International Construction Contracting: a study of the geographical and industrial structure of gross value added.

By

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Abbreviations

AIC - Advanced Industrial Country

BIS - Bank for International Settlements

Bn – Billion

C - Condition

CE – Constructing Excellence

CEO - Chief Executive Officer

CITB - Construction Industry Training Board

CPP - Country of Project Performance

DETR - Department of the Environment Transport and the Regions

DTI – Department of Trade and Industry

EBRD - European Bank of Reconstruction and Development

ECERU - European Construction Economics Research Unit

ENR - Engineering News Record

EPSRC - Engineering and Physical Sciences Research Council

ESRC - Economic and Social Research Council

FCF - Fixed Capital Formation

FDI - Foreign Direct Investment

GDP – Gross Domestic Product

GNI - Gross National Income

GNP - Gross National Product

GVA – Gross Value Added

GVPT - Gross Value Project Turnover

FDI - Foreign Direct Investment

H - Hypothesis

HMSO - Her Majesty's Stationary Office

HSBC - Hong Kong and Shanghai Banking Corporation

ICC - International Construction Contracting

ICT – Information and Communication Technologies

ILO - International Labour Office

IIP - Investors in People

ISO - International Standards Organisation

KPI - Key Performance Indicator

LDC - Less Developed Country

MNE - Multi National Enterprise

NIC - Newly Industrialised Country

OECD - Organisation for Economic Co-operation and Development

ONS - Office for National Statistics

OPEC - Oil Producing Exporting Countries

PFI - Private Finance Initiative

TQM – Total Quality Management

QS - Questionnaire Surveys

R&D – Research and Development

SME – Small Medium Sized Enterprise

SSI - Semi-structured Interview

UK – United Kingdom

UKICC - United Kingdom International Construction Contractor

US – Unites States

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Abstract

This report centres on the role of construction in economic development, by appraising the performance of UK international construction contractors in overseas markets. The report discovered that less developed countries retain a lower percentage of gross value project turnover than newly industrialised countries, hindering economic development. It is elicited that this was as a result of project deliverers disfavouring of the engagement of subcontractors indigenous to the country of project performance, while favouring domestic subcontractors with formal partnering agreements. The report sought and offers suggestions on how to increase the levels of project turnover remaining within the country of project performance, and repatriated to the UK. The continued internationalisation of the UK construction industry is appraised and the research discovers that strategically firms do not currently favour developing over developing regions, although potential key geographical markets are identified. The research concludes with the presentation of a conceptual model, highlighting the levels of project turnover an economically classified region can expect to retain for different categories of construction project.

Keywords: Economic development, UK international construction contractors, less developed countries, newly industrialised countries, subcontractors.

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Chapter 1

Introduction

1.1 Overview

Construction is a major industry throughout the world, and an important form of economic activity, accounting for a sizeable proportion of global GDP. The United Nations Environment Programme estimate that approximately ten percent of the global economy is dedicated to the construction of the built environment (Mitullah & Wachira, 2003:06), valued in excess of four trillion dollars annually (ENR, 2006).

International trade, activity undertaken by international construction contracting (ICC) firms, accounts for a sizeable proportion of gross global built environment turnover. For the last five years the top 225 internationally active firms shared revenue of $719bn, up eighty percent for the sample period. Projects completed by UK firms accounted for $50.8bn; representing seven percent of the revenue available (ENR, 2001 - 2006). For the purposes of this research an international construction contractor is a firm that works outside the country in which it is registered. In the context of this research, an internationally active UK construction firm will be referred to as a UK international construction contractor (UKICC).

Theoretically, there is no such thing as international construction[i], for construction is not a commodity that can be traded across international frontiers (Strassman & Wells, 1998:01). Unlike manufacturing processes of production, in which the final products are in motion while the instruments of production are stationary, in construction the relationship is reversed (Linder, 1994:03), with each product fixed in location (Strassman & Wells, 1998:01). However, as identified through the Engineering News Record (ENR) data, national boundaries do not seem

to present barriers, as there has always been a certain amount of trade in international construction (ibid).

This report centres on the role of construction in economic development, by appraising the performance of UKICC in overseas markets. Although there is a growing body of knowledge on the gross value turnover of ICC, the body of knowledge on the geographical and industrial structure of the value-added represented by this turnover is still in its infancy.

The aim of this report is to assess the initial gross value project turnover (GVPT) destination for a representative sample of internationally procured construction projects, delivered by UKICC. The results will contribute to the development of benchmark data which will allow both the UK and the country of project performance (CPP), to anticipate levels of GVPT initially retained from differing project types contributing to economic development. This data is essential if governments are to set Key Performance Indicator (KPI) targets for retained levels of GVPT, and, a conceptual model is introduced to aid the identification of retained levels. The report also ascertains why some categories of countries secure a lesser percentage of GVPT than others, and if the behaviour of UKICC is contributory. More ~~laterally~~ the report assesses the continued internationalisation of UKICC, and appraises the future of ICC. The following research questions provide the focus and direction for this piece of research:

Q1: Do UKICC disfavour the engagement of subcontractors indigenous to the location of project performance?
Q2: Do UKICC favour the engagement of partnered suppliers when operating overseas?

Over the past thirty[ii] years the international construction sub-market has become characterised by fierce competition as contractors continue to enter from less developed regions of the world such as Korea, Mexico,

and China, targeting projects requiring little technical expertise but a high input of unskilled labour (Seymour, 1987:01-2; ENR, 2005a:29). Many of these nations, backed by home government support, export entire construction teams, taking advantage of lower wage rates and undercutting traditional exporters[iii] (Seymour, 1987:02). As a result the ICC arena has dramatically changed and is now characterised by diverse project supply chains, resulting in GVPT dispersed amongst a wider variety of project stakeholders and construction project process participants (ibid), resulting in reduced economic spill-over, and subsequent multiplier[iv] and acceleration[v] effects.

Therefore, the proportion of the initial GVPT initially remaining within and contributing to the GDP, and as a consequence the economic development of the CPP, is reducing. In addition, due to this increased volume of international competition, the volume of international business won by UKICC, and their international supply chains is reducing (Strassman & Wells, 1998:12-18), and the GVPT repatriated to the UK and contributing to its GNP, weakened. From this, several key problems and issues emerge.

