisms and processes), the enabler intangibles infrastructure intangibles (knowledge based infrastructure, IT infrastructure and interface management infrastructure), human capital components infrastructures for individual knowledge intangibles and project leadership intangibles and social capital components infrastructure for relationship dynamics, power tensions and access to knowledge and information intangibles and reputation intangibles infrastructure. Consequently, point 1 in Figure 10.2 draws attention to the fact that the project deployment infrastructure is heavily dependent on the specification of the single project client organisation and input of other stakeholder organisations which are also contracting organisation with either a role as a partner or contractor. Furthermore, the aspects of project management deployment that require a central function and aspects that do not need central function will be communicated and the role of IT as an enabler and the extent of its use will also be communicated. Therefore, the extent of autonomy of the different sub projects and consequently extent of autonomy for the organisations in the supply chain are subjective to the requirements stated by the single project client organisation. Similar to the first and second scenario, the project deployment infrastructure will have implications for intangible benefits derived as shown in the intangible benefits column in Figure 10.1 and the drivers of intangible benefits and the attributes of intangible benefits will therefore be considered. The drivers of intangible benefits to be considered include the generic drivers and drivers that are relevant for contracting organisations in general and contracting organisations in the supply side of a single project client organisation. In addition, the attributes of intangible benefits to be considered should include manifestations that are generic and contextual to varying degrees. At point 2 of Figure 10.2, only the contracting organisation's mechanisms will determine the extent to which organisational, human and social capital accrues to the organisation leading to competitiveness and the role of corporate knowledge ownership intangible benefits cannot be under estimated. The mechanisms put in place at point 2 are therefore with reference to the drivers and attributes of intangible benefits.

In addition, in line with the discussions in section 9.6.4, the implication of the variety of stakeholders and types of organisational changes are also general critical factors for the three scenarios with implications for the application of the Approach in practice. For the contracting organisation, variety of stakeholders' present multiple lens for intangible benefits with implications at point 1 of Figure 10.2 and therefore the input from variety of stakeholders is required for buy in and ownership of the mechanisms and processes put in place. At point 2 of Figure 10.2, the input of multiple stakeholders will also influence the extent of accrual to the

base organisation. This is similar for the single project client organisation and the contracting organisation in the supply side of the single project client organisation. However, in the case of the single project client organisation, the input of variety of stakeholders will influence the accrual of intangible benefits depending on the final outcome. Similarly, in the case of the contracting organisation in the supply side of the single project client organisation, the variety of stakeholders will influence the accrual of intangible benefits to the organisation. In addition, with regards to organisational changes, the types of organisational changes such as merger and acquisition and changes of business model identified from contracting organisations and inproject mobility changes identified from the single project client organisation will impact on the generation of intangible benefits with the severity of disruption increasing from inproject mobility changes to merger and acquisition with the disruptive effects more visible on the human and social capital components. However, the timing of the organisational change whether at point 1 or point 2 of Figure 10.2 will have an impact on the mechanisms and processes put in place with consequences for the generation of intangible benefits and the accrual to the project based organisation.

The general insights identified on project life cycle and knowledge management in section 9.6.4 are also relevant for the three case scenarios. The project lifecycle draws attention to the possibility that the different phases of the project lifecycle may impact on the type and the extent of the generation of types of intangible benefits. Consequently Figure 10.2 may also represent each phase of the project and therefore provide the opportunity for the project based organisation to apply the approach on a project phase basis. Whilst the knowledge management insight provides additional support to how project based organisations can improve on knowledge management with the maximising of the generation of intangible benefits as the focus at point 1 and point 2 of Figure 10.2 and the feedback loop.

Therefore, the approach to the generation of the intangible benefits from project management deployment point to the fact that the ability of the organisation to intervene at point 1 of Figure 10.2 regardless of whether it is a contracting or single project client organisation with the appropriate mechanisms that suits the generic and contextual drivers and attributes of intangible benefits, will increase the ability to identify, manage and maximise the intangible benefits generated. However, the intervention at point 2 of Figure 10.2 greatly influences the benefits accrued by the organisation which is primarily dependent on the corporate ownership intangible benefits components from the point of view of the base organisation.

Consequently, the three case scenarios are reviewed against the extent to which the base organisation can be proactive or adaptive with regards to the generation of intangible benefits as shown in Table 10.4.

Table 10.4: Implications for Project Implementation Context

Intangible benefits	Contracting Organisation	Single project client organisation	
		Base organisation	Supply side Contracting organisation
Corporate knowledge ownership intangible	Proactive	Proactive	Adaptive
Corporate knowledge Alignment intangible	Proactive	Adaptive	Adaptive
Project management Methodology intangible	Proactive/ Adaptive	Adaptive	Adaptive
Organisational Team working intangible	Proactive	Proactive	Adaptive
Decision making intangible	Proactive	Proactive	Adaptive
Individual Knowledge	Proactive	Proactive	Proactive
Project leadership intangible	Proactive	Proactive	Proactive
Corporate alignment IT enabled	Proactive	Proactive	Adaptive
Corporate alignment Interface management intangible	Proactive	Proactive	Adaptive
Relationship Dynamics intangible	Proactive	Adaptive	Adaptive
Power Tensions Intangible	Proactive	Proactive/Adaptive	Adaptive
Access to knowledge and information intangible	Proactive	Proactive	Proactive

As shown in Table 10.4, the contracting organisation in the role of a main contractor is in a better position mediated by the type of client to be proactive with regards to the drivers of intangible benefits and the attributes of intangible benefits. The single project client organisation however has to be more adaptive because of the number of stakeholders and the number of interfaces. The contracting organisation in the supply side of the single project client organisation in the role of a contractor needs to be adaptive while been proactive with regards to the human capital component of intangible benefits.

Therefore, the application of the approach in practice has demonstrated that the type and role of the project based organisation strongly influence the extent to which intangible benefits can be generated and maximised. The application of the approach also suggests that the base

organisation will either take a proactive or adaptive stance dependent on the type and role of the base organisation.

10.4 Summary

In view of the theoretical framework developed in chapter 5 and building on the understanding developed from earlier chapters focusing on intangible benefits, the project based organisation and the Link, the development of the approach to the generation of intangible benefits from project management deployment started by first identifying the project deployment activities by combining the two-leading project management BOKs. The approach was made up of three columns, arrows that show linkages and direction and two boxes depicting competitiveness and the organisation. Each column, linkage, direction and box was also populated as it was assumed that the project based organisation engaged in the project activities indicated in the first column, the intangible benefits generated as a result of the project activities were indicated in the second column whilst in the third column the intellectual capital component generated as a result was indicated. The approach to the generation of intangible benefits from project management deployment was therefore an expanded version of the theoretical framework developed by application of the logic model and clearly demonstrated the link between the deployment of project management and the generation of intangible benefits and the link between intangible benefits derived from project management deployment and the generation of intellectual capital thus contributing to competitiveness. The feedback loop from competitiveness back to the organisation was also highlighted as critical for organisational learning. Importantly, the approach to the generation of intangible benefits from project management deployment demonstrated that the social capital components were at par with organisational and human capital components.

The application of the developed approach to the generation of intangible benefits was theoretical demonstrated using the three scenarios encountered in the case organisations. It was demonstrated that the context and strategic objectives influenced the key considerations for each scenario and that the key considerations included all the intangible benefits of project management deployment. For the contracting organisation, the key considerations included the generic drivers of intangible benefits and drivers of intangible benefits relevant for contracting organisations in general and attributes of intangible benefits that included manifestations that were generic and contextually appropriate. For the single project client organisation, the drivers of intangible benefits to be considered included the generic drivers and that specifically related to the single client project organisation and attributes of intangible benefits that included manifestations that were generic and contextually appropriate. For the contracting organisation in the supply side of the single project client organisation, the drivers

of intangible benefits to be considered included the generic drivers and drivers that were relevant for contracting organisations in general and for contracting organisations in the supply side of a single project client organisation.

It was also demonstrated that the variety of stakeholders and types of changes had implications for project based organisations, at the point where the project base organisation puts in place the project deployment infrastructure and the point, where the project closes or where assessment was made about intangible benefits accrual to the base organisation. In addition, the general insights about project lifecycle also demonstrated that each project lifecycle phase could be a potential point of assessment whilst the additional knowledge management insight supported the decision making at the initial point where the project deployment infrastructure was put in place and when the project closed or a point where assessment was made about intangible benefits accrual to the base organisation. It was also demonstrated that the contracting organisation in the role of a main contractor could be more proactive compared to a single project client organisation that needed to be more adaptive. Likewise, in the case of the contracting organisation in the supply side of the single project client organisation whilst it needed to be adaptive, it also needed to be proactive with human capital component of intangible benefits.

Consequently, building on the findings from the theoretical and empirical approaches investigating the generation of intangible benefits from project management deployment, it has been demonstrated that the type of organisation and role of organisation drives the extent of the generation of intangible benefits and therefore the extent to which the base organisation can be proactive or adaptive with its approach to the generation of intangible benefits from project management deployment bearing in mind the impact of variety of stakeholders and organisational changes. In addition, the development of the Approach to the generations of intangible benefits from project management deployment by combining the PMBOK and APMBOK with emphasis on the more relational aspects of project working, highlighted the deficiencies in the PMBOK and APMBOK and advocates for a more rigorous approach to managing the relationship of project actors individually and across teams with implications for project management practice and training.

Consequently, the developed approach to the generation of intangible benefits demonstrated that the ability of the base organisation to intervene at the start of project management deployment with the appropriate mechanisms and at the end of the project or designated point in time, will ensure that the organisation accrued as much benefit as possible from its project management deployment. Therefore, an organisation's awareness and exploitation of intangible benefits will ultimately improve its competitiveness.

Chapter 11 Conclusions

The theoretical investigation was undertaken within the context of extant project management broadly, however the empirical investigation was undertaken within the context of construction project management in the United Kingdom. Five organisations participated in the multicase studies with a total of 28 interviewees with different job roles including project director, project manager and section engineer. A coherent research design which combined both a theoretical and empirical approach was used which addressed the flaws identified from extant project management whilst building on the insight garnered from the review of intellectual capital and taking up what has already been captured in extant literature. Each objective is considered in turn and discussed below.

11.1 Objective 1

To identify the intangible benefits from project management deployment as captured in existing literature

The literature reviewed in chapter 2 and 3 served as a background to identify the intangible benefits from project management deployment. Subsequently, a theoretical approach using content analysis was used to systematically investigate the intangible benefits derived from project management deployment as captured in extant project management literature. Twenty-nine benefits from project management deployment were identified and the benefits were categorised into tangible and intangible benefits. Sixteen benefits were categorised as intangible and thirteen as tangible. Focusing on the intangible benefits, it was identified that the intangible benefits generated by project management deployment accrued to the organisation in terms of achieving strategic objectives, aligning the business to its strategic objectives, improving decision making and the general use of resource (also related to human capital). Similarly, human capital had to do with what people know and how they applied their knowledge, and their motivation. In addition, while organisational related and employee related intangible benefits could be clearly categorised under organisational and human capital, organisation-market related intangible benefits included new product/service streams, improved competitiveness and types of contractual agreements referring to innovation and relationships which were dependent on both the organisation and its employees that is requiring organisational, human and social capital inputs. Whilst the research was limited by the fact that only a few researchers had considered the intangible dimension of project management deployment with the consequent sparse research literature, it was considered an opportunity and so the objective to identify the intangible benefits from project management deployment as captured in existing literature was addressed.

This PhD research has therefore established for the first time that sixteen intangibles were theoretically derived and the intangibles of project management fit broadly into organisational capital, human capital and social capital. The intangible benefits identified are: impact of improved regulatory compliance (Government/society related benefit); attainment of strategic objectives, strategic alignment, better project decision making and improved general use of resources (Organisational related benefits); new understanding/knowledge gained, more effective human resources and motivation/personnel satisfaction (Employee related benefits) and new product/service streams, improved competitiveness, more strategic contractual agreements leveraging on strengths and goodwill (Organisation-Market Related). Disbenefits were also identified and include: bureaucratisation, standardisation and lack of creativity/routinisation, conflicts and lack of ownership of project management (Organisational related disbenefits). It was also established that the theoretically identified social capital component was implied and not obviously alluded to which is consistent with the criticism of the RPM, CPM and the project management BOKs. A theoretical framework was also developed that demonstrated the theoretically derived link between the deployment of project management and the generation of intangible benefits and the link between the generation of intangible benefits to competitiveness. By addressing objective 1, this PhD contributes to project management knowledge in theory by establishing for the first time that sixteen intangibles (twelve intangible benefits and four intangible disbenefits) were identified from project management deployment as captured in extant project management literature.

Theoretical evidence has now been provided that the intangible benefits derived from project management deployment are captured in extant project management literature although with little or no awareness by researchers thus also providing insight to support the empirical investigation of the generation of intangible benefits. In addition, extant literature as it is currently captured can be organised to develop the theory of intangible benefits from project management deployment bearing in mind that the theory of intangible benefits developed will be incomplete as expressed by the RPM and CPM literature.