1.2 Statement of the problem

The problem for governments of the country of the CPP lies in maximising the level of work performed on construction projects by indigenous firms, so that maximum levels of GVPT remain within its boundary in the first instance, generating maximum multiplier and accelerant benefits. The UK government will be equally concerned, but in an entirely opposite direction. The initial issue is the desire to maximise the number of projects won by its UKICC and, as such, their international supply chain. A further issue is to increase the volume of work performed by members of the UK construction supply chain on international projects delivered by non UK based construction contractors. The problems under investigation led to the development of

two hypotheses that form the foundation of this research as a theoretical investigation:

H1: The lower a country of project performance ranks on the scale of level of economic development - GNI per head- the lesser the level of gross project turnover is initially retained by its economy.
H2: Subcontractors with a formal partnering agreement with a UKICC secure higher levels of GVPT than subcontractors with other forms of agreement.

1.3 Construction's role in economic development

The construction industry's importance is not only related to value but the dynamic role it plays in the process of economic development, by creating the physical facilities which are important factors of production, the infrastructure and utilities which support productive activity and, the premises and facilities needed for the consumption of goods and services (Ofori, 1993:265; Bon & Crostwaite, 2000:07; Mitullah & Wachira, 2003:01), also known as fixed capital formation (FCF). UK examples of FCF include the Metropolitan Line,[vi] the Firth of Forth Bridge[vii] and the Blackwall Tunnel.[viii] A more contemporary example is Crossrail - which will boost the UK economy by £60bn over the next sixty years, and attract new businesses to the capital, bringing up to 80.000 new jobs (The Londoner, 2006:06).

Economic development, in this context, is the entire historical process of economic transition involving the structural transformation of an economy through industrialisation and raising of GNP and Gross National income (GNI) per capita, whereby an Less Developed Country (LDC) becomes an Newly Industrialised Country (NIC), and ultimately an Advanced Industrial Country (AIC) (Pass & Lowes, 1988:147; Bon & Crostwaite, 2000:13).
An important aspect in the transition from LDC to NIC, has to do with the rate of FCF accumulation (Pass & Lowes, 1988:148), and is the key to

economic growth and development (Szirmai, 2005:102). In this sense, construction projects are about the creation of new value through physical asset creation (Winch, 2002:5), and have the potential to foster or inhibit overall economic development (Linder, 1994:5). The construction industry in this context includes international firms undertaking the assembly of materials & components on-site, and the repair of buildings and infrastructure (Ive & Gruneberg, 2000:09, Pearce, 2003:09), and constitutes a narrow definition of the industry.

The demand for FCF depends directly on the expected demand for other final products or services, composing of consumer and investment demand - as such, the demand for ICC is derived (Ive & Gruneberg, 2000:205). The underlying hypothesis is that the architecture of demand is the single most important determinant of industrial structure (Drewer, 1978:50). As such, demand for ICC has resulted in the creation of a sub-market that is large, mature, highly fragmented and very competitive (Langford and Male, 2001:126).

CI alone

Although there are differences to the opinion of its value, in the early stages of economic development, in its maximum sense, construction activity can contribute up to 20% of GDP, 10% of GVA, with new construction work representing between 45-65% of FCF (Turin, 1978:39-41; World Bank, 1994:11; Hillebrandt, 2000:19). The wider definition of the industry, the supply chain for all construction materials, products and assemblies, can imply an approximate doubling of the contribution to GDP made by the narrowly defined sector (Pearce, 2003:15). In this sense, the construction industry is of great significance as it produces such a large component of GDP (Hillebrandt, 2000:20).

As a user of a wide range of goods and services, and cutting across most sectors and regions of the economy, the construction industry has a direct and indirect effect on the outputs of other industries (Hable-Selassie, 1978:53; HSBC, 2005:12), generating extensive multiplier

effects through its backward and forward linkages, and as a result, the generation of demand by growth in the rest of the economy through acceleration (Ofori, 1990:92; Banister & Berechman, 2000:39). Therefore if a CPP does not retain an adequate percentage of GVPT, economic development will be impeded.

1.4 The relationship between construction and economic development

Several studies, Berry (1973), Burns & Grebler (1977), Turin (1978), examine the relationship between construction activity and economic development, and show that the share of construction first grows and then declines with the level of economic development, measured in terms of GDP per capita. Wells (1986) statistical analysis reveals a clear positive relationship between GDP per capita, and the three separate measures of construction activity: value-added as a percentage of GDP, gross output as a percentage of GDP, and employment as a percentage of Economically Active Population (19). More recent analysis (Bon & Crostwaite, 2000), indicate that constructions share of GDP first grows during LDC status, peaks during NIC status and then declines, as countries move to AIC status; and it is reasonable to assume that these relationships holds true for any country over time (32).

Construction is especially relevant in this context of economic development as it offers an index of economic maturity through new construction orders. Once the bulk of physical capital is in place, the construction sector shifts from being demand, to supply driven (Bon, 2000:281), as its share of GDP shifts. In other words, construction activity switches from relative to absolute decline at some stage of economic development (Bon & Crostwaite, 2000:18). Construction demand can therefore be determined not only by investment and growth, but also by a country's stage of economic development (ibid:34). Therefore, the role of construction changes as countries

proceed from LDC, through NIC and ultimately AIC, a process which Bon & Crostwaite (2000), claim is unidirectional (17).

Rostow (1960) sketched a stage theory of economic development in which each society passed through the same five stages[ix], with some countries taking the lead and others lagging behind. Just as in Marxist theory the path of development is the same for all societies (Szirmai, 2005:79). However, Kuznets (1965), along with many other economists, had serious objections to the unilinear concept of development, and argued there was nothing inevitable about the stages of development and claimed countries can move backwards as well as forwards (cited Szirmai, 2005:81) - the case currently with some African countries. This was reinforced by Sachs (2005) who cites that economic development occurs at different rates in different countries (38).

1.5 International construction projects - a classification

Developing countries require a wide range of constructed goods to achieve their economic development objectives. Turin (1973) and Drewer (1980) classified the type of projects used to construct these goods as international-large, conventional-modern, national-modern and traditional sub sectors (cited Ofori, 1993:04). Ofori (1989) suggested an alternative system for categorising with two main variables; formal and informal, with the key features technical sophistication and frequency of projects (ibid).

Figure 1: Classification of international projects

Number of projects

Conventional - medium/small	Conventional large
Self-help	International

Source: Ofori, 1993

Technical sophistication

Projects in the formal sector comprise the international subsector and the conventional-large subsector (Ofori, 1993:05). Projects in the international subsector are infrequent, large, technically-complex, requiring high levels of technical expertise and sophisticated plant, equipment, and materials, most of which are imported. The client is invariable the government, projects are often financed wholly or partly with foreign aid, the subject of international tenders and the buildings and works tend to be designed overseas and undertaken by foreign owned firms (Ofori, 1993:5-6). The projects forming the research sample comply to this definition.

1.6 Developing countries and economic development

Many of the projects undertaken at the early stages of economic development could be considered major, with a long life span, and large budgets (ibid) Rosenstein-Rodan theorised about simultaneous growth and development centring on large scale planned projects, and claimed

that a 'big-push' could launch a chain reaction throughout the whole economic system (Cypher & Dietz, 1997:137). However, many LDCs and some NICs often lack strong technical development, and do not possess the necessary knowledge and skills required by the latest construction and design technology, and are forced to procure projects overseas (Howes & Tah, 2003:40). Therefore, it is essential for governments of the CPP to maximise the benefits of construction projects by minimising economic leakage.

1.7 UKICC and economic development

The ICC sub-market comprises major firms delivering major projects. In 2005 the top performing[x] UKICC had an average turnover of six point two billion dollars. However, it is estimated that between seventy five per cent and ninety per cent of a major construction project is subcontracted (Haksever, 1996:240; Meyers, 2004:71). Therefore, it is essential for the UK government to maximise GVPT repatriated, by optimising the level of the construction industry supply chain engaged in the international sub-market.

1.8 Report structure

What follows is divided into eight chapters. The following chapter reviews the literature on ICC and appraises the reports analytical framework. Chapter three presents the reports research method and methodology. In Chapter four the focus shifts and examines the geographical structure of UKICC value added, while chapter five examines the industrial structure of this value added. Chapter six appraises the future of ICC. Chapter seven presents a conceptual model for the identification of GVPT retention. Finally, chapter eight summarises the reports main points and draws conclusions from the findings presented in earlier chapters. Emphasis in this chapter is also on making recommendations.

Chapter 2

International construction contracting - a literature review

2.1 Overview

The profile of the international construction sub-sector is high, and the potential for theoretical and empirical analysis considerable. However Lucas (1986), states this profile creates a false impression that plenty of information is available (x), which is reinforced by Seymour (1987), who cites that literature and empirical studies on ICC are not extensive (07).

This chapter presents a review of the literature concerning ICC, examining theoretical and empirical studies at industry level.

2.2 History of international construction contracting

British involvement in ICC is not a new phenomenon. Early in the 1800s a vanguard of British railway contractors, notably Brassey, Peto and Betts, were operating around the world - the first paradigm of ICC (Linder, 1994:04). One of their first projects undertaken was the Le Havre - Paris railway, and by 1848 they had constructed three-quarters of the French railway track (Linder, 1994:37).

However, British firms by no means monopolised, and by 1849 US contractors had commenced work on the Panama Railroad, and early in the twentieth century achieved international dominance with the completion of the Panama Canal (ibid:101). A position, arguably, it still retains. In the aftermath of World War 2 firms completed profitable re-building and development programmes in newly independent[xi] states, funded by institutional loans (Langford & Male, 2001:129), with potential gains attracting non-traditional construction exporters (Strassman & Wells, 1988:04) from LDCs and NICs.

The first round of oil price increases brought a four-fold increase in revenues, and by 1975 OPEC countries became the source of one-third of all new foreign construction business[xii] (Linder, 1994:172). By the 1980s this petrodollar fuelled boom was over (ILO, 1998:03), although demand in the Far East provided opportunities. In the 1990s demand declined in developing countries (Langford & Male, 2001:123), whereas markets in Europe and North America remained stable (ILO, 1998: 04). Lately, the continued growth and development of emerging nations, and one off factors such as the Gulf War derived new demand (Langford & Male, 2001:129).

Table one illustrates the areas where the top 225 international construction contactors secured their revenue over the previous five years.

Table 1:Sources of revenue for top 225 international construction firms

	Middle East	Asia	Africa	Europe	U.S.	Canada	Latin America	Total $bn
2001	08.54	21,98	8,82	28,25	21.7	6.54	10.63	$106
2002	09.74	22.68	11.14	33.09	23.1	4.46	9.55	$116
2003	16.46	25.03	12.66	46.66	22.8	4.76	9.89	$140
2004	25.42	30.47	14.28	60.27	22.80	4.97	9.04	$167
2005	28.15	37.78	15.14	68.58	24.57	6.31	12.08	$190

Source: ENR, 2001 - 2006

For this period the top 225 international contractors revenue increased by eighty percent. What is interesting to note here is that AICs[xiii] represented on average sixty four percent of revenue annually. This is contrary to Seymour's (1987) theory that major markets for international contractors will be in developing countries. However, a more recent study discovered that UKICC increased their overseas turnover [1990-96], by winning business in developed countries (Crostwaite, 1998). This level of demand for ICC gives an indication why firms are

2.3 International business strategy

This early phases of internationalisation arose under the specific conditions of uneven development between Britain and Western Europe. As railway construction subsided towards the end of the 1840's, railway building became a service which could be exported, when capital invested could not be employed profitably in Britain (Linder, 1994:38).

Hillebrandt et al (1995) observed that a general reaction from constructors to a falling domestic workload is to undertake more contracting work abroad (80). Langford & Rowland (1995 Langford & Male (2001), and Imbert (1990), build on Hillebrandt's et al thesis and highlight further objectives why firms choose to internationalise. These include:

- Market saturation in the domestic markets and unreasonable return on assets.
- Greater profitability and long-term profitability is anticipated from internationalisation than diversification.
- International activity allows realised profits to be re-invested and existing fixed capital to be utilised more profitably that in a domestic setting.
- Domestic demand declining.
- Maximising share value, profits and dividends.
- Even out business cycles through geographical diversification.
- Increase turnover and balance growth.

By definition a UKICC works outside the country in which it is registered. It is therefore classed as a multi-national enterprise (MNE), and influenced by economic theory pertaining to these enterprises (Seymour, 1997:10; Crostwaite, 2000:07). ~~The dominant theoretical~~

~~(Seymour, 1997:10; Crostwaite, 2000:07)~~. The dominant theoretical framework for analysing the international behaviour of MNEs is the eclectic paradigm of international production.

2.4 The eclectic paradigm

Initially conceived by Dunning in 1977,[xiv] the eclectic paradigm of international production is an approach that selects the relevant parts of various theory[xv] and adapts them to analyse and explain the behaviour of MNEs (Crostwaite, 2000:07). Taken separately, none of these theories offer a comprehensive explanation of MNE activity - taken together - they do (Dunning, 2000:166).