11.2 Objective 2

To understand how organisational, human and social capital manifests in practice-
their inter-relationship, link to project management deployment and to
competitiveness

Guided by the theoretical framework developed from addressing objective 1, objective 2 was addressed in three chapters, first from the basic analysis in chapter 6 and then building on the findings of chapter 6 in chapter 7 and chapter 8. From chapter 6, for organisational capital

corporate knowledge ownership intangibles; project management deployment structural intangibles: project management methodology intangibles, team working intangibles, decision making intangibles and communications intangibles; and corporate alignment intangibles: knowledge based intangibles, IT enabled intangibles and interface management intangibles were identified from the data. For human capital, individual knowledge intangibles and project leadership intangibles were identified from the data. Likewise, for social capital, relationship dynamics, power tensions intangibles and access to knowledge and information intangibles were identified from the data. Lastly, reputation intangibles were also identified from the data. It was therefore empirically demonstrated that the intangible benefits from project management deployment in project based organisations were types of knowledge and capabilities. In addition, it was also empirically demonstrated that social capital as important as the two other intellectual capital components, organisational and human capital as social capital component were socially complex dimensions of capabilities, dependent on human dimensions of interaction dependent on the organisation's processes, positions and paths. Furthermore, it was empirically demonstrated that reputation was not only a component part of organisational capital but was a hybrid and contributed to human capital and social capital. It was also empirically demonstrated that the views of the case study participants and organisational changes were important factors that influenced the generation of intangible benefits with the effect of organisational changes more visible in the human and social capital components. Consequently, the findings from chapter 6 enhanced the understanding of the "generates intangible benefits" box of the theoretical framework.

In addition, from chapter 7, using a deductive analytical lens, a total of sixty-seven drivers of intangible benefits were empirically identified which operationalised how intangible benefits were generated from project management deployment. For organisational capital, seven drivers were identified for corporate knowledge ownership intangibles, and for project management deployment structural intangibles: three drivers were identified for project management methodology intangibles; five drivers each were identified for team working intangibles and decision-making intangibles; and four drivers for communications intangibles. Similarly, for corporate alignment intangibles, five drivers were identified for knowledge based intangibles, three drivers for IT enabled intangibles and two drivers for interface based intangibles. For human capital, one driver was identified for individual knowledge intangibles and three drivers for project leadership intangibles. For factors that affect human capital, four drivers were identified for individual career factor and three drivers for work load factor. For social capital, six drivers were identified for relationship dynamics intangibles and power tensions intangibles, four drivers were identified for access to knowledge and information intangibles. Likewise, five drivers were identified for reputation intangibles. By comparing the drivers of intangible benefits across the three types of organisations indicated in the data, the findings demonstrated that across the contracting and single project client organisation,

corporate knowledge ownership intangibles and the human capital components were generic whilst the other intangible benefits components were contextual to varying degrees. In addition, the findings revealed that organisation changes were disruptive and that the disruptive effect on the generation of intangible benefits from project management deployment increased on a continuum depending on type of change or combination of changes. Consequently, the findings from chapter 7 also enhanced the understanding of the “generates intangible benefits” box of the theoretical framework.

Lastly, in chapter 8, using the identified drivers and the better understanding of the relationship between the different components of intangible benefits, the logic to the generation of intangible benefits was developed consistent with the earlier developed theoretical framework. Furthermore, the variety of stakeholders and organisational changes established the need to consider multiples lens to intangible benefits and effects of changes. It was also established that a more generalised approach across project organisations portfolio of projects could be adopted for the generic intangible benefits components: corporate knowledge ownership intangibles and human capital components. The expectation was that the application of logic model in developing the approach to the generation of intangible benefits from project management deployment (Approach) should influence a project based organisation project management deployment. Consequently, the findings primarily enhanced the understanding of the “Link” but also enhanced the understanding of the “generates intangible benefits” box. However, the research to address objective 2 was limited because the research design only allowed the views of the base organisations’ project actors and did not allow for the views of other project stakeholders internal or external. In addition, the data was generated from one phase, the execution phase of the project life cycle.

The findings therefore addressed objective 2 as this PhD has demonstrated a greater understanding of how organisational, human and social capital manifests in practice- their inter-relationship, link to project management deployment and to competitiveness. This is because for the first time, the intangible benefits from project management deployment have been identified as types of knowledge and capabilities with a better understanding of social capital and reputation. In addition, sixty-seven drivers of intangible benefits were derived operationalising the generation of intangible benefits and it was found that corporate knowledge ownership intangibles and the human capital components were generic whilst the other intangible benefits components were contextual to varying degrees. In addition, for the first time, using the identified drivers of intangible benefits and the better understanding of the inter relationship of the different components of intangible benefits, the logic to the generation of intangible benefits from project management deployment was developed based on the understanding that the outworking of decisions taken in delivering the project by the project based organisation are directly linked to the generation of intangible benefits and that the generation of intangible benefits are directly linked to the generation of intellectual capital

which is directly linked to competitiveness which is to do comparatively better than the competitor measured by the yardsticks of competitiveness. In addition, the views of variety of stakeholders and organisational changes were identified as critical factors that influence the generation of intangible benefits.

A greater understanding of the nature and behaviour of intangible benefits was thus demonstrated as empirical evidence was provided with the intangible benefits derived from project management deployment in practice identified, the nature of intangible benefits as types of knowledge and capabilities revealed, the drivers of intangible benefits identified and the links between project management deployment, the generation of intangible benefits, intellectual capital and competitiveness empirically validated. The implication is that intangible benefits from project management deployment can now be discussed in more specific terms as it has been identified and better understood and therefore there is the potential that it can be managed and exploited, thus providing some insight to support the development of an approach to the generation of intangible benefits from project management deployment. In addition, the focus on the nature and behaviour of intangible benefits and the Link further strengthens the case for developing a coherent and complete theory of intangible benefits from project management deployment with both theoretical and empirical inputs with implication for project management theory, practice and education.

11.3 Objective 3

To explore to what extent intangible benefits are generic and specific across three types of project based organisations

With the use of an inductive analytical lens with the focus on the context of the three types of project based organisations, thirty-eight attributes of intangible benefits were derived directly from the case study data across organisational, human and social capital to shed more light on the influence of context by comparing the contracting and single project client organisation. For organisational capital, six attributes were identified for corporate knowledge ownership intangibles, and for project management deployment structural intangibles: three attributes were identified for project management methodology intangibles; two attributes each were identified for team working intangibles and decision-making intangibles; and two drivers for communications intangibles. Similarly, for corporate alignment intangibles, three attributes were identified for knowledge based intangibles, one attribute for IT enabled intangibles and two attributes for interface based intangibles. For human capital, one attribute was identified for individual knowledge intangibles and two attributes for project leadership intangibles. For factors that affect human capital, three attributes were identified. For social capital, two attributes were identified for relationship dynamics intangibles, three attributes for power

tensions intangibles, and two attributes were identified for access to knowledge and information intangibles. Likewise, four attributes were identified for reputation intangibles. From the comparison of the attributes of intangible benefits across the contracting organisation, the single project client organisation and the contracting organisation in the supply side of the single project client organisation, it was established that there was need to consider both the generic and contextual manifestations of project based organisations to maximise the generation of intangible benefits from project management deployment. The use of the inductive analytical approach validated and extended the understanding of what was known about intangible benefits from using the deductive analytical approach and the comparison of the drivers of intangible benefits and the attributes of intangible benefits across the three types of project based organisations demonstrated that there was need to consider the intangible benefits as well as the project based organisation as context. It was also established that corporate knowledge ownership intangible benefit was the most critical intangible component from the view point of the organisation deploying project management due to its role in the feedback loop of the logic model. Likewise, better understanding of project management knowledge management was established as the link between often distinct aspect of project knowledge management emerged. However, the research to address objective 3 also suffered from the limitations of addressing objective 2.

The findings therefore addressed objective 3 which was to explore to what extent intangible benefits are generic and specific across three types of project based organisations. This is because for the first time, it was empirically established that project based organisations manifest in a generic and contextual manner with regards to the generation of intangible benefits. In addition, for the first time, corporate knowledge ownership intangible benefits were identified as a critical intangible component regardless of type of project based organisation, which also challenges the position held about whether one intangible benefits component was more important than another after addressing objective one. In addition, closely related to the corporate knowledge ownership intangibles, this PhD also contributes to current theory of project management knowledge management by demonstrating the linkages between six often isolated aspects of knowledge management. Lastly, by first using a deductive analytical approach to address objective 2 and using a second analytical lens, an inductive analytical approach on the same data to address objective 3 achieving analytical triangulation, this PhD contributes to project management theory by demonstrating a robust approach to project management research using both theoretical and empirical approaches, grounding the empirically derived findings.

The behaviour of project based organisations with regards to the generation of intangible benefits is now better understood with corporate knowledge ownership intangibles identified as the most critical intangible benefits component. The implication is that there is also a need to better refine how project based organisations are characterised to improve the sensitivity to

changes to the generation of intangible benefits, thus helping the project based organisation better manage and exploit the generation intangible benefits from project management deployment. In addition, improving the generation of corporate knowledge ownership intangibles is expected to cause the biggest organisational improvement with regards to generation of intangible benefits. Therefore, influencing the drivers of the generation of corporate knowledge ownership intangibles should be the first focus of the project base organisation. Consequently, more insight to support the development of an approach to the generation of intangible benefits from project management deployment is provided. In addition, the focus on the context of the organisation and corporate knowledge ownership intangibles provides researchers with further lines of enquiry thus further strengthening the case for developing a coherent and comprehensive theory of intangible benefits from project management deployment with implications for project management theory, practice and education.

11.4 Objective 4

To develop an approach to facilitate managing and maximising intangible benefits derived from project management deployment

In chapter 10, the approach to the generation of intangible benefits from project management deployment was developed, expanding on the theoretical framework earlier developed from addressing objective one, and building on the understanding of intangible benefits, the project based organisation and the Link from addressing objectives 2 and 3. The Approach clearly demonstrates the link between the deployment of project management and the generation of intangible benefits and the link between intangible benefits derived from project management deployment and the generation of intellectual capital thus contributing to competitiveness. The feedback loop from competitiveness back to the organisation has also been highlighted as critical for the organisational learning. Importantly, the Approach has demonstrated that the fact that the social infrastructure of project management deployment is not sufficiently acknowledged or is outright ignored does not negate its existence or its impact. The social capital dimension of project working therefore needs to be at par with other positivist aspects of project working.

The application of the Approach was theoretically demonstrated using the three scenarios encountered in the case organisations and it was established that the context and strategic objectives of each type of project based organisation influenced the key considerations which was made up of generic and contextual drivers of intangible benefits and the consideration of generic and contextual manifestation of attributes of intangible benefits at the point where project deployment infrastructure was deployed and a designated point of assessment of

accrual of intangible benefits The views of variety of stakeholders and organisational changes on the generation of intangible benefits was also established as critical for the accrual of intangible benefits. Consequently, in general terms, the contracting organisations in the role of a main contractor could take a more proactive approach to intangible benefits whilst a contracting organisation in the supply side of the single project client organisation will need to be adaptive in its approach to intangible benefits except with regards to its human capital component whilst the single project client organisation needs to be adaptive in its approach to intangible benefits. However, the research to address objective 4 was limited because the approach developed was not empirically validated and did not specify competencies that organisations must attain to achieve competitiveness. In addition, competitiveness was not empirically validated as data was not captured. Furthermore, due to theoretical sampling, the findings from this research are limited to analytical generalisation.

The findings therefore addressed objective 4 which was to develop an approach to facilitate managing and maximising intangible benefits from project management deployment. This is because the author has devised a tool, the Approach for the first time that was developed to help organisations identify, manage and maximize intangible benefits generated from project management deployment to contribute to the competitiveness of the project base organisation by specifying the drivers and the attributes of intangible benefits. In addition, for the first time, the significant role that corporate knowledge ownership intangible benefits play and the influence of stakeholder views and organisational change events as critical factors for the generation of intangible benefits derived was empirically established. Similarly, the general insights on the role of project lifecycle established that each phase could act as a designated intangible benefits accrual assessment point whilst that on knowledge management serves as additional support to how project based organisations can improve on knowledge management with implications maximising the intangible benefits derived.

Importantly, the author's original contribution to knowledge is the Approach as addressing objectives 1, 2 and 3 were in preparation for developing the Approach. In addition, the Approach in conjunction with the logic model equips project management practitioners and project based organisations with both strategic level and operational level overview of the generation of intangible benefits. Furthermore, the inherent features of the Approach provide organisations the flexibility to apply the Approach on a single project, multi projects or across an organisation (e.g. contracting or single project client organisation).

The expectation is that the Approach can be used in three ways, predictively to help the organisation to get to where it wants to be, to assess where the organisation currently is, and lastly, retrospectively to learn from previous business outcomes. As an assessment and

predictive tool, the generation of intangible benefits from project management deployment can play the role of a leading indicator for the project based organisation as the application of the Approach helps the organisation to identify, manage and exploit the generation of intangible benefits. In addition, retrospectively, after a negative business outcome such as project failure the trail of the generation of intangible benefits can also be used to decipher what went wrong or provide alternative explanations, helping a project based organisation to learn from its errors. Despite intangible benefits being given little or no attention at present, for the first time there is a process which can identify and select intangible benefits to allow the enhancement of organisational, human and social capital and hence improve organisational competitiveness offering an advantage which is crucially important for success and survival in today's market economies.

Consequently, there is a need to empirically validate the Approach used in three ways: predictively, currently and retrospectively. In addition, the case for developing a coherent and comprehensive theory of intangible benefits from project management deployment is strengthened as the Approach can serve as a tool that can be used to test, validate and extend the developed theory. This PhD therefore provides theoretical and empirical evidence that the intangible dimension to project management deployment is a complementary and critical dimension with implications for project based organisations regardless of their awareness with implications for project management theory, practice and education.

General Conclusions

In addition, whilst the focus of this research was on investigating the generation of intangible benefits, other contributions to extant literature emerged that demonstrated how the research findings confirm existing literature and move each subject forward by focusing on intellectual capital literature and the theory of the firm. In addition, aspects of project management deployment the project management deployment management perspectives, the project management bodies of knowledge and benefit realisation management are also considered and discussed below.

The research findings have contributed to existing theory of intellectual capital by focusing on project working context and for the first time, a more coherent understanding to the generation and manifestation of intangible benefits from project management deployment using an intellectual capital lens was demonstrated.

This PhD has focused attention on the context within which project based organisations in the construction industry operate as it was empirically demonstrated for the first time that the

intangible benefits derived from project management deployment are more aligned to the dynamic capability view of the firm and requires the base organisation to organise and reorganise project management deployment in view the business environment, the base organisation's resources and the resources it has access to on a project by project basis and the overarching organisation.

This thesis has also contributed to extant literature by demonstrating empirically that intangible benefits derived from project management deployment are more aligned to the soft paradigm and dependent on the actuality of project management thus evidencing practice oriented findings addressing some of the concerns raised by the RPM. In particular, investigating intangible benefits aligns with the value creation perspective as it puts into focus not just the product (i.e. infrastructure to be delivered) but the corresponding associated benefits of project management deployment to the base organisation executing the project. This thesis also addresses the organisational change perspective because it also brings into focus the need for dynamic changes to the structure and behaviour of the base organisation as a consequence of intangible benefits considerations.

In addition, this thesis also emphasised some of the often-neglected aspects of project management demonstrated by empirically identifying the factors that affect human capital. Similarly, the social capital dimensions to project management deployments was brought to the fore empirically thus addressing some of the concerns raised by the CPM. Furthermore, this thesis supports the reasoning that from an intangible benefits point of view, all projects are equal regardless of project outcome, whether perceived as success or failure, again corroborating the arguments of the proponents of critical project management.

In addition, the thesis addresses some of the criticism of the PMBOK and the other BOKs as it uses an interpretivist approach and addresses the more strategic elements of knowledge and its products. In addition, by combining the PMBOK and APMBOK to develop the Approach, the findings demonstrate the need for a more comprehensive but less prescriptive guidance to project management practice.

Lastly, this thesis contributes to addressing the issues of impact and adoption of benefit management as it empirically demonstrates that intangible benefits from project management deployment contribute to competitiveness and therefore needs to be adopted, complementing the current approaches to benefit management. In addition, the developed Approach to benefits management contributes to the understanding of evaluating projects and their impact on business performance. In addition, by specifying the project lifecycle phase which the research mainly focuses on, the need to consider project life cycle phase in benefit management research and practice has also been demonstrated.

11.5 Further Research

- The developed approach needs to be validated in practice. This can be validated in the construction industry or in a different industry.
- The approach developed can also be used as a theoretical framework to review existing literature of project management to develop a coherent theory of project management from an intellectual capital point of view.
- A longitudinal approach to investigating the other phases of project lifecycle to determine the predominant intangible benefits derived in each phase to help organisation better manage and maximise intangible benefits
- A longitudinal approach to have a better understanding of the time lag between generation of intangible benefits and when the organisation enjoys the benefit is required. This is to help to justify the cost of investing in intangible benefits.
- Empirical investigation of the relationship between project success and failure and the generation of intangible benefits
- Empirical investigation of the relationship between project maturity models and the development of intangible benefits

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List of Abbreviations

Intellectual Capital	IC
Competitive Advantage	CA
Activity Based View	ABV
Resource Based View	RBV
Dynamic Capabilities Based View	DCV
Knowledge Based View	KBV
Direct intellectual capital methods	DIC
Market capitalisation methods	MCM
Return on assets methods	ROA
Scorecard methods	SC
Organisational capital	OC
Human capital	HC
Employee organisational relationship	EOR
Social capital	SC
International Journal Project Management	IJPM
Project Management Journal	PMJ
Information Technology	IT
Information Communications Technology	ICT
Project Management Institute	PMI
Project Management Body of Knowledge	PMBOK
Association of Project Management Body of Knowledge	APMBOK
Bodies of knowledge	BOKs
Project Management Methodology	PMM

Appendix A Ethical Review Confirmation Form

Performance, Governance and Operations
Research & Innovation Service
Charles Thackrah Building
101 Clarendon Road
Leeds LS2 9LJ
Tel: 0113 343 4873
Email: j.m.blaikie@leeds.ac.uk



UNIVERSITY OF LEEDS

Gloria Oliomogbe
Civil Engineering
University of Leeds
Leeds, LS2 9JT

**MEEC Faculty Research Ethics Committee
University of Leeds**

15 August 2017

Dear Gloria

Title of study **The Investigation of the Generation of Intangible Benefits through Project Management Deployment**
Ethics reference **MEEC 12-018**

I am pleased to inform you that the application listed above has been reviewed by the MaPS and Engineering joint Faculty Research Ethics Committee (MEEC FREC) and following receipt of your response to the Committee's initial comments, I can confirm a favourable ethical opinion as of the date of this letter. The following documentation was considered:

<i>Document</i>	<i>Version</i>	<i>Date</i>
MEEC 12-018 Ethical_Review_Form_ Gloria Oliomogbe (2).doc	1	10/01/13
1 Case Study Information Sheet sent.docx	1	10/01/13
2 Primary interview questions original.docx	1	10/01/13
3 Participant Formal Invitation.docx	1	10/01/13
4 Confidentiality Agreement.docx	1	10/01/13
5 Participant Consent Form.doc	1	10/01/13
6 Permission to Quote form.docx	1	10/01/13
7 Fieldwork Risk Assessment form.doc	1	10/01/13

Committee members made the following comments about your application:

- Keeping your data for just 2 years is a fairly short time.
- The distinction between organisations and pilot organisations could have been clearer throughout the application.
- C.20, it appears that interview voice recording is for transcription purpose only. This should be made clear, particularly to participants.
- There are a few typos and grammatical errors.

Please notify the committee if you intend to make any amendments to the original research as submitted at date of this approval, including changes to recruitment methodology. All changes must receive ethical approval prior to implementation. The amendment form is available at

http://researchsupport.leeds.ac.uk/index.php/academic_staff/good_practice/managing_approved_projects-1/applying_for_an_amendment-1.

Please note: You are expected to keep a record of all your approved documentation, as well as documents such as sample consent forms, and other documents relating to the study. This should be kept in your study file, which should be readily available for audit purposes. You will be given a two week notice period if your project is to be audited. There is a checklist listing examples of documents to be kept which is available at

http://researchsupport.leeds.ac.uk/index.php/academic_staff/good_practice/managing_approved_projects-1/ethics_audits-1.

Yours sincerely

Jennifer Blaikie
Senior Research Ethics Administrator, Research & Innovation Service
On behalf of Professor Gary Williamson, Chair, [MEEC FREC](#)

CC: Student's supervisor(s)

Appendix B Case Study Protocol Documents

B.1 Initial Information for Organisations to Supply Case Study Information

This work is part of a doctoral research to investigate the intangible benefits generated through project management deployment by Miss Gloria Oliomogbe of the University of Leeds and is supervised by Prof Nigel Smith and Dr Apollo Tutesigensi.

Brief Background to the Research

In the past project management was seen to deliver a 'product' or 'service' on time, on budget and within quality tolerance but now it is becoming increasingly important to consider the benefits and dis-benefits of project management deployment alongside the project objectives. Changes in the business environment; now characterised by globalisation, over-competition and advancement in technology and telecommunications impacts how organisations define and create value. The pressure exerted by these changes affects all organisations and this is also driving the changes to project management deployment in organisations. But project management have been used traditionally by sectors such as Construction, Defence and Aerospace and the author argues that intangible benefits have always been generated whenever project management had been deployed. But the importance and contribution of intangible benefits as a result of deploying project management have become increasingly relevant due to the changes in the business environment. Extant research shows that organisations are more dependent on intangible benefits for their competitiveness and that wealth and growth in modern economies are driven primarily by intangible benefits which include claims to future benefits which do not have a physical or financial form. Research has also shown that it is increasingly recognised that firms possess considerable intangible benefits that add to the performance of an organisation. Therefore, this research seeks to investigate the intangible benefits accrued from deploying project management that contributes to the competitiveness and sustainability of organisations.

Research Aim and Objectives

The overall aim of this research is to identify and make available to your organisation for exploitation, your unique intangible benefits- organisational, human and social capital generated through project management deployment in your organisation. This will be achieved by developing an approach that will help your organisation determine what clusters of benefits add to your competitiveness and sustainability. To do this the following objectives should be achieved:

1. To identify and understand the intangible benefits accrued from the deployment of project management that impacts on the organisation
2. To identify and understand the benefits accrued from the deployment of project management that affects people and their relationships
3. To determine how to measure and enhance the generation of intangible benefits by project management and verify and validate the approach

How will your organisation benefit from this?

Broadly speaking, your participation will contribute to the advancement of knowledge through a better understanding of the value of project management deployment in today's business environment. In particular, you will benefit from the following:

- have this information in advance of everyone else and be able to identify your organisation's unique intangible benefits that contribute to competitive advantage and sustainability
- enhance and exploit the generation of intangible benefits in your organisation

What do we need from your organisation?

Your participation will consist of providing access to information and individuals for interviews at the following levels:

Project Level

- Project Manager- for project specific organisational and strategic information
- Project Team Members- for project specific information

Organisational Level

- Project Director- for organisational and strategic information
- Client Representative- client's perspective on project specific information
- Contractor Representative- contractor's perspective on project specific information
- Members of staff (from Base organisation and external to project)

*The interviews will be recorded and may take approximately 1-2 hours at your organisation and on project sites. The primary interview questions have been attached for your organisation

What this Research is not

This research is not about how effective project management deployment is in your organisation or project management competencies; rather it is about the benefits or dis-benefits generated as project management is deployed in your organisation.

Confidentiality

All interviews will be confidential in accord with the 'confidentiality agreement'. Case examples, which identify the organisations involved, will not be cited in any published document unless formal written approval has been sought and given.

Ethics

This research will be conducted with the principles of good research practice and the wider consequences of this research would always be considered. Data (electronic/manual) shall be securely managed and encrypted when transmitted. Furthermore, the principles of honesty and openness would be observed in both the conduct of research and the publication of results.

Special Language Requirement

Please indicate if any special arrangement for translation from English is required

B.2 Field Work 1- Primary Interview Questions with Prompts

Do you consider yourself to be engaged in project management activities in your organisations?
What project are you currently involved in (single or multiple project environment) or just past?

(A) Strategic Awareness

1) What is your understanding of the aim of this project?

-Financial -Non-financial

2a) What in your opinion are the benefits derived from deploying project management in your organisation?

2b) What are the dis-benefits?

(B) Organisational Capital

1) What methodology, tools and techniques are used for project management within your organisation?

PROMPT if not covered -Contingency approach?

2a) Please could you describe how project teams are utilised within your organisation?

PROMPT if not covered – how teams are selected and disbanded

- how are people promoted/is there a clear career path?
- what are relevant company policies/is it important/bureaucratisation?
- how are project tasks designed/improved (do you have a say?)
- what is the impact of information technology/internet?
- what training is available/are there preconditions?

2b) How does this affect your performance?

2c) For this current project or the just completed project are all these thing also true? Are there any differences? And why?

3a) How well do you feel that teams work within your organisation?

PROMPT if not covered – best factors/worse factors

- how projects tasks are assigned
- how team issues are resolved
- leadership, culture
- innovation (creativity),
- routinisation (standardisation)

3b) what effects does this have on your performance?

3c) For this current project or the just completed project are all these thing also true? Are there any differences? And why?

4a) In your organisation who oversees knowledge management systems, and information databases (including Lessons learnt)? Who manages (PMO, dedicated team members etc?)

PROMPT if not covered - What systems are in place-formal/ informal? (Knowledge sharing mechanisms)

- How are they accessed? /processes? /systems? /routines?
- What types of knowledge are captured/lost?
- Lessons learnt-project memory (describe knowledge)/project memory system (capture the context)
- Are there associated costs, trade-offs etc?
- What is the impact of information technology/internet?
- are the right structures/processes in place (fit for purpose?)
- do you share in the ownership of knowledge management?

4b) what effects does this have on your performance?

4c) For this current project or the just completed project are all these thing also true? Are there any differences? And why?

5a) In your liaising and working with external organisations does your work in project management make your work easier or worse?

(In your opinion, does your organisation's project management deployment affect your organisation's reputation?)

PROMPT if not covered - Internally -how team members perceive the project (successful, not necessary etc)

-how staff (on a different project or function in the organisation perceive team members

Externally - how staff (team members) perceive that external stakeholders view the project and the project team

-and the organisation as a result/new business opportunities

-serves as barrier to entry for other competitors (i.e. matching cost)

-taking on bigger, more complex projects

5b) What effects does this have on your performance?

5c) For this current project or the just completed project are all these thing also true? Are there any differences? And why?

6a) What are the main barriers to sharing knowledge and information on a project team?

Prompt if not covered- within your organisation

6b) What do you think makes for effective sharing of knowledge and information on your project team

Prompt if not covered- within your organisation

-helps harmonise terminology, processes and methods

-What is the impact of information technology/internet?

6c) For this current project or the just completed project are all these thing also true? Are there any differences? And why?

C) Human Capital

1a) What has your experience been in working in project based organisations and how has this changed over time?

Prompt if not covered -on your knowledge, skills, attitude/ willingness to share knowledge, intellectual agility (absorptive capability) and performance

-changing employee organisational relationship (EOR)

-no lifelong employment/benefits

-self development/organisational training?

-no clear career path

-What is the impact of information technology/internet?

1b) what is your current experience in this job and on this project?

2) How many projects do you work on at any one time (one project/multiple projects) and what is the impact on you?

Prompt if required: how does this impact on your knowledge, skills, attitude/ willingness to share knowledge, intellectual agility, knowledge sharing and performance

- impact on your perception of the company's performance.

3) Considering your level of technical and project management knowledge before this project, do you feel adequately experienced and educated for the job you have?