The paradigm suggests that the propensity of construction firms to produce outside their national boundaries reflects three things: ownership advantages; internalisation advantages; and, location advantages (Seymour, 1989: 44).

2.4.1 The ownership advantages of firms

The first condition of the model refers to the nature of competition within international production (Seymour, 1989:45).

C1: 'The firm possesses ownership advantages over firms indigenous to the host country, and also over firms of other nationalities'

This condition suggests that for enterprises from one country to be involved in another country, they must acquire or possess assets not available to indigenous firms. These advantages can be derived from three sources: firm-specific, industry-specific and country-specific factors (ibid).

2.4.1.1 Firm specific factors: are those generated by a firm in order to differentiate its product from other firms in the industry and come under

three headings: name of the firm, human capital, size of the firm (ibid:46)

2.4.1.2 Industry specific factors: are those generated as a result of being a constituent member of a certain industry which has advanced core technical knowledge which assists in the process of differentiating.

2.4.1.3 Country specific factors: are characteristics of the home or host country that the firm may exploit to differentiate itself from enterprises of other nationalities and are likely to come under two headings - comparative advantage and home country government support (ibid:47). To market services successfully, MNEs must have access to some core technological, managerial, financial, or marketing asset (Dunning, 1993:252).

2.4.2 Internalisation advantages of firms

For internationalisation to take place a second condition must be satisfied:

C2: 'Ownership advantages are most advantageously exploited internally by the enterprise rather than externalised by means of selling or licensing those advantages to other firms'

Ownership advantages include information, technical knowledge, brand names and managerial expertise (Seymour, 1989:49). The various options open to the international contractor in exploiting the firm's ownership advantages may be summarised under three possible modes of market servicing:

- Exporting: moving personnel between markets and projects.
- Licensing: A firm's name is an easily transferable property right, and can be instrumental in the winning of a bid

- Foreign direct investment: Undertaking production in a foreign country, where personnel work within that market (ibid:51).

The implicit benefits and costs of the internal hierarchy in ICC means that production does not need to be fully internalised, this need only occur where the factors of production are continually in use. Internalisation is thus a means of guaranteeing that the firm remains competitive and, as such, forms an integral part of the eclectic approach (ibid:52).

2.4.3 Location advantages of countries

If the firm chooses to internalise its advantages, foreign direct investment (FDI) will take place in the Dunning model only if the third condition is realised:

C3: 'It is more advantageous for the firm to undertake production outside national borders using internalised ownership advantages than it is to service foreign markets by domestic production and export'

This is a necessary condition since, if no benefits accrue to the interaction of ownership advantages and the characteristics of a specific location, there is no reason to enter foreign markets (ibid:53).

2.5 Analytical framework

The theoretical argument on which this work stands is the eclectic paradigm of international production satisfactorily highlights the major issues of ICC in its contemporary setting. Therefore, the eclectic paradigm is the most applicable analytical framework for this research project, examining the behaviour of UKICC.

This chapter reviewed the literature on ICC and appraised the reports analytical framework. The next chapter details the method and methodology used in the production of this report.

Chapter 3

Research method and methodology

3.1 Overview

The aim of this research project is to assess the initial GVPT destination for a representative sample of internationally procured construction projects, delivered by UKICC. The project will contribute to the development of benchmark data which will allow both the UK and the CPP, to anticipate levels of GVPT initially retained from differing projects, contributing to economic development.

The method[xvi] of research chosen for this project was a combination of questionnaire surveys (QS) and case studies, with the tactics of the enquiry questionnaires and semi-structured interviews (SSI). The research methodology involved both primary and secondary data collection. The initial research comprised secondary analysis on the international activity of UKICC using published data. This formed the first stage analysis of this intellectual puzzle, refined the research questions, and influenced the method of informing and guiding the inquiry. This exercise was followed by the collection of primary data from project case studies, and semi-structured interviews.

3.2 Secondary analysis

The first stage of the secondary analysis exercise centred on determining if any previous research had been completed addressing the aim of this project. Responses received from The World Bank,[xvii] the EBRD,[xviii] the EPSRC,[xix] and the BIS, [xx] cite that no research has been undertaken in this area. In addition, an appraisal of the most recent 311 EPSRC Portfolio research projects revealed that none of the completed, or in progress projects, addressed the aim of this research.

The second stage secondary analysis exercise centred on identifying national competitive advantage. More specifically, identifying UKICC. Secondary analysis was based, in the main, on data from the US trade journal Engineering News Record (ENR), which produces statistics on international built environment activity. Linder (1994) comments, that ENR data is useful for capturing trends over time, and the relative distribution among firms and regions of performance (25). Although there are limitations, specifically in the context of this research - data is firm based and not project-based, ENR represents a valuable data set for ICC (Edkins & Winch, 1999:24), and quoted widely. Further limitations include:

- Data is supplied by firms - in response to a questionnaire.
- Figures are for turnover not added value.
- Data only includes the top 250 ranked firms, with some firms not responding for internal reasons.
- The survey is limited to 150 countries.
- Current prices are used and spending is measured in dollars (Edkins & Winch, 1999:23-24; Bon & Crostwaite, 2000:29; Crostwaite, 2000:51).

To supplement this data set, identification of UKICC not appearing in ENR were identified from the UK's Building magazine 'Top Contractors' series, from the Chartered Institute of Purchasing and Supply's 'Construction Procurement Group,' and, also from industry contacts.

3.3 Quantitative primary analysis

To address the project aim, primary data was gathered from fifteen completed international projects from ten UKICC. To be included in the study firms met the criteria that their headquarters are in the UK, resulting in the sample having the same national identity.[xxi]

A confidential self-administered postal QS was used as the method for gathering this data set [Appendix 1]. It was felt that this was the easiest methodology for collecting numerical data, and gave the participants time to respond. A closed format methodology was used, with clarity of wording and simplicity of design. Response choices, for appropriate questions, were determined by the author, facilitating a short completion time. However, opportunity was given for unanticipated responses, of which several respondents availed.

During the design of the constructs all scientific advice[xxii] was taken on board to secure a high response rate. The framing of the questions received considerable attention to remove ambiguity, a problem identified during the initial undertaking of this research. Following development, the QS was pre-tested with academics, business analysts, and colleagues. To ensure correct interpretation of the questions a pilot exercise was conducted in June 2006, with a firm that was later omitted from the project, ensuring a clean data set, after amendment.

The QS was distributed to executives of thirty firms. Individuals received personal communications where possible. The QS was accompanied by a covering letter clearly indicating the purpose of the research, conveying its importance and assuring confidentiality. The letter also welcomed the opportunity of interviewing firm representatives to achieve the second stage primary analysis exercise. Five firms who felt that they could not provide data agreed to participate in the SSI exercise.

The use of a precursor letter to introduce the research was rejected, as it was felt that this methodology would introduce an unnecessary stage of communication. This methodology was used in the initial undertaking, and a more lucid method was preferred for this undertaking, with the vocabulary and syntax of the cover letter simpler. This constituted the first stage empirical data set, and guided the second stage primary analysis exercise, SSI.

3.4 Qualitative primary analysis

The content of the interview pro-forma [Appendix 2] was influenced by case study data, and pre-tested. Interviews provided data and qualitative commentary against the first stage empirical data, and insight into the behaviour of firms when operating overseas, unavailable from published sources.

Interviews were conducted in a clear and non-threatening manner to achieve neutrality, with a fluid agenda and open-ended questions. Conversation, around specific themes, was initiated for the purpose of obtaining relevant-research information, with the specific purpose of securing unanticipated answers suggesting ~~untaught~~ unthought-of relationships or hypotheses.

Fifteen interviews were completed with representatives from fifteen firms. Interviewees included executives, project directors and procurement managers.

3.5 Ethical considerations

Methods used to gather data were carried out in a value free and value neutral manner. As such,

- Potential participants were informed by letter of the purpose of the research and invited to participate.
- All primary research data will be commercial in confidence and no data or quotations will be attributable to individuals or firms.
- All participants were individually thanked.

This chapter detailed the method and methodology used in the production of this report. The next chapter presents and analyses the data on the geographical structure of UKICC value added.

Chapter 4

The geographical structure of international construction contracting value added

4.1 Overview

This chapter examines the extent to which the sample projects have contributed to the economic development of the CPP, through the initial retention of GVPT. This will be achieved by assessing the data received from the completion of the QS detailing the geographical structure of the value added. Supporting this data set will be information collected from SSI. Analysis of this data will also allow evaluation of the behaviour of UKICC concerning the engagement of subcontractors indigenous to the location of project performance. The chapter also ascertains the perceived risks in engaging said subcontractors, and what actions can be taken to strengthen their position in securing increased levels of GVPT.

4.2 Analysis of gross project value retained by developing countries

The sample projects mean value is eighty eight point three million pounds, complying to Ofori's definition that international projects are large (Ofori, 1993:7). Table two presents the data on the approximate GVPT initially remaining within the CPP. Table three shows the mean values retained for the sample and reports that LDCs should expect to retain twenty per cent of GVPT initially. This analysis also reveals that LDCs, have, on aggregate, from the sample, retained a lower percentage of GVPT than NICs.

Table 2: Data of overseas projects completed by UKICC

Work under-taken by local to firms	Design Work %	Supply & fix %	Supply only %	Lab only %	Tot %	Type of project	Country project p/mance	Value (m)
Pro 1		12	3	5	20	Manu	Singa	£90
Pro 2		12	5	10	25	Pharma	P-Rico	£145
Pro 3		15	10	5	30	Pub Bld	UAE	£200
Pro 4		15	6	3	24	Trans	UAE	£185
Pro 5		11	8	6	25	Mining	Senegal	£27
Pro 6		13	7	10	30	Pri Bld	Sudan	£56
Pro 7		5	4	9	18	Trans	Kenya	£18
Pro 8		4	6	10	20	Trans	Nigeria	£32
Pro 9		4	4	8	16	Trans	Ghana	£40
Pro 10	10	20	8	7	45	Plb Bld	Qatar	£100
Pro 11	7	15	09	12	43	Pharma	P-Rico	£25
Pro 12	5	2	2	4	13	Oil	Chad	£150
Pro 13	7	2	2	7	18	Oil	Mali	£125
Pro 14		6	5	12	23	Pri Bld	Ghana	£45
Pro 15		5	5	8	18	Trans	Nigeria	£87

Source: QS

Table 3: Mean value retention for principle categories

	Total percentage project value retained	Sample size	Mean value
All projects	368	15	24.53
Projects in NIC	187	6	31.16
Projects in LDC	181	9	20.11

Source: QS

Only four projects complete any design activity in the CPP. This fits with Ofori's definition of an international project as one which tends to be designed overseas (Ofori, 1993:7). Two interviewees revealed that design work, in this context, was detailed work, with the overall concept

and scheme designs being completed in the UK. One interviewee commented:

'we are starting to use companies [NICs] to complete detail design work, as this is much cheaper than using in-house resources. However, we generally use firms we have an interest in, or anticipate having an interest in - so it could be argued it is still in-house but just in another country' - International Director

This behaviour complies to the third condition of the eclectic theory of international production. The strategy of using local firms to complete aspects of the design or building regulations approval is also used to comply with requirement for technology transfer as laid down in the project agreement. However, there can be difficulties with this strategy.

'using local contractors to complete critical aspects of a project can run high risks to the programme...its something we look carefully at' - CEO

Table four links the disaggregated project data, to the countries ranking on the World Banks Gross National Income per capita database.

Table 4: Sample LDC countries position on GNI database

Ranking	Economy	GNI per capita 2005	Percentage project value retained
160	Senegal	$710	25
164	Sudan	$640	30
169	Nigeria	$560	19 (mean value)
171	Kenya	$530	18
176	Ghana	$450	18.5 (mean value)
180	Chad	$400	13
183	Mali	$380	18

Source: World Development Indicators database, World Bank, July 2006

It can be seen that both Sudan and Mali have retained higher percentages of GVPT than countries ranked above them, in the scale level of economic development. Therefore, from the sample projects, a country's position on the scale level of economic development does not dictate the percentage of GVPT it economy will initially retain.

What the data does not tell us if it is better for a developing country, in the context of GVPT retention, to employ a contractor from an AIC, NIC or a LDC. As these case studies have been completed by firms from an AIC, the results could be higher than if comparing against a sample completed by an NIC or LDC, who may adopt entirely different business models (Stallworthy & Kharbanda, 1985:42). New players within the international sub-market, particularly LDCs, have entered with very aggressive prices, as a result of low labour costs (ENR, 2006), with contractors exporting entire construction teams to complete projects (Seymour, 1987:02). This situation was confirmed by Abdul-Aziz (1995) in his study of the Malaysian construction industry. The decision on who to appoint could have an impact on the levels of GVPT retained, and as such the projects contribution to economic development.