Prompt if not covered

- Is there a typical 'learning from project cycle'? Different project experiences same cycle?
- In your opinion, is this the experience of your other team mates?
- how does this project impact on generic knowledge/ephemeral knowledge or technical/entrepreneurial/project management?
- knowledge about technology and products, knowledge about markets?
- objectified (hard) and collective knowledge?
- do team dynamics play a role?

4) How does your organisation's project staffing strategy impact on being promoted- knowledge, skills, attitude/ willingness to share knowledge and performance.

Prompt if not covered (in-house, out-sourcing, external consultant as expert etc);

- staff turnover and retention
- higher diversity in skills
- greater wage dispersion
- training whose responsibility?
- changing job roles/ need for upgrading knowledge, skills, competencies?

5a) What is the most effective way of sharing and accessing knowledge in your organisation and what influences your willingness to share (one on one, using database/systems, or via internet using-information technology for communicating blackberry, tweets etc)

Prompt if not covered

- Formal or –Informal
- Does it change from project to project (e.g. multiple projects environment?)

5b) For this current project or the just completed project are all these also true? Are there any differences? And why?

6) Would you take up a new position in another organisation deploying project management? If so what do you think you have gained here that will help you settle in?

D) Social Capital

1) What is your relationship with your team mates and how does your relationship with team mate's impact on you and your ability on this project?.

Prompt if not covered - your knowledge, skills, attitude/ willingness to share knowledge, intellectual agility and performance [**Do you trust them, what do you have in common?**]

- how long have you known them for/does time matter?
- is it based on current level of experience, knowledge

- how (do you socialise during and after office hours)? /how often?
- with whom (based on office hierarchy, age, academic level etc)
- What is the impact of information technology/internet?

1b Within your team, list in the order of priority who you would go for help on the project

1c Within your team, list in the order of priority who you are closest to

2) What is your relationship with previous colleagues (on a different project or line function) within the organisation and how does your relationship impact on you and your ability on this project?

Prompt if not covered -your knowledge, skills, attitude/ willingness to share knowledge, intellectual agility and performance **[Do you trust them, what do you have in common?]**

- how long have you known them for/does time matter?
- based on current level of experience, knowledge
- how (do you still keep in touch and socialise?)/how often
- with whom (based on office hierarchy, age, academic level etc)
- What is the impact of information technology/internet?
- how often do you ask former colleague for help on current projects 1-10 priority

2b)For this current project or the just completed project are all these also true? Are there any differences? And why?

3) How does your relationship with previous colleagues from past organisations, your friends/family impact on you and your ability on this project?

Prompt if not covered -your knowledge, skills, attitude, intellectual agility and performance **[Do you trust them, what do you have in common?]**

- how long have you known them for/does time matter?
- based on current level of experience, knowledge
- how (do you still keep in touch and socialise?)/how often
- with whom (based on age, academic level etc)
- What is the impact of information technology/internet?
- how often do you ask former colleague for help on current projects 1-10 priority

4) On this project/ previous project as it applies, list the first ten people you would go to for help (they could be on this project, a colleague from a different project, a friend or family)

State the number of times you would communicate with them, how often they would get back to you, the importance of the message, their knowledge/expertise in that area.

Need to explain SNA and how to show diagrammatically

5) What workplace process/infrastructure etc allow for easy communication with colleagues (present and past)and what is the impact on you and your ability on this project?

Prompt if not covered -what about barriers to easy communication.....

- with regards to access to knowledge and information sharing
- Are they formal or informal?
- Are some systems/processes obsolete (or not fit) and have they been replaced informally?
- What is the impact of information technology/internet?

6) How do you see yourself within the team (e.g. knowledge, skills, attitude, intellectual agility and performance?)

Prompt if not covered -in relation to the organisation's business/corporate strategy- does this change from project to project?

7) What is your perception of your team (e.g. knowledge, skills, attitude, intellectual agility and performance?)

Prompt if not covered -in relation to the organisation's business/corporate strategy- does this change from project to project?
-Do you share the same goals?

B.3 Modified Primary Interview Questions

Do you consider yourself to be engaged in project management activities in your organisations?

(A) Strategic Awareness

1) What is your understanding of the use of project management techniques to deliver a project?

-Financial -Non-financial -tangible -intangible

2a) What in your opinion are the benefits derived from deploying project management in your organisation?

2b) What are the benefits to you?

2c) What are the dis-benefits to you?

(B) Organisational Capital

1a) Please can you describe how project teams are utilised within your organisation?

1b) How does this affect your organisations' performance?

2a) How well do you feel that teams work within your organisation?

2b) What effects does this have on your organisations' performance?

3) What methodology, tools and techniques are used for project management within your organisation?

4a) In your organisation who oversees knowledge management systems, and information databases (including Lessons learnt)? Who manages e.g. PMO?

4b) What effects does this have on your organisations' performance?

5a) In your liaising and working with external organisations does your work in project management make your work easier or harder?

5b) What effects does this have on your organisations' performance?

6a) In your opinion, does your organisation's project management deployment affect your organisation's reputation?

6b) What value do you place on this generated reputation

7a) What are the main barriers to sharing knowledge and information between your project teams?

7b) What do you think makes for effective sharing of knowledge and information within your project teams?

7c) What do you think makes for ineffective sharing of knowledge and information within your project teams?

C) Human Capital

1) What has your experience been in working in project based organisations and how has this changed over time?

2) How many projects does your organisation work on at any one time (one project/multiple projects, multiple locations) and how does this impact on your project teams?

b) how does this impact on your organisations' performance?

3) How does your organisation's project staffing strategy impact on being promoted and the career progression?

b) how does this impact on your organisations' performance?

4) What is the most effective way of sharing and accessing knowledge in your organisation and what influences the willingness to share (one on one, using database/systems, or via internet using-information technology for communicating blackberry, tweets, Skype etc.)

D) Social Capital

1) What is your relationship with your project team(s) and how does your relationship impact on the team's performance and your organisations performance?

2) What relationship exists between project teams in your organisation?

3) What is the relationship between project teams and non-project team members in your organisation?

4) In your opinion, how does your project teams' relationship with the customer influence your organisation's performance?

5) In your opinion, how does your project teams' relationship with the contractors influence your organisation's performance?

6) In your opinion, how does your project teams' relationship with the suppliers influence your organisation's performance?

7) What is the benefit of project management deployment in your organisation to the general public?

B.4 Formal Invitation Letter- Project Management generated Intangible Benefits Project

1. Introduction

You are being invited to take part in a research project. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take your time to read the following information carefully and discuss with others if you wish. Please ask me if there is anything that is not clear or if you would like more information.

2. What is the purpose of the project?

The project seeks to identify and enhance the intangible benefits generated from project management deployment. Intangible benefits have been identified for the purpose of this research as Organisational, Human and Social capital. The aim is to maximise its application in your organisation, improving your performance and that of your organisation hence contributing to competitiveness.

3. Why have I been chosen?

Your organisation has agreed to participate in this research and has nominated you as one of the participants whose contribution would reflect its values and your personal observations.

4. Do I have to take part?

No, it is not mandatory for you to take part but your contribution is highly valued and will be appreciated. There are no associated penalties for not taking part. If you decide to take part you would be given this information sheet and would also be asked to sign the consent form. You can withdraw at any time until the data analysis and you do not have to give a reason.

5. What do I have to do/what will happen to me if I take part?

Each interview will last between 60mins to 80mins. You only need to answer the questions as honestly as you can. It involves structured interview with a few open ended questions. Prompts will be used if required. The information will be anonymised and the data will be analysed for findings. If you take part, it will be an opportunity to have your say and in the long term may influence how you work and learn; your performance and contribution to value for the organisation. No travel expense will be incurred by you as I as Researcher will incur the travel expense coming to your location.

6. Will my taking part in this project be kept confidential/what will happen to the results of the research project

Your taking part in this research will be anonymised and confidential. All the information that we collect about you during the course of the research will be strictly confidential. You will not be identifiable in any reports or publications. If a direct quote from you will be used, permission via the 'permission to quote' form will be sought. The result of this research project will be used to develop an approach that will help organisations that use project management get even more value from the intangible benefits that is believed to be generated but is not currently identified, measured for impact or monitored in most organisations.

7. What Type of Information would be Required from me and why is the Collection of this Information Relevant for Achieving the Research Project Objectives

Information about your work (individual and team) within projects and your organisation. By getting this information, more light will be shed on how organisational, human and social capital is generated. By analysing this data, more knowledge would be created to inform an approach to help your organisation maximise them to be more competitive.

8. What are the Possible Benefits of taking Part in this Research

In the short term it will be an opportunity to share your thoughts. In the mid to long term it could have an impact on the employee-organisation relationship in your organisation. It is hoped that the findings will impact on how your tasks are designed, your performance and promotion, continuous professional development and lifelong learning. This should have a knock on effect on your knowledge and skills, competences and abilities.

9. What are the Possible Disadvantages and Risks of taking Part in this Research

If the data is not properly stored or anonymised, then participants may be identifiable. To ensure data integrity and confidentiality, data will be encrypted and pass worded. Data and identification data will not be stored in the same file.

10. Who is Organising/funding the research

I am on a scholarship from the Petroleum Technology Development Fund (PTDF) and the Major Project Association (MPA)

Contact for further information

Researcher: Gloria Oliomogbe
Civil Engineering, University of Leeds,
Mobile: 07748583110, Email: cngoo@leeds.ac.uk

Primary Supervisor: Prof Nigel J Smith
Head of School, Civil Engineering, University of Leeds,
Phone: 01133432267, Email: n.j.smith@leeds.ac.uk

You will be given a copy of the information sheet and also a signed copy of the consent form to keep.

I will also like to say thank you for taking time to read through the information.

B.5 Confidentiality Agreement

In order to assist the University of Leeds in conducting a research project entitled "The Investigation of the Generation of Intangible Benefits through Project Management Deployment", ("the Project") it is necessary for each of us to disclose certain confidential information relating to interviews and document collected for the study ("the Confidential Information").

In this Agreement "the disclosing party" means that party disclosing confidential information to the other party which in this Agreement shall be referred to as "the receiving party". The disclosing party agrees to disclose the Confidential Information to the receiving party upon the following conditions:

a) The receiving party shall use the Confidential Information solely for the purpose of conducting the Project and shall not use the Confidential Information for any other purpose or for further research unless the written consent of the disclosing party has been first obtained.

b) The receiving party shall treat the Confidential Information in strict confidence and shall not cite the Confidential Information, or any part of it, in any external reports or other forms of disclosure without obtaining the prior written permission of the disclosing party.

c) The receiving party will limit access to the Confidential Information to such of its employees as are necessary to carry out the Project aforesaid and shall use reasonable endeavours to ensure that each such employee observes the conditions set out in this Agreement.

d) Subject to the receiving party's right to retain a copy of the Confidential Information for audit purposes, at the end of the Project the receiving party shall, if requested to do so by the disclosing party, destroy all copies of the Confidential Information, provided that the receiving party shall be entitled to make any disclosure required by court order or government or regulatory requirement of the disclosing party's Confidential Information, subject to notifying the disclosing party as soon as possible of such requirement.

The receiving party's obligations under conditions (a), (b) and (c) above shall not apply to any part of the Confidential Information;

1) which is known by the receiving party at the date of disclosure and is not the subject of any restriction on disclosure imposed by a third party upon the receiving party; or

2) which is subsequently disclosed to the receiving party without restriction by any other person or company that is entitled to disclose the Confidential Information or relevant part thereof; or

3) which is in the public knowledge or subsequently comes into the public knowledge, other than by a breach of this Agreement.

This Agreement shall be governed and construed in all respects in accordance with the laws of England,

and the parties hereto submit to the non-exclusive jurisdiction of the English Courts.

Signed on behalf of Signed on behalf of

For XXXXXX:
Signature:
Name:.....
Date:

University of Leeds Party:
Signature:
Name:
Date:

B.6 Consent Form- To take part in the Project Management Generated Intangible Benefits

	Add your initials next to the statements you agree with
I confirm that I have read and understand the information email/letter explaining the above research project and I have had the opportunity to ask questions about the project.	
I agree for the data collected from me to be used in relevant future research.	
I agree to take part in the above research project and will inform the lead researcher should my contact details change.	

Name of participant	
Participant's signature	
Date	
Name of lead researcher	
Signature	
Date*	

*To be signed and dated in the presence of the participant or by email if telephone interview conducted

Once this has been signed by all parties the participant should receive a copy of the signed and dated participant consent form, the letter/ pre-written script/ information sheet (if applicable) and any other written information to be provided to the participants. A copy of the

signed and dated consent form should be kept with the project's main documents which must be kept in a secure location.