4.3 Participants general views of international market

Supplementary information was collected during the SSI to support the case study data set, with a view to discovering why LDCs may claim a lower percentage of GVPT than NICs.

Several general questions [Appendix 2: Part 2 - Q1-3] were asked on the percentage GVPT a CPP could expect to retain from a general project. The data collected is set out in Appendix 3. Ten interviewees felt they could provide an answer. What is interesting to note here is the similarity of the two mean data figures, taking into account the possible rounding of figures by interviewees. The mean result for this exercise is twenty six point five per cent. Therefore the results of the two separate

exercises have just a one point nine seven per cent variance, reinforcing the accuracy of the data set.

Interviewees felt that this percentage would change for different project types, and different CPP. The range of data provided for retention ranged from fifteen percent to eighty five percent in developing countries. The higher figure would be representative of a general construction project, with local materials utilised and operatives recruited from the conventional-medium small subsector. Ofori (1993) states that the construction industry in developing countries is characterised by a multiplicity of small firms (12) lacking technical and management expertise (ibid:15), with low levels of skilled construction workers (ibid:24), which is also confirmed by Strassman & Wells (1988:19). Therefore, according to Morcos (2003) these types of indigenous contractors generally gain in the context of general construction projects by being able to increase equipment and especially labour productivity, and potentially benefit from some technology transfer (cited, Ganesan & Kelsey, 2006:745), which in the long-run is more important than resource flows (Strassman & Wells, 1988:20), as countries move through economic development.

The lower figure interviewees felt would be representative of very technical projects performed in LDCs, characterised by highly skilled labour, and high levels of plant technology. In this context UKICC possess ownership advantages over indigenous firms. These ownership advantages include firm specific factors[xxiii] and, industry specific factors.[xxiv] Therefore, the behaviour of UKICC complies with the first condition of the eclectic theory of international production.

Interviewees felt, albeit articulated with different language and vocabulary, that the lesser the level of economic development a country had achieved, the less opportunity it had of retaining a significant share

of GVPT. That said, did these participant firms have a policy of engaging with indigenous contractors?

4.4 Engaging with indigenous subcontractors

All interviewees [Table 5] claimed their firms had a policy of engaging with firms in the CPP. However, only twenty six per cent confirmed there was a set target for engagement, and no interviewee would expand on achievement. Although not requested it would be of interest ascertain if these policies are available to view.

Table 5: Engaging with indigenous contractors

General questions	Yes %	Not sure %	No %	Sample size
Does your firm have a policy of engaging with indigenous subcontrators, in the country of project performance?	100	0	0	15
Is there a target for this engagement?	4	3	8	15

Source: Interviews

From these results it could be argued that UKICC do not actively attempt to engage with indigenous contractors, but just play lip service to their policy to satisfice clients. One interviewee commented:

'the culture of countries is of paramount importance in the employment of local contractors....it can be hard to deal with a company who is not able to fit in with our systems and procedures' - International Procurement Manager

Table six reinforces the argument as UKICC did not consider the availability of indigenous subcontractors very important when appraising international opportunities. However, interviewees were more forthcoming when asked what actions should be taken[xxv] to strengthen the position of subcontractors in the CPP in securing business on

international projects. All suggestions are amalgamated into the following recommendations:

Table 6: Appraisal of international opportunities

	Very important	Important	Not important	Sample size
Availability of indigenous sub-contractors	20	47	33	15

Source: Interviews

- Compile approved[xxvi] lists of regional and sub-regional subcontractors.
- Approved subcontractors should have access to primer information concerning all internationally procured contracts.
- Subcontractors not gaining approved list status should have access to government supported business development programmes.
- Subcontractors should have access to business clubs allowing networking and the opportunity of attending seminars centring on ICC requirements.

4.5 Engagement of indigenous subcontractors

Taking that UKICC have policies for the engagement of indigenous subcontractors, at what stage of project execution would interviewees expect to engage a firm, and any perceived risk associated with engagement.

Table seven highlights that, in general, the perception is to automatically place indigenous contractors in developing countries towards the lower end of the project supply chain. One hundred per cent of participants [Appendix 2: Part 3 - Q3] went on to state that engaging with indigenous sub-contractors in developing countries carried higher risk than their existing UK supply chain.

Table 7: Engagement of indigenous contractors

At what stage of the supply chain are you most likely to engage an indigenous subcontractor	Tier 1 %	Tier 2 %	Tier 3 %	Tier 4 %	Other %	Sample size
AIC	100	100	100	100	100	15
NIC	0	13	40	86	100	15
LDC	0	0	20	53	100	15

Source: Interviews

Table 8: Perceived risk of engaging with indigenous subcontractors

	Financial %	Operational %	Competency %	Sample size
AIC	86	33	13	15
NIC	100	66	60	15
LDC	100	86	86	15

Source: Interviews

Table eight provides data on how interviewees perceive this risk. Several interviewees felt that the higher risks associated with subcontractors in the CPP can be as a result of the current national conditions. This is supported by Han & Diekmann's argument that country conditions determine the initial circumstances of a project, such as political, economic or cultural (2001:766). Nevertheless one interviewee commented:

'when faced with employing local firms it is best to attempt to do this outside the critical path of the project, and as much as possible towards activities which can be recovered without affecting the programme' - CEO

Interviewees were asked [Appendix 2: Part 3 - Q4] did the perceived risks reduce the further down the supply chain a subcontractor was engaged? Sixty six per cent replied yes for AICs, sixty per cent replied no for NICs and, one hundred per cent replied no for LDCs. Therefore

LDCs fare worse in perception than NICs and AICs. However, these results may be biased because of the volume of procurement managers interviewed, a group typically risk averse.

4.6 Operational complexity and value-added

In addition, interviewees felt that LDC firms would perform low complexity and low value-added tasks on projects. However, several interviewees stated that on some projects, in LDCs, firms had completed high-value added work of high operational complexity. However, this is relative, because what may be of high operational complexity on one project, for example general building, may not be considered in the same category on others, i.e. petrochemical.

Table 9: Engagement of subcontractors - operational complexity

Which category of operational complexity is it most likely to engage an indigenous subcontractor	LOW %	MED %	HIGH %
AIC	100	100	100
NIC	100	46	13
LDC	100	26	00

Source: Interviews

Table 10: Engagement of subcontractors - value-added

Which category of added-value is it most likely to engage an indigenous subcontractor	LOW %	MED %	HIGH %
AIC	100	100	100
NIC	100	53	20
LDC	100	20	00

Source: Interviews

When asked what actions should be taken to strengthen the position of indigenous subcontractors concerning the attainment of higher operational complexity and high value-added work, interviewees provided several suggestions:

- Governments should consider guaranteeing the financial status of subcontractors.
- Contractors should concentrate on higher technical skill attainment, and centre their activities on adding value to the activities of the main contractor.
- Contractors should develop the competencies of their workforce aligning themselves with current construction technology.
- The expectations of some subcontractors need to be managed with entry levels clearly established.

These and the recommendations in 4.4 are endorsed by Miles and Neale (1991) in their work on appraising the construction industry in Singapore, India etc....and, also supported by Henriod et al (1984) and the World Bank (1988).

4.7 Summary analysis

The results from the QS and SSI highlight some concerns about the appointment of subcontractors in the CPP. The case studies analysis results revealed that LDCs can expect to retain less of the GVPT initially than a NIC. Further analysis tested hypothesis one:

H1: the lower a country of project performance ranks on the scale of level of economic development - GNI per head - the lesser the level of gross project turnover is initially retained by its economy.

Comparison of the range of CPP present in the project sample, on the GNI per capita database, reveal that several LDCs secure a higher percentage of GVPT initially than countries ranked above them on the scale level of economic development. Therefore H1 is refuted.

In attempting to ascertain why an LDC may expect to secure less of the GVPT than an NIC, responses were sought from interviewees to specific

questions. Responses revealed that twenty six percent of UKICC had a target for the engagement of indigenous subcontractors, with a further twenty per cent considering the availability of indigenous contractors important when appraising overseas opportunities. Interviewees felt that when appointed, indigenous subcontractors would be found generally towards the lower end of the supply chain, completing tasks of low operational complexity and low value-added. This is a consequence of one hundred per cent of interviewees indicating that engaging with subcontractors overseas carried higher risk than engaging with domestic supply chains, and that the perceived risks did not diminish the further down the supply chain a contractor was engaged in an LDC.

Therefore the reasons LDCs retain less of the initial GVPT than an AICs is because UKICC disfavour the engagement of subcontractors indigenous to the country of project performance.

This chapter presented and analysed the geographical structure of UKICC gross value added. The next chapter presents and analyses the industrial structure of UKICC gross value added.

Chapter 5

The industrial structure of international construction contracting gross value added

5.1 Overview

This chapter examines the performance of the UK construction industry in international markets. More specifically, the levels of profit repatriated GVPT through the activities of UKICC, and their UK supply chains. This will be achieved by assessing the data provided in the QS concerning the industrial structure of value added. Analysis of this data will also allow examination of the extent to which UKICC favour the engagement of partnered subcontractors when operating overseas. Supporting this data set will be information collected from SSI. This chapter also examines the skills shortages negating the UK construction industry securing a larger part of the international sub-market. Finally, the continued internationalisation of the UKICC is appraised.

5.2 Analysis of gross project values repatriated to the UK

Table eleven [Page thirty three] provides data on the GVPT repatriated by UKICC. What is unclear, from the data, is if some firms just performed the management of on-site activities, while others managed the complete process,[xxvii] explaining the variance. Table twelve [Page thirty three] shows the mean values repatriated for the whole sample.

Table thirteen [Page thirty four] provides data on the case studies supply chains. The lowest percentage repatriated was from a private building, where much of the materials and labour may have been available locally. This fits with Ofori's (1982, 1990) recommendations to design buildings, in developing countries, using naturally occurring materials. The mean percentage repatriated was twenty nine point six-six per cent. Taking the two mean figures [16 + 29.66] together, provides an overall percentage figure, forty five point six-six, repatriated to the UK.

Table 11: Gross project values repatriated by UKICC

Work done in-house	Design Work %	Sup & fix %	Sup only %	Lab only %	Tot %	Type of project	Country project p/mance	Value (m)
Pro 1	5			10	15	Manu	Singapore	£90
Pro 2	8			10	18	Pharma	Puerto-Rico	£145
Pro 3				18	18	Pub Bld	UAE	£200
Pro 4				18	18	Trans	UAE	£185
Pro 5				15	15	Mining	Senegal	£27
Pro 6	3			12	15	Pri Bld	Sudan	£56
Pro 7				12	12	Trans	Kenya	£18
Pro 8				18	18	Trans	Nigeria	£32
Pro 9				15	15	Trans	Ghana	£40
Pro 10				12	12	Plb Bld	Qatar	£100
Pro 11				20	20	Pharma	Puerto Rico	£25
Pro 12				13	13	Oil	Chad	£150
Pro 13				15	15	Oil	Mali	£125
Pro 14	10			10	20	Pri Bld	Ghana	£45
Pro 15	5			12	17	Trans	Nigeria	£87

Source: QS

Table 12: Mean value repatriated for main contractors

	Total percentage project value retained	Sample size	Mean value
All projects	241	15	16.06
Projects in NIC	91	6	15.16
Projects in LDC	150	9	16.66

Source: QS

Unfortunately the DETR Housing and Construction Statistics, which contains the balance between domestic and overseas new orders was discontinued in 2002 (ONS, 2006). Therefore to place this repatriated

won by UKICC represented in the ENR, Top 225 International Contractor series between 2001 - 2005 is fifty point eight billion dollars. Therefore twenty three point one billion dollars could be expected to be repatriated.

Table 13: GVPT repatriated by case studies supply chains

Work under-taken by UK subs	Design Work %	Supply & fix %	Supply only %	Lab only %	Tot %	Type of project	Country project p/mance	Value (m)
Pro 1		30b	5b		35	Manu	Singa	£90
Pro 2		15b	15b		30	Pharma	P-Rico	£145
Pro 3		20a	5c		25	Pub Bld	UAE	£200
Pro 4		10a	10c		20	Trans	UAE	£185
Pro 5		15b	5b		20	Mining	Senegal	£27
Pro 6		10b	5c		15	Pri Bld	Sudan	£56
Pro 7		25b	10b		35	Trans	Kenya	£18
Pro 8		30b	10b		40	Trans	Nigeria	£32
Pro 9		25b	5b		30	Trans	Ghana	£40
Pro 10		20b	10c		30	Plb Bld	Qatar	£100
Pro 11		10b	10b		30	Pharma	P-Rico	£25
Pro 12		30b	10c		40	Oil	Chad	£150
Pro 13		25b	10b		35	Oil	Mali	£125
Pro 14		15b	10b		25	Pri Bld	Ghana	£45
Pro 15		25b	10b		35	Trans	Nigeria	£87

Source: QS

# a= work contracted to another company within the group.
b= work subcontracted to a firm with a formal partnering agreement.
c= work subcontracted to a firm with an informal but regular relationship.