Fieldwork Project Details	
Faculty School/Service	Civil Engineering
Location of Fieldwork	XXXXXXXXXXXX XXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXX WakeField XXXXXXXXXXXX
Brief description of Fieldwork activity and purpose	Semi-structured interview to gather data about intangible benefits of project management deployment- Organisational, human and social capital
Organiser Details	Contact details <i>Name, email, telephone</i>
Fieldwork Activity Organiser / Course Leader	Gloria Oliomogbe, cngoo@leeds.ac.uk , xxxxxxxx
Departmental Co- ordinator	Prof Nigel J Smith (Primary Supervisor)
Nature of visit <i>Size of Group, lone working, staff, postgraduate, undergraduate</i>	Lone working, access to organisation documents and manuals and semi-structured interviews
Participant Details <i>Attach information as separate list if required</i>	Contact details <i>Name, Address, email, telephone, Next of Kin contact details</i>
	Xxxxxxx xxxxxxxxxxxx Email: xxxxxxx@xxxxxx.co.uk

Appendix C Data Analysis Documents

C.1 Example of Table Shell Displaying Metrics and Coded Data

	TYPE	METRICS	TRANSCRIPT	CODE	MEDIATING FACTORS
1	Project Organisation al Capital QUES 1	<p>What methods/tools/technique used</p> <ul style="list-style-type: none"> • Company own • Prince 2 or equivalent • Selection criteria (mix) • Client's own (if appropriate) • Adhoc 	<p>32Structured PM methods/tools/principles</p> <p>32aWe are audited and monthly report... a Org D standard of PM</p> <p>32b-A leadership and individual skills (a framework for leadership)...</p> <p>33Org D Perspective</p> <p>33aSet of PM processes written down and adapted annually</p> <p>33bPeople come from all sorts of organisations and bring their ideas on project management, so we need to be sure that:</p> <p>33c-They have the right processes in mind</p> <p>33d-Org D style and standard needs to be delivered</p> <p>33e-Our Pm and PD gain confidence and PM confidence to deliver effectively</p> <p>33fA certain type of personality (adapting style to fit client)</p> <p>34For example: A project last year had a structural design that was incorrect</p> <p>34a-disaster recovery, there is the tendency to pay over attention</p>	<p>32''structured''</p> <p>32a''audited and reported''</p> <p>32b''leadership framework''</p> <p>33''Org D perspective''</p> <p>33a''set of project management processes''</p> <p>33bdifferent background of staff</p> <p>33cright attitude</p> <p>33d''Org D style''</p> <p>33e''confidence and project management confidence</p> <p>33fproject management person type</p> <p>34''example''</p> <p>34a''over attention to the process''</p> <p>34bneed for practical approaches</p> <p>34cneed to focus on solutions</p> <p>34dstructure is necessary</p>	

			<p>to the process and there is the need to think of practical answers and think outside the box.</p> <p>34c-over analytic behaviour and not actually doing the job</p> <p>34d(it is better to have the problem of applying too rigorously or not well enough than to not have a structure in place at all)</p> <p>35Org D way started 10years ago, 35astopped for 5 years and started 3 years ago but just the programme management side.</p> <p>35bIt involves time (train people, explain Org D way). 35cYou cannot tell them that the bloke over there, do what they do.</p> <p>35dSeen improvement to Program Management, now the process is including a lot more</p> <p>35ecollaboration (people on the field).</p> <p>35fThe PM is still 12 months in the process.</p>	<p>35start of Org D way implementation</p> <p>35a''interruption and restart of Org D way implementation''</p> <p>35btime to implement</p> <p>35ccannot be adhoc in deployment</p> <p>35d''seen improvement''</p> <p>35emore field collaboration</p> <p>35fproject management phase yet to be implemented</p>	
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C.2 Screenshot First Order Coding Analysis

	A	B	C	D
1	Organisation D1	Organisation D2	Organisation D3	Organisation D4
2		60close commission internally	91'MMS''	33''Lessons learnt captured within the MMS''
3		61review information, knowledge, best practice		34individual responsibility to upload
4		62''whats not going well and why''	92''effective 3.5 of 10''	35REC: ''MMS can be improved''
5		62a''plans''	93''Quality management and quality assurance in control''	35aB''not enough time for people to upload''
6		63'' reviews with main contractor''	94REC:''stakeholder manager-tailoring knowledge''	36REC:more control needed
7		64''lesson learnt forum''		36aREC: 36amake sure it's relevant what goes on
8		65''improving''		37''no team of people managing the process''
9		66B:lessons learnt important for programme		38REC:more people need to be involved ie motivation to hav
10		67B:improve process and delivery		39no reward system for initiative or ownership
11		68B: individual attitudes		
12		69B:''strength and weakness''		
13		70B:implications of not learning from experience		
14		71B:''best way to do lessons learnt''		
15		72REC:''informal environment''		
16		73B:''better answers''		
17		74V:''not critical''		
18		75B:''better indication of where people are''		
19		76B:''likely to share knowledge''		
20		77V:''trust''		
21		78V:reward/incentives to sharing knowledge		
22		78aB:''box ticking exercise''		

C.3 Organisation D Report Format

1.0 Organisational Capital

1.1 What the organisation knows (captures)

This has to do with how we capture and retrieve knowledge and information; where employees are active participants in the process. The components that make this up:

1.1.1 Knowledge management system

1. Structure
 - a. There is an Organisation D Management System (DMS) in place managed by the Quality Assurance/Quality Control function.
2. Process
 - a. There is the process to capture information and knowledge
 - b. There is no process in place to manage and control the content on the DMS
 - c. There is no process to tailor or transform the data captured on the DMS

3. Organisation Learning activities
 - a. Reviews
 - b. Meetings with main Contractor
 - c. Lesson Learnt Forums

Outcome

1. Demotivation to use DMS for active information or knowledge retrieval
2. No reward or incentive for ownership of knowledge capture
3. Poor ownership of DMS by employees, there is therefore low willingness to use DMS for information and knowledge capture.
4. Lessons learnt is adhoc and subjective, left to the discretion of the project manager or project director

Implications and Discussion

These have implications for:

1. Culture: Even though there is a formal structure in place to capture knowledge, the value placed on collective knowledge is very low influencing people's attitudes.
2. Knowledge: the DMS is not been utilised to its capacity as data (information, knowledge) captured is not managed; tailored and therefore may not be fit for purpose when retrieved and may take longer to retrieve.
3. Attitude: It also means that the DMS may not be the best place to find out more about something suggesting that informal methods may be employed.

1.1.2 Effective sharing of knowledge

1. Structure

Information management control system

 - Standardised
 - Document controller
2. Organisational learning activities

Knowledge sharing activities:

 - a. Project team tours
 - b. Monthly communications meeting
 - c. Quarterly communications meeting
3. Attitudes (and affecting attitudes)
 - a. The physical distance involved between project sites and team mates and the tendency to focus on day to day job; "the project".
 - b. How information and knowledge is captured and retrieved (timely manner)
 - c. Friendliness of the DMS

1.1.3 Barriers to sharing Knowledge

1. Process
 - a. There is no direct mechanism for sharing knowledge
 - b. There is no opportunity for project managers to share knowledge on their projects
 - c. Sharing knowledge is outside "day to day" job

- d. There is no time
- 2. Attitudes
 - The attitudes of the team members
 - The attitudes of project managers
- 3. Communications:
 - Too much information (type/volume)

1.2 What it should know (not captured)

This has to do with what is foregone when information and knowledge that can be captured in the DMS is lost due to barriers to knowledge sharing and an inactive Employee voice. Employee voice in this case refers to ideas of improvement from employees.

1.3 What it should know (to achieve strategic aims) and how it ensures it knows what has been determined is necessary to know.

- 1. Process
 - a. Employee training selection process
 - b. Training process
 - c. Staff survey: Identified gap between training provided and needs of project managers)
- 2. Structure
 - a. Types of training available
 - Online training/modules
 - Class room based
 - On the job training
 - Project led training-identified gap
 - b. Categories of training available
 - Mandatory training
 - IT and Software training
 - Organisation D way
 - Personal development/CPD
 - General processes
 - General awareness
 - Leadership and management
 - Experience based training (talking to people or informal sharing/story telling)
 - c. Senior management control/leadership
 - d. Project Matrix/Gap Framework
- 3. Organisational Learning
 - a. Project Matrix/Gap framework Ownership by staff to populate own experience
 - b. Organisation communicates progress

Preconditions

Organisational level:

- a. Senior management control/leadership
- b. Relevance to organisation by level
- c. Costs allocated to own project

Client power:

Set prerequisite } To meet client's requirement
Gap identified }

1.2 How we work

This is looked at from three perspective; the methodology in its entirety (formal and informal; techniques, tools etc.), team working and decision making.

1.2.1 Methodology

- 1. Process
 - a. Formal set of processes
 - b. Allocate resources to come to speed with client's own system
 - c. Audits/reports
- 2. Structure
 - a. Formal methodology (Organisation D Management System)
 - b. Standards; ISO 9001, 14000 and 8001

Outcome

It improves culture (same language)

1.2.2 Team working

1.2.2.1 Work design

- 1. Process
 - Through Meetings (frequency and types)
- 2. Structure
 - Roles and responsibilities for project directors
 - Roles and responsibilities for project managers
- 3. Culture
 - a. Onsite project culture
 - b. Offsite/office project culture
- 4. Relations
 - Formal and informal relations and the implications for project directors and project managers

1.1.2.2 Input to work design

- 1. Process
 - Senior management control process
 - *(Adhoc process for secondment)
- 2. Structure
 - a. Senior management control hierarchy
 - b. Work types

- Normal
- Secondment

Primarily meetings are used for three reasons:

- To put the right people on the right projects (progress, stage gate, etc)
- To identify project opportunities and
- Extend current opportunities

1.1.2.3 Criteria for Team Selection

1. Process

- a. Right team in place (based on expertise, skills, qualification and competence)
- b. By Skill sets (sharing skills, best practice and budget)
- c. By Sector (use of meetings for resource sharing and resource chart)
- d. By procured company (subjective and in agreement with Client)

*An important point to make is that Organisation D didn't provide full project team members for clients until merger into Organisation D banner and can now provide full project team members.

- e. On-going project led (responsive)

2. Structure

- Currently use project matrix/gap framework

3. Attitude

- Onus on staff to populate own experience, knowledge, qualification and competences

1.1.2.4 Input on assignment to teams

1. Process

a. Based on:

- reporting hierarchy
- Support framework (meetings to discuss workload etc.)
- Bid team preparation of CV for final client

b. Depends on:

- Assignment scope and size
- Project leadership and resource allocation
- Delegation

1.2.3 Decision making

1. Structure

At three levels:

- a. Organisational (extra level of organisational structure for control)
 - i.e. senior management control
 - About people
 - About processes, systems etc
- b. Individual project manager
 - Accountability
 - Paper work
 - Stifling and constraining

- Senior management control
- Client focus
- c. Contractors
 - i. Expertise from day one
 - ii. Trust and sense of responsibility
 - iii. Contractor's influence based on quality of judgement

1.2.4 Communications

1. Reasons:

- To communicate change or course of action
- To aid working together as team sharing or getting information

2. Type: Formal and informal

A. Formal:

- a. Project team tours
- b. Monthly communications meeting
- c. Quarterly communications meeting
- d. Electronic e.g. blogs, newsletters
- e. Reports

B. Informal

Corridor discussions

2.0 Human Capital

2.1 Progression Intangibles

2.1.1 Employee progression (Internal Reputation)

1. Process

- a. Strategy (within one sector more common, move from sector to sector less common); what's the trend and the implications?
- b. No clear career progression process: there is no clear guideline on how to demonstrate the knowledge, competence or experience required i.e. as contained in the operational framework and competencies
- c. Based on:
 - Line manager's discretion (subjective)
 - Region financial status
 - Route: regular or graduate programme (this has implications)
 - Type: regular or secondment (more common in megaprojects)

2. Structure

- a. Clear career progression structure
- b. Formal capability schedule for promotion
- c. Operational framework and competences (skills, experience, length of time, qualifications, team targets, individual targets)

3. Competence

- a. Capable individuals

- b. Leadership of project teams
- 4. Relations
 - Client power to influence promotion

2.1.2 Selection for project lead

1. Process
 - a. Timing and luck
 - b. What's coming up next
 - c. Be reassigned
2. Structure
 - Adhoc
3. Culture
 - a. Bigger project the better the project manager, different skills set
 - b. Smaller projects (more in number), broader experience, different skills set
 - c. Bigger project the more salary earned
 - d. People aim for bigger projects
4. Talent
 - Inherent in individuals

*intellectual agility can be developed

2.2 Working on Multiple projects Intangibles

1. Process
 - a. Person to project ratio
 - b. Person allocation- multiple project multiple project phase
- *(Formal or informal?)
2. Attitudes (and affecting attitudes)
 - a. Motivation (opportunity to develop and cultivate relationships with clients and peers)
 - b. Stress (pressure)
 - Staff welfare is secondary
 - More focus on client
 - The decision for reassignment over stressful project is based on client requirement
 - c. Inundated
 - d. Difficulty remembering

2.3 IT related intangibles

1. Structure
 - a. More IT infrastructure
 - b. New ways of working
 - Video conferencing
 - Doing client's work in another client's office (need to always be available)

2. Communications
 - a. Communicating got easier (volume and type)
 - b. More global reach

2.4 Knowledge

This dimension of knowledge was not captured in the pilot study.

3.0 Social Capital

3.1 Relationship Dynamics

- a. Relationship between Project manager and project team
 - Importance: “fundamental”, “absolutely crucial”, can motivate, be positive or have negative impacts.
 - Dependent on project managers; their focus (inward or outward) and their leadership which affects how project managers are perceived
 - *Relationship with Project director (ensure good flow of work, staff allocation, assessing value of staff to organisation, motivation, delegation, approachable to staff etc.)
- b. Relationship between project teams
 - Project manager is the link between projects
 - Relationship is between individual projects and central office
 - No mechanism for relationship between project managers to share knowledge on their projects
- c. Relationship between project and non-project workers
 - Split between “us” and “them”
 - The intention to blur the line between project and non-project work
 - Roles are defined and conflicts avoided
- d. Relationship with client
 - Importance: “key to next period performance”, “Integral”, “important”, “can be a positive thing”
- e. Relationship with main contractor (contractor)
 - Importance: “One of the most important relationships”, “paramount to the organisation’s performance (on the ground delivering)”, “a secondary relationship”
 - Types of relationship: dependent on large project or small project
 - Types of relationship : dependent on type of contractor: client facing or non-client facing
- f. Relationship with Supplier
 - Importance: Less important, “Slightly different”, “good relationship helps”

3.2 Relationship building

1. Process
 - a. Team relationship building
 - Time to form relationship

- Professional relationship
- Personal relationship
- Longevity of relationship
- b. Organisation relationship building activity
 - With team - Formal and informal
 - With Client - Formal
- c. Formal relationship building activity – team
 - Monthly communications meeting
 - Quarterly communications section
- d. Project and non-project staff
 - Opportunity to move between project and non-project work
 - Quarterly communications section (formal relationship building activity)
- e. Contractor alignment influences Clients' perception of Organisation D

2. Structure

Managing relationships

- a. With client:
 - Organisation D can work as full Mac team (more cohesive)
 - Organise other companies
- b. With Contractor
 - Framework in place to manage relationship
- c. With suppliers
 - Preferred lists of suppliers used

3.3 Power Intangible

- a. Client power
 - Client can influence project manager appointment
 - Relationship with contractor depends on relationship with client
 - Can influence the relationship with contractor or supplier (the need to understand relationships; “who knows who”)
 - Organisation D relationship with client an indication of performance?
- b. Organisation D Power
 - Can influence the relationship with Client
 - Has power over suppliers with possible future opportunities
 - *What about the power with the contractor?
- c. Team power: Healthy competition between project teams
- d. Senior management power
 - Seen in section 1.3_c, 1.1.2.2_{1,2}, 1.2.3_b and 2.1.1_{1c}
- e. Project Manager's Power
 - Influence team and team attitudes

3.4 Reputation (External) and Goodwill

- 1. Reputation based on:
 - Process to deploy project management
 - Level of service

- Quality of work
- Relationship with Client

2. Goodwill based on:

- Perception of Organisation D (reputation?)
- Reliability/Confidence in brand
- Good service
- Demonstrate credibility
- Investors in people

Appendix D Tables for Deductive (See Chapter 7) and Inductive (See Chapter 9) Analytical Approaches

D.1.1 Tables for Drivers of Intangible Benefits in Chapter 7

As stated in section 7.1, the tables for the drivers of intangible benefits are presented in this section but the contents and implication are discussed in section 7.1.

Table D1.1: Drivers for Project Management Methodology Intangibles

Intangible benefit	Drivers of intangible benefits	Contracting organisation	Single Project Client Organisation	Contracting Organisation-supply side
Project management methodology Intangibles	8) Methodology	X	X	X
	9) Direct benefits		X	X
	10) National difference			X

Table D1.2: Drivers for Team Working Intangibles

Intangible benefit	Drivers of intangible benefits	Contracting organisation	Single Project Client Organisation	Contracting Organisation-supply side
Team working Intangibles	11) Team selection process	X	X	
	12) Project actor roles			
	13) Factors that influence team member selection	X	X	X
	14) Meetings	X	X	X
	15) Types of teams	X	X	

Table D1.3: Drivers for Decision Making Intangibles

Intangible benefit	Drivers of intangible benefits	Contracting organisation	Single Project Client Organisation	Contracting Organisation-supply side
Decision making Intangibles	16) Demonstrated organisational capability (timeliness/quality)	X	X	X
	17) Demonstrated individual project actor capability	X	X	X
	18) Organisational disposition to decision making	X		X

	19) Decision making information	X		X
	20) Fit of decision support system	X		X

Table D1.4: Drivers for Communications Intangibles

Intangible Benefit Component	Drivers of intangible benefits	Contracting organisation	Single Project Client Organisation	Contracting Organisation-supply side
Communications Intangibles	21) Types of communications	X	X	X
	22) Role of IT	X	X	
	23) Modes of communications	X	X	X
	24) Timeliness of communications	X	X	X

Table D1.5: Drivers for Corporate Alignment Knowledge Based Intangibles

Intangible benefit	Drivers of intangible benefits	Contracting organisation	Single Project Client Organisation	Contracting Organisation-supply side
Corporate Alignment Knowledge based Intangibles	25) Training provision mechanisms	X	X	
	26) Types and modes of training	X	X	X
	27) Factors that influence training provision	X		
	28) Project actor voice	X		X
	29) Project actor satisfaction	X		X

Table D1.6: Drivers for Corporate Alignment IT Enabled Intangibles

Intangible benefit	Drivers of intangible benefits	Contracting organisation	Single Project Client Organisation	Contracting Organisation-supply side
Corporate Alignment IT enabled Intangibles	30) Sphere of influence	X	X	X
	31) Limitations	X		X
	32) National cultural disposition			X

Table D1.7: Drivers for Corporate Alignment Interface Based Intangibles

Intangible benefit	Drivers of intangible benefits	Contracting organisation	Single Project Client Organisation	Contracting Organisation-supply side
Corporate Alignment Interface based Intangibles	33) Types of interface issues 34) Critical interface issue	X	X X	X

Table D1.8: Drivers for Individual Knowledge Intangibles

Intangible benefit	Drivers of intangible benefits	Contracting organisation	Single Project Client Organisation	Contracting Organisation-supply side
Individual knowledge Intangibles	35) Types of knowledge	X	X	X

Table D1.9: Drivers for Project Leadership Intangibles

Intangible benefit	Drivers of intangible benefits	Contracting organisation	Single Project Client Organisation	Contracting Organisation-supply side
Project Leadership Intangibles	36) Project manager capabilities 37) Developing leadership characteristics 38) Difference between leadership reflected and promoted	X X X	X X X	X X

Table D1.10 Drivers for Individual Career Factor

Intangible benefit	Drivers of intangible benefits	Contracting organisation	Single Project Client Organisation	Contracting Organisation-supply side
Individual Career Factor	39) Staffing and promotion strategy 40) Effect of changes 41) Factors (objective & subjective) 42) Impact of staffing and promotion strategy	X X X X	X X	X X X

Table D1.11 Drivers for Work Load Factor

Intangible benefit	Drivers of intangible benefits	Contracting organisation	Single Project Client Organisation	Contracting Organisation-supply side
Work Load Factor	43) Project related stressors	X	X	
	44) Organisational related stressors	X		X
	45) Factors that affected the stress assessment	X		X
	46) Support of project management methodology	X		X

Table D1.12: Drivers for Relationship Dynamics Intangibles

Intangible benefit	Drivers of intangible benefits	Contracting organisation	Single Project Client Organisation	Contracting Organisation-supply side
Relationship Dynamics Intangibles	47) Project manager	X	X	
	48) Relationship mechanisms	X	X	
	49) Direct benefits	X	X	
	50) Configuration of relationships between stakeholders	X	X	X
	51) Social resources	X	X	X
	52) Ease of collaboration	X		X

Table D1.13: Drivers for Power Tensions Intangibles

Intangible benefit	Drivers of intangible benefits	Contracting organisation	Single Project Client Organisation	Contracting Organisation-supply side
Power Tensions Intangibles	53) Strategic and operational tensions	X		
	54) Organisational working based tensions	X		
	55) Team based tensions	X		
	56) Supply chain tension	X	X	
	57) individual career based tensions	X		
	58) Organisational led individual based tensions	X		X

Table D1.14: Drivers for Access to Knowledge and Information Intangibles

Intangible benefit	Drivers of intangible benefits	Contracting organisation	Single Project Client Organisation	Contracting Organisation-supply side
Access to Knowledge and information intangibles	59) Organisational formal route	X		X
	60) Factors that influence access to knowledge and information	X		
	61) stakeholder configuration access (and refer to learning routes under organisational capital)	X	X	X
	62) networks available (and refer to learning routes under organisational capital)	X	X	X

Table D1.15: Drivers for Reputation Intangibles

Intangible benefit	Drivers of intangible benefits	Contracting organisation	Single Project Client Organisation	Contracting Organisation-supply side
Reputation intangibles	63) Direct benefits	X		
	64) Organisation-led internal reputation	X		
	65) Proxies of organisational reputation	X	X	
	66) Project actor-led reputation	X	X	
	67) Factors that affect reputation	X	X	

D.1.2 Tables for Attributes of Intangible Benefits in Chapter 9

As stated in section 9.1, the tables for the Attributes of intangible benefits are presented in this section but the contents and implication are discussed in section 9.1.

Table D2.1: Attributes of Project Management Methodology Intangibles

Intangible Components	Attributes	Contracting Organisation	Single Project Client Organisation
Project management methodology intangible	7. Type and approach to project work	-Usually formal and concurrent. Can also adopt composite -More structured approach	-Usually composite. -Less structured approach overall (usually unique project, more practical focused)
	8. Fit of language/culture	Variable common language (i.e. due to different sectors, project sizes etc.)	Variable common language (i.e. due to informal aspects and across sub projects)
	9. Fit for purpose	Variable fit (across different types)	Fit for purpose (variable fit across type of project e.g. core construction or support construction)

Table D2.2: Attributes of Team Working Intangibles

Intangible Components	Attributes	Contracting Organisation	Single Project Client Organisation
Team working intangible	10. Team member selection business process	-Team selection process -Team selection process stakeholders -Team selection strategy (right mix/right people, competing factors e.g. availability)	-Team selection process -Team selection process stakeholders -Team selection strategy (right mix/right people)
	11. Team work design	-Structure (Roles and responsibilities) -Primary mechanism: meetings (type, frequency and outcome)	-Structure (Roles and responsibilities) -Primary mechanism: meetings (type, frequency and outcome)

Table D2.3: Attributes of Decision Making Intangibles

Intangible Components	Attributes	Contracting Organisation	Single Project Client Organisation

Decision making Intangible	12. Decision making disposition of the organisation (e.g. culture of risk management)	Variable dependent on type of project, client and role of base organisation	Variable and competing dependent on the perspective of stakeholder
	13. Fit of decision support system	Formal and informal -about people -About systems, processes (variable across sectors, regions, types of project, or size of projects)	Formal and informal -about people -About systems, processes (variable across sub projects)

Table D2.4: Attributes of Communications Intangibles

Intangible Components	Attributes	Contracting Organisation	Single Project Client Organisation
Communications intangible	14. Communications strategy (combination of timeliness, effectiveness etc.)	-On a per project basis with overarching organisation wide strategy	-Project wide strategy with implications for sub projects
	15. Communication Infrastructure	Use of formal and informal, people led and technology led systems, processes and mechanisms -individual project led with aspects imposed by organisational wide strategy	Use of formal and informal, people led and technology led systems, processes and mechanisms -Project wide provision -consideration of implications for partner organisations, contractors and clients

Table D2.5: Attributes of Corporate Knowledge Alignment Intangibles

Intangible Components	Attributes	Contracting Organisation	Single Project Client Organisation
Corporate Knowledge Alignment Intangible	16. Staff expectation/attitude	Higher staff expectation on training and personal development	Less staff expectation on training and personal development
	17. Training needs	Wider training needs spectrum	Less training needs spectrum, specific training needs
	18. Training delivery Infrastructure	-Types of training -Modes of training -Post training feedback (use of Employee voice, Reviews and assessment)	-Types of training -Modes of training -Post training feedback

			(use of Employee voice, Reviews and assessment)
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Table D2.6: Attributes of IT Enabled Alignment Intangibles

Intangible Components	Attributes	Contracting Organisation	Single Project Client Organisation
IT Enabled Alignment intangibles	19. Fit of IT provision	On a per project basis	Project wide strategy

Table D2.7: Attributes of Interface Management Alignment Intangibles

Intangible Components	Attributes	Contracting Organisation	Single Project Client Organisation
Interface management Alignment intangible	20. Extent of impact	Less predominant and problematic however dependent on type of project and client	Predominant and more problematic (multiple stakeholders, multiple interfaces)
	21. Fit of mechanisms	More likely to be overlooked however dependent on type of project and client	More likely treated as high risk, more mechanism put in place

Table D2.8: Attributes of Individual Knowledge Intangibles

Intangible Components	Attributes	Contracting Organisation	Single Project Client Organisation
Individual knowledge	22. Knowledge about people/about projects and team working knowledge	Dependent on tenure entry criteria, portfolio of projects	Dependent on tenure entry criteria, length of tenure and team type

Table D2.9: Attributes of Project Leadership Intangibles

Intangible Components	Attributes	Contracting Organisation	Single Project Client Organisation
Project leadership	23. Leadership skills	Increase and manifest horizontally and vertically	Increase and manifest horizontally and vertically

	24. Promotion Strategy	Organisation wide opportunity (Organisation's culture: what qualities does the organisation promote; how is this perceived)	In-project opportunity (important for future job prospects and leveraging power)
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Table D2.10: Attributes of Factors that Influence Human Capital

Intangible Components	Attributes	Contracting Organisation	Single Project Client Organisation
Factors that influence human capital	25. Opportunities for career progression (career aspirations)	Variable organisation wide promotion opportunities (Dependent on contextual factors)	In-project opportunity (Generalist background i.e. skills matches emerging project role)
	26. Career progression structure	Mixture of structures and adhoc career progression	-Recognise that not a long term career
	27. Stress	Organisation's attitude to stress	Organisation's attitude to stress

Table D2.11: Attributes of Relationship Dynamics Intangibles

Intangible Components	Attributes	Contracting Organisation	Single Project Client Organisation
Relationship Dynamics	28. Types of relationships	Relationship between project team members, Relationship between project and non-project staff, Relationship with client, Relationship with T1 contractors etc.	Relationship between project team members, Relationship between project and non-project staff, Relationship with client, Relationship with T1 contractors etc.
	29. Organisational infrastructure	Different types of mechanism and processes in place to manage relationship	Different types of mechanism and processes in place to manage relationship

Table D2.12: Attributes of Power Tensions Intangibles

Intangible Components	Attributes	Contracting Organisation	Single Project Client Organisation

Power tensions intangible	30. External stakeholders leveraging power	-Client's leveraging power (clients, contractors and suppliers) -Partners/Supply chain power: Large and few EME firms. Business risk, strategic implications	-Client's leveraging power (Utilities companies, suppliers, contractors) - Power tensions with partner organisations (snatching new job opportunities. Large contractors mopping up everything)
	31. Internal stakeholders leveraging power	-Project Individuals: individual, team or organisational aspiration -Project teams: competition between project teams Project Manager: Authority, autonomy and political influence	-Project Individuals: individual, team or organisational aspiration -Projects teams: competition between delivery teams and non-delivery teams Project Manager: Authority, autonomy and political power
	32. Base organisation leveraging power	State of the economy, external reputation	Unique project with political and economic implications

Table D2.13: Attributes of Access to Knowledge and Information Intangibles

Intangible Components	Attributes	Contracting Organisation	Single Project Client Organisation
Access to knowledge and Information intangible	33. Network range	Wider Network dependent on project portfolio, also project individuals	Large network, dependent on organisation and project individual
	34. Leverage (personal and organisational)	Potential for personal leverage. Organisation leverage more likely	Personal leverage more likely. Potential for organisational leverage but more likely with supply chain organisations

Table D2.14: Attributes of Reputation Intangibles

Intangible Components	Attributes	Contracting Organisation	Single Project Client Organisation
Reputation	35. Organisation's external perspective	-Investors in people (award) - Reliability/confidence in brand	-Success of project management is same as delivery of organisation

		<ul style="list-style-type: none"> -Good level of service -Demonstrated credibility -Track record -Repeat business -Good ranking/rating -Less litigation 	<ul style="list-style-type: none"> -Project management delivery and reputation intrinsically linked -Reputation is every thing
	36. Organisation's internal perspectives	<ul style="list-style-type: none"> About stakeholders Career progression opportunities increases motivation 	<ul style="list-style-type: none"> About stakeholders - Intrinsic to everybody associated with project -In-project opportunity increases motivation
	37. Personal reputation (external)	<ul style="list-style-type: none"> Good CV Influence career progression 	<ul style="list-style-type: none"> Good CV Determines future job roles Personal reputation you take forward i.e. it has personal value
	38. Reputation concerns	<ul style="list-style-type: none"> -Can be about shareholders 	<ul style="list-style-type: none"> -Not about shareholders but about taxpayers

Appendix E Mapping the Project Management BOK to the Logic Model

The PMBOK, APMBOK and the Construction extension to the project management body of knowledge PMBOK Guide-2000 edition were considered as relevant BOK. Each intangible benefit is discussed below in turn in the light of the PMBOK, the PMBOK's extension to construction management and APMBOK.

Corporate Knowledge Ownership Intangibles: The PMBOK has no clear guidance on project management knowledge while the APMBOK gives some direction indicating that the project office may also be responsible for the linking corporate strategy to project execution. The author is of the opinion that the APMBOK's position is a limited application of knowledge generated from project management deployment in organisations. A more proactive exploitation of knowledge generated from project management deployment generates more intangible benefits for the base organisation and project workers-satisfaction. This will be evidenced by how the organisations knowledge management strategy impacts on winning new work and improves project execution.

Project Management Methodology Intangibles: The author defines project management methodology as the full toolkit set with all techniques, methods (soft and hard) and processes used to deliver projects in the base organisation. They are employed for the design, planning, execution and closing of the project lifecycle. Going by this definition, the author adopts the position that the 10 knowledge areas of the PMBOK, the 4 knowledge areas of the Construction extension or the 7 sections of the APMBOK are useful in determining the full set of tools, techniques, methods and processes that can be combined to deliver the range of projects by the base organisation. However, the selection of what tools, techniques, methods and processes is influenced by several factors including the project type, the skills level of project workers, expert judgement (knowledge/familiarity of existing available tools, techniques, methods and processes) of the selectors. There is also the matter of whether the methodology is integrated (IT enabled capabilities) or not. Therefore, a base organisation that uses these guides is more likely to develop project management methodology intangibles.

Table D.1: Intangibles and the Project Management Bodies of Knowledge

Intangibles	PMBOK	APMBOK (5th Edition)
Corporate knowledge intangibles	4.3.3.3 Lessons Learned	1.1.6 Project office(particularly under additional roles)

	No clear management process	
Project management methodology intangibles	All 10 knowledge areas 2.5.1 Standards and Regulations 2.5.2 Internalisation 2.5.3 Cultural Influences 2.5.4 Social-Economic-Environmental Sustainability Construction Extension: Safety management Environmental management Financial management Claim management	All 7 sections
Team working intangibles	Project human resource management 9.2 Acquire project team 9.3 Develop Project team 9.4 Manage project team Construction Extension: Safety Management	Section 6 Organisation and Governance 6.7 Organisational Structure 6.8 Organisational roles Section 7 People and the profession 7.2 Teamwork 7.6 Human resource management 7.7 Behavioural characteristics 7.8 Learning and development 7.9 Professionalism and ethics
Decision making intangibles	All 10 knowledge areas Construction Extension: Safety management Environmental management Financial management Claim management	All 7 sections
Communications intangibles	2.4.2 Communicating 10.1 Communications planning	7.1 Communications
Individual capabilities and competencies (knowledge)	Project human resource management 9.2 Acquire project team 9.3 Develop Project team 9.4 Manage project team	7 People and the profession
Team capabilities and competencies intangibles	Project human resource management 9.2 Acquire project team 9.3 Develop Project team	6 Organisation and Governance 7.2 Team work

	9.4 Manage project team	
Project Leadership	2.4 Key General management skills 2.4.1 Leading	6 Organisation and Governance 6.10 Governance of project management 7.3 Leadership
Corporate Knowledge Alignment	7.17.3.4 Supporting detail	1.6 Project Office (particularly under additional roles) 7.8 Learning and Development
Corporate Alignment- IT enabled intangible	No clear management process.... Project integration function?	4.4 Technology management
Corporate Alignment- Interface management intangible	4.2 7.17.1 Input to organisational planning	xxxx
Relationship dynamics intangibles	2.4.3,.4 and .5 Stakeholder management Communications management Construction Extension: Claim management Safety Management	2.1 Project success and benefits management 2.2 Stakeholder management 7.4 Conflict management 7.5 Negotiation 7.7 Behavioural characteristics 7.8 Learning and development 7.9 Professionalism and ethics
Power Tensions intangible	2.4.3 Negotiating 2.4.4 Problem solving 2.4.5 Communications Stakeholder management Communications management Project human resource management 7.17.1 Project interfaces 9.2 Acquire project team 9.3 Develop Project team 9.4 Manage project team Construction Extension: Claim management Safety Management	Section 7 People and the profession 7.2 Teamwork 7.6 Human resource management 7.7 Behavioural characteristics 7.8 Learning and development 7.9 Professionalism and ethics
Access to knowledge and information	Stakeholder management Communications management Project human resource management 7.17.1 Project interfaces 9.2 Acquire project team 9.3 Develop Project team	Section 7 People and the profession 7.2 Teamwork 7.6 Human resource management 7.7 Behavioural characteristics 7.8 Learning and development

	9.4 Manage project team Construction Extension: Safety Management Claim management	7.9 Professionalism and ethics

Team Working Intangibles: The PMBOK covers this in the project human resource management knowledge area particularly in the acquire, develop and manage project team sections. The APMBOK covers this in Section 7 under teamwork, human resource management, behavioural characteristics, learning and development and professionalism and ethics. Therefore, a base organisation that uses these guides is more likely to develop team working intangibles. Claims management from the PMBOK construction extension is therefore a role that is to be defined within the team or as part of support function.

Decision Making Intangibles: Decision making is inherent in project delivery from initiation- is this right project until when the project is handed over and closed. Therefore decision making is evidenced in both the PMBOK and the APMBOK. By using the PMBOK or the APMBOK as a guide, a base organisation is made aware of the different decisions that have to be made with regards to different knowledge areas and specifically for different processes. However, from the author's findings, decision making intangibles is dependent on the quality of decision (dependent on the expert judgment of the decision maker) and time which are dependent on access to requisite knowledge or information in a timely manner and the right processes/tools/ techniques as decision support mechanisms. Therefore it can be argued that a base organisation that uses the PMBOK or the APMBOK is more likely to generate decision making intangibles. The construction extension considerations are therefore to be embedded in the team functions or in the support functions. The roles have to be clearly defined and allocated.

Communications Intangibles: The PMBOK states that communications involves the exchange of information with many dimensions to communicating. However the PMBOK takes the position that communicating in general management is different to project communications management which is the application of these broad concepts to the specific needs of a project. The findings corroborate the position of PMBOK in that in practice; the 'how of communications management' showed that face to face, meetings and emails, modes of communication were critical. The findings from this research show that project communications is critical for knowledge sharing and integration, decision making, team working which are all components of organisational. The APMBOK states that communication is the giving, receiving, processing and interpretation of information

through different media and can be active or passive, conscious or unconscious. It also states that anticipating the impact of communication is key and that effective communication management throughout the project lifecycle was fundamental to the project. The APMBOK draws attention to the fact that critical information is usually available to the project manager informally before it is available through formal channels and therefore there is the need for sensitivity from the project manager.

Individual Capabilities and Competencies (Knowledge): Individual capabilities and competencies are developed based on individual roles and responsibilities as individuals engage in project work. It is however influenced by several factors. Of particular importance is the PMBOK's project human resources management- acquire, develop and manage project team. This is covered in the APMBOK under organisation and governance-Organisation structure, organisational roles and under People and the profession- team work and human resource management. This suggests that a base organisation that uses the PMBOK or the APMBOK is likely to generate individual capabilities and competencies.

Team Capabilities and Competencies Intangibles: Team capabilities and competencies are also developed alongside individual capabilities and competences. This is logical because individuals work in teams for a common goal while imputing their individual knowledge, know-how and skills and adjusting their input to the team to ensure that the goal is achieved. This is covered in the PMBOK under human resource management- acquire, develop and mage project team. Similarly in the APMBOK it is covered under People and the profession under team working. This suggests that a base organisation that uses the PMBOK or the APMBOK is likely to generate team capabilities and competencies.

Project Leadership: This is both an individual and team capability, however, it is treated by itself because it was identify as a critical skill from the findings. The PMBOK identifies leadership as a general management skill while the APMBOK covers this under section 7- people and the profession. This suggests that a base organisation that uses the PMBOK or the APMBOK is likely to generate project leadership capabilities and competencies.

Corporate Alignment Knowledge based intangibles: the PMBOK alludes to knowledge alignment of the organisation through the human resource knowledge area. The APMBOK human resource management position support the alignment intangibles as it states that human resource management is the understanding and application of the policy and procedures that directly affect the people working within the project team

and working group ie project actors. These policies include recruitment, retention, reward, personal development, training and career development. As training is the main mode of alignment considering that the project actor has already been recruited directly or indirectly eg outsourced, a base organisation has access to the human capital while the project actor is connected to the organisation. The extent to which this can be exploited by the organisation is dependent on other factors including the willingness of the project actor to contribute to corporate knowledge whether in codified or tacit form.

Corporate Alignment IT Enabled: No clear guideline is given by the PMBOK. In the APMBOK, it is recognised as techniques- technology management defined as

“the management of the relationship between available and emerging technologies, the organisation and the project. It includes management of enabling technologies, used to deliver the project, technologies used to manage the project and the technology of the project deliverables.”

However, what has been indicated by the findings relate to technologies used to manage the project. With this as the context, IT enabled capabilities intangibles are derived to the extent that the base organisation can complement its project management methodology with IT infrastructure that fits.

Corporate Alignment interface Management intangibles: The PMBOK makes reference to interface management in section 4.2 in relation to the project execution process with the project manager and project management team’s need to direct the various technical and organisational interfaces. It also makes mention of three types of interfaces: organisational, technical and interpersonal interfaces in section 7.17.1 stating that they can occur simultaneously. The APMBOK didn’t give any guidance however reference is made to interface management in the glossary of project management terms. Therefore the use of the PMBOK is more likely to encourage the generation of interface management intangibles compared to the APMBOK

Relationship Dynamics Intangibles: This is covered by the PMBOK by elements of stakeholder management and communications management. It is also covered by everything under team working intangibles. In the APMBOK it is covered by project success and benefits management, stakeholder management and section 7.4-7.9 covering aspects such as conflict management and behavioural management etc. This

was arrived at because social capital is first about access to a relationship or network. As a consequence of been selected to a team, a project actor's network is extended. However, how the relationships unfolds is dependent on the individual project actor, the project manager, the organisation's relationship building mechanisms, and on the other actors in the network who may or may not be from the same project based organisation. A big influencer however is the project manager and the base organisation in shaping the behaviour of its project actors and the infrastructure it puts in place. From the PMBOK construction extension claims management and safety management have to be embedded in the project teams or provided by a support function. This is particularly important because claims issues are a big trigger for conflict. Safety is sanctioned by organisations however it is behavioural based in practice. Team members have to trust the safety judgement of their team mates alongside their technical and other capabilities.

Power Tensions Intangibles: Similar to relationship dynamics intangible, power tension intangible is influenced by the individual project actor, project manager, the organisations infrastructure as well as other project actors. Therefore the base organisation has a big influence on the extent that power tensions can have a negative effect on the base organisation or the wellbeing of its project actors. For example the difference between the project stakeholders' views and that of the organisation's shareholders generate power tensions across different levels of the project deployment. The position on the PMBOK construction extension is similar to that of relationship dynamics.

Access to Knowledge and Information: This is equally similar to the other intangible discussed under social capital. However it is more concerned with the individual project actor and whether he or she is motivated to access the knowledge or information in the interest of the base organisation. Again, the onus is on the project base organisation to provide the incentive that this is the case. The position on the PMBOK construction extension is similar to that of relationship dynamics

Appendix F 42 Methods for Measuring Intangibles in Chronological Order

Approx. year	Label	Major Proponent	Category	Description of Measure
2009	ICU Report	<i>Sanchez (2009)</i>	SC	ICU is a result of an EU-funded project to design an IC report specifically for universities. Contains three parts: (1) Vision of the institution, (2) Summary of intangible resources and activities, (3) System of indicators.
2008	EVVICAETM	<i>McMcCutch eon (2008)</i>	DIC	Developed by the Intellectual Assets Centre in Scotland as a web-based EVVICAETM toolkit based on the work of Patrick H. Sullivan (1995/2000).
2008	Regional Intellectual Capital Index (RICI)	<i>Schiuma, Lerro, Carlucci (2008)</i>	SC	Uses the concept of the Knoware Tree with four perspectives: (hardware, netware, wetware, software) to create a set of indicators for regions.
2007	Dynamic monetary model	<i>Milost (2007)</i>	DIC	The evaluation of employees is done with analogy from to the evaluation of tangible fixed assets. The value of an employee is the sum of the employee's purchase value and the value of investments in an employee, less the value adjustment of an employee.
2004	IAbM	<i>Japanese Ministry of Economy, Trade and Industry.</i>	SC	Intellectual asset-based management (IAbM) is a guideline for IC reporting introduced by the Japanese Ministry of Economy, Trade and Industry. An IAbM report should contain: (1) Management philosophy. (2) Past to present report. (3) Present to future. (4) Intellectual-asset indicators. The design of indicators largely follows the MERITUM guidelines. Described in Johanson & al. (2009)
2004	SICAP		SC	An EU funded project to develop a general IC model specially designed for public administrations and a technological platform to facilitate efficient management of the public services. The model structure identifies three main components of intellectual capital: public human capital, public structural capital and public relational capital. Described in Ramirez Y. (2010)
2004	National Intellectual Capital Index	<i>Bontis (2004)</i>	SC	A modified version of the Skandia Navigator for nations: National Wealth is comprised by Financial Wealth and Intellectual Capital (Human Capital + Structural Capital)
2004	Topplinjen/ Business IQ	<i>Sandvik (2004)</i>	SC	A combination of four indices; Identity Index, Human Capital Index, Knowledge Capital Index, Reputation Index. Developed in Norway by

				consulting firm Humankapitalgruppen. http://www.humankapitalgruppen.no
2003	Public sector IC	<i>Bossi (2003)</i>	SC	An IC model for public sector, which builds on Garcia (2001) and adds two perspectives to the traditional three of particular importance for public administration: transparency and quality. It also identifies negative elements, which generate intellectual liability. The concept of intellectual liability represents the space between ideal management and real management, one of the duties a public entity must fulfil for society. Described in Ramirez Y. (2010)
2003	Danish guidelines	<i>Mouritzen, Bukh & al. (2003)</i>	SC	A recommendation by government-sponsored research project for how Danish firms should report their intangibles publicly. Intellectual capital statements consist of 1) a knowledge narrative, 2) a set of management challenges, 3) a number of initiatives and 4) relevant indicators. http://en.vtu.dk/publications/2003/intellectual-capital-statements-the-new-guideline
2003	IC-dVAL™	<i>Bonfour (2003)</i>	SC	“Dynamic Valuation of Intellectual Capital”. Indicators from four dimensions of competitiveness are computed: Resources & Competencies, Processes, Outputs and Intangible Assets (Structural Capital and Human Capital indices). Journal of IC vol 4 Iss 3 2003
2002	Intellectus model	<i>Sanchez-Canizares (2007)</i>	SC	Intellectus Knowledge Forum of Central Investigation on the Society of Knowledge. The model is structured into 7 components, each with elements and variables. Structural capital is divided in organizational capital and technological capital. Relational capital is divided in business capital and social capital.
2002	FiMIAM	<i>Rodov & Leliaert (2002)</i>	DIC/MCM	Assesses monetary values of IC components. a combination both tangible and Intangible assets measurement. The method seeks to link the IC value to market valuation over and above book value. Journal of IC vol 3 Iss 3 2002
2002	IC Rating™	<i>Edvinsson (2002)</i>	SC	An extension of the Skandia Navigator framework incorporating ideas from the Intangible Assets Monitor; rating <i>efficiency, renewal</i> and <i>risk</i> . Applied in consulting http://www.icrating.com/
2002	Value Chain Scoreboard™	<i>Lev B. (2002)</i>	SC	A matrix of non-financial indicators arranged in three categories according to the cycle of development: Discovery/Learning, Implementation, Commercialization. Described in

				book Lev (2005): <i>Intangibles: Management, Measurement and Reporting.</i>
2002	Meritum guidelines	<i>Meritum Guidelines (2002)</i>	SC	An EU-sponsored research project, which yielded a framework for management and disclosure of Intangible Assets in 3 steps: 1) define strategic objectives, 2) identify the intangible resources, 3) actions to develop intangible resources. Three classes of intangibles: Human Capital, Structural Capital and Relationship Capital. The original Meritum final report can be found here. Meritum is also further developed by members of E*KNOW-NET. A summary is found on P.N Bukh's home page .
2001		<i>Caba & Sierra (2001)</i>	SC	An IC measuring model for public sector based on the European Foundation Quality Management Model (EFQM). It integrates the elements from the EFQM model in three blocks which compose intellectual capital: human capital, structural capital and relational capital. Described in Ramirez Y. (2010)
2001	Intangible assets statement	<i>Garcia (2001)</i>	SC	An IC measuring model for public sector based on the IAM with Indicators of: growth/renovation efficiency and stability.
2001	Knowledge Audit Cycle	<i>Schiuma & Marr (2001)</i>	SC	A method for assessing six knowledge dimensions of an organisation's capabilities in four steps. 1) Define key knowledge assets. 2) Identify key knowledge processes. 3) Plan actions on knowledge processes. 4) Implement and monitor improvement, then return to 1). Described in book (2002). <i>Profit with People</i> by Deloitte & Touche. Hard to find. Try Giovanni Schiuma's homepage .
2000	Value Creation Index (VCI)	<i>Baum, Ittner, Larcker, Low, Siesfeld, and Malone (2000)</i>	SC	Developed by Wharton Business School, together with Cap Gemini Ernst & Young Center for Business Innovation and Forbes. They estimate the importance of different nonfinancial metrics in explaining the market value of companies. Different factors for different industries. The VCI developers claim to focus on the factors that markets consider important rather than on what managers say is important. http://www.forbes.com/asap/2000/0403/140.html
2000	The Value Explorer™	<i>Andriessen & Tiessen (2000)</i>	DIC	Accounting methodology proposed by KMPG for calculating and allocating value to 5 types of intangibles: (1) Assets and endowments, (2) Skills & tacit knowledge, (3) Collective values and norms, (4) Technology and explicit knowledge, (5) Primary and management processes. Described in Journal of IC 2000.

				http://www.weightlesswealth.com/downloads/Implementing%20the%20value%20explorer.PDF
2000	Intellectual Asset Valuation	<i>Sullivan (2000)</i>	DIC	Methodology for assessing the value of Intellectual Property.
2000	Total Value Creation, TVC™	<i>Anderson & McLean (2000)</i>	DIC	A project initiated by the Canadian Institute of Chartered Accountants. TVC uses discounted projected cash-flows to re-examine how events affect planned activities. http://www.cica.ca/about-the-profession/cica/annual-reports/item21582.pdf
1999	Knowledge Capital Earnings	<i>Lev (1999)</i>	ROA	Knowledge Capital Earnings are calculated as the portion of normalised earnings (3 years industry average and consensus analyst future estimates) over and above earnings attributable to book assets. Earnings then used to capitalise Knowledge Capital. Baruch Lev's home page
1998	Inclusive Valuation Methodology (IVM)	<i>McPherson (1998)</i>	DIC	Uses hierarchies of weighted indicators that are combined, and focuses on relative rather than absolute values. Combined Value Added = Monetary Value Added combined with Intangible Value Added.
1998	Accounting for the Future (AFTF)	<i>Nash H. (1998)</i>	DIC	A system of projected discounted cash-flows. The difference between AFTF value at the end and the beginning of the period is the value added during the period. http://home.sprintmail.com/~humphreynash/future_of_accounting.htm
1998	Investor assigned market value (IAMV™)	<i>Standfield (1998)</i>	MCM	Takes the Company's True Value to be its stock market value and divides it in Tangible Capital + (Realised IC + IC Erosion + SCA (Sustainable Competitive Advantage)).
1997	Calculated Intangible Value	<i>Stewart (1997)</i>	MCM	The value of intellectual capital is considered to be the difference between the firm's stock market value and the company's book value. The method is based on the assumption that a company's premium earnings, i.e. the earnings greater than those of an average company within the industry, result from the company's IC. It is hence a forerunner of Lev's Knowledge Capital model. Kujansivu & Lönnqvist (2007) gives a good example of the calculation.

1997	Economic Value Added (EVA™)	<i>Stern & Stewart 1997</i>	ROA	<p>Calculated by adjusting the firm's disclosed profit with charges related to intangibles. Changes in EVA provide an indication of whether the firm's intellectual capital is productive or not. EVA is the property of the consulting firm Sternstewart and one of the most common methods.</p> <p>http://www.sternstewart.com/?content=proprietary&p=eva</p> <p>A good evaluation of the method is found here: http://lipas.uwasa.fi/~ts/eva/eva.html</p>
1997	Value Added Intellectual Coefficient (VAIC™)	<i>Pulic (1997)</i>	ROA (doesn't quite fit any of the categories)	<p>An equation that measures how much and how efficiently intellectual capital and capital employed create value based on the relationship to three major components: (1) capital employed; (2) human capital; and (3) structural capital.</p> <p>$VAIC^{TM}_i = CEE_i + HCE_i + SCE_i$ http://www.vaic-on.net/start.htm</p>
1997	IC-Index™	<i>Roos, Roos, Dragonetti & Edvinsson (1997)</i>	SC	<p>Consolidates all individual indicators representing intellectual properties and components into a single index. Changes in the index are then related to changes in the firm's market valuation.</p>
1996	Technology Broker	<i>Brooking (1996)</i>	DIC	<p>Value of intellectual capital of a firm is assessed based on diagnostic analysis of a firm's response to twenty questions covering four major components of intellectual capital: Human-centred Assets, Intellectual Property Assets, Market Assets, Infrastructure Assets.</p>
1996	Citation-Weighted Patents	<i>Dow Chemical (1996)</i>	DIC	<p>A technology factor is calculated based on the patents developed by a firm. Intellectual capital and its performance is measured based on the impact of research development efforts on a series of indices, such as number of patents and cost of patents to sales turnover, that describe the firm's patents. The approach was developed by Dow Chemical and is described by Bontis (2001).</p>
1995	Holistic Accounts	<i>Rambøll Group</i>	SC	<p>Rambøll is a Danish consulting group, which since 1995 reports according to its own 'Holistic Accounting' report. It is based on the EFQM Business Excellence model www.efqm.org. Describes nine key areas with indicators: Values and management, Strategic processes, Human Resources, Structural Resources, Consultancy, Customer Results, Employee Results, Society Results and Financial Results. Their report can be downloaded from www.ramboll.com</p>
1994	Skandia Navigator™	<i>Edvinsson and Malone (1997)</i>	SC	<p>Intellectual capital is measured through the analysis of up to 164 metric measures (91 intellectually based and 73 traditional metrics) that cover five components: (1) financial; (2) customer; (3) process; (4) renewal and</p>

				development; and (5) human. Skandia insurance company brought it to fame, but Skandia no longer produces the report.
1994	Intangible Asset Monitor	<i>Sveiby (1997)</i>	SC	Management selects indicators, based on the strategic objectives of the firm, to measure four aspects of creating value from 3 classes of intangible assets labelled: People's competence, Internal Structure, External Structure. Value Creation modes are: (1) growth (2) renewal; (3) utilisation/efficiency; and (4) risk reduction/stability. http://www.sveiby.com/articles/companymonitor.html
1992	Balanced Score Card	<i>Kaplan and Norton (1992)</i>	SC	A company's performance is measured by indicators covering four major focus perspectives: (1) financial perspective; (2) customer perspective; (3) internal process perspective; and (4) learning perspective. The indicators are based on the strategic objectives of the firm. http://www.balancedscorecard.org/
1990	HR statement	<i>Ahonen (1998)</i>	DIC	A management application of HRCA widespread in Finland. The <i>HR profit and loss account</i> divides personnel related costs into three classes for the human resource costs: renewal costs, development costs, and exhaustion costs. 150 listed Finnish companies prepared an HR statement in 1999.
1989	The Invisible Balance Sheet	<i>Sveiby (ed. 1989) The "Konrad" group</i>	MCM	The difference between the stock market value of a firm and its net book value is explained by three interrelated "families" of capital; Human Capital, Organisational Capital and Customer Capital. The three categories first published in this book in Swedish have become a de facto standard. Download English translation of book here. Download article The Invisible Balance Sheet.
1988	Human Resource Costing & Accounting (HRCA 2)	<i>Johansson (1996)</i>	DIC	Calculates the hidden impact of HR related costs which reduce a firm's profits. Adjustments are made to the P&L. Intellectual capital is measured by calculation of the contribution of human assets held by the company divided by capitalised salary expenditures. Has become a research field in its own right. HRCA journal.
1970's	Human Resource Costing & Accounting (HRCA 1)	<i>Flamholtz (1985)</i>	DIC	The pioneer in HR accounting, Eric Flamholtz, has developed a number of methods for calculating the value of human resources. Several papers are available for download on his home page. http://www.hartr.ucla.edu/faculty/bios/flamholtz.html

1950's	Tobin's q	<i>Tobin James</i>	MCM	The "q" is the ratio of the stock market value of the firm divided by the replacement cost of its assets. Changes in "q" provide a proxy for measuring effective performance or not of a firm's intellectual capital. Developed by the Nobel Laureate economist James Tobin in the 1950's. http://en.wikipedia.org/wiki/Tobin's-q
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Figure F7.1: Comprehensive list of Measurement Approaches for Intangibles

Source: Sveiby (2001)