Table thirteen also identifies the extent to which main contractors favour the engagement of partnered subcontractors when operating overseas, and is analysed in table fourteen.

Table 14: Categorisation of subcontractor engagement

	A - work contracted to another company within the group	B - work subcontracted to a firm with a formal partnering agreement	C - work subcontracted to a firm with an informal but regular relationship	Sample size
Supply and Fix	10%	90%	00%	15
Supply only	00%	60%	40%	15

Source: QS

These results emphasise the importance of formal relationships between subcontractors and main contractors. The establishment of long-term relationships will play a major role in the achievement of efficiency and business success (Haksever, 1996:201). This was reinforced with eighty percent of interviewees [Table fifteen] highlighted the strength of the existing partnered supply chain when appraising overseas projects.

Table 15: Appraisal of international opportunities

	Very important	Important	Not important	Sample size
Strength of existing partnered supply chain	80	20	0	15
Strength of regular supply chain	67	33	0	15

Source: Interview

The importance UKICC place on the partnered relationships can be illustrated further:

'subcontractors must have a proven track record and a partnering arrangement in place before they are contracted overseas' - Director

Analysis of the case study data and responses to the interview questions, show conclusively that UKICC favour the engagement of partnered subcontractors when operating overseas. In addition, subcontractors with formal partnering agreements will secure higher levels of GVPT, than subcontractors with other forms of agreements.

5.3 Strengthening of UK supply chains

Several interviewees provided suggestions on the actions subcontractors should take to strengthen their position in securing contracts with UKICC. These included:

- Subcontractors should align the international aspect of their firm to the main contractors international activities.
- Ensure all pre-qualification requirements are met.
- Develop partnering relationships.
- Employ multi-lingual staff.

In 2004, ninety eight percent of UK construction firms employed less than eighty persons (DTI, 2005:45), and it is from this grouping of small and medium sized enterprises (SME) that UKICC will assemble their supply chains. However, the majority of these firms will be owner-manager led, and the behavioural characteristics of these firms will be determined by the orientation of the owner-manager (Lloyd-Reason & Mughan, 2002:120). Therefore, in order to understand the strategic behaviour of these SMEs, it is necessary to understand the behaviour characteristics of the owner-manager. Any policy initiatives should aim to develop the international orientation of the owner manager, as a precursor to the development of the SME itself (ibid). However, it is essential that the SMEs chosen for partnering development are correct, because, according to Badger & Milligan (1995), the cost of developing a firm to full partnering status can cost up to $600K (cited Pietoforte, 1997:99).

Interviewees also provided suggestions on what actions should be taken to strengthen the position of the UK supply chain in securing contracts with non UKICC:

- The government should sponsor[xxviii] export shows and trade missions.
- Government should assist SMEs in developing consortia.
- Subcontractors should retain the services of brokering agents overseas.
- Subcontractors should develop a marketing strategy raising the profile of the firm internationally.

From these suggestions several key points emerge. The establishment of formal relationships and adding value to the main contractors activities is crucial. Macneal (1978) stated that to achieve the maximum benefit from partnerships, the relationship must go beyond neo-classical contracting, with the long-term aim to consider the contract essentially a relationship between parties (cited Kumaraswany et al 2004:325). This supports the recommendations by the Office of Science and Technology (1995), who state that partnerships between contractors and their supply chains are required to sharpen international competition. Howes & Tah add to this and state that domestic supply chains can have a significant effect on international competition (2003:36), especially when they lead into the development of keiretsu (Bennett, 1991:149).

However, does the UK supply chain have inherent skills shortages stopping it developing these relationships and, securing a larger share of the international sub-market?

5.4 UK construction industry skills shortages

Forty per cent of respondents [Table sixteen] claimed there were skills shortages within their supply chains.

Table 16: Subcontractors skills shortages

	Yes %	No %	Sample size
Is there a shortage of skills that hinder UK subcontractors securing contracts on international projects?	40	60	15

Source: Interviews

However, none of the respondents cited a shortage of technical skills. The primary skills deficiencies identified were: marketing, business planning, knowledge of corporate financial strategies, languages, strategic planning, and the acumen to add value to UKICC offer. What is interesting to note is that the skills shortages identified are crucial core competencies of main contractors (Godbout, 2000). One interviewee commented:

'although technically competent, many subbies lack adequate business development skills, especially in [business] planning and marketing' - Procurement Manager

Table 17: Main contractors skills shortages

	Yes %	No %	Sample size
Is there a shortage of skills that hinder UK main contractors securing international construction projects?	26	74	15

Source: Interviews

Main contractors identified their skills shortages as sales and marketing and, the employment of multi-lingual staff - although there may be bias towards the results of this question, compared to the previous.

Cheah and Garvin's (2004) analysis concurs with these findings, and in addition highlight finance and human resource management as other areas of weakness (186). Due to the structure of demand, construction marketing in general is not very sophisticated. However, Howes & Tah (2003) claim that the role of marketing is essential in ICC and its development as a core competence should form an important part of the core competencies influencing international strategy (89).

One interviewee added its firm needed to completely transform fully into a lean construction[xxix] organisation, allowing it to respond swiftly to international opportunities. This facility has been reported as lacking in international construction firms (ENR, 2004, 2005), when appraising response times to major disasters.

Taken as a whole the identified skills shortages conform to the Construction Federation (1998) and CITB (2002), who cite management and business development skills as hindering the industry reaching its full potential. Given the importance the industry currently places on partnering, it is considered curious that no interviewee mentioned these skills as lacking within the industry. It could possibly be that the industry has provided sufficient training so that no skills shortages are apparent, or, that no interviewee recognises any skills associated with the identification, development and operation of partnerships. If this is the case, the industry, its clients and the government should be concerned.

5.5 Internationalisation factors

Political stability is the joint top ranked response in relation to the conditions considered important when appraising international opportunities. This supports Collier (1999), and Collier & Hoeffler's (2004) findings, from the examination of the effects of political unrest on economic development, discovering that countries suffer from capital flight and negative foreign direct investment (FDI).

Table 18: Appraisal of international opportunities

	Very important	Important	Not important	Sample size
Home country links / firm links	67	20	13	15
Access to finance through London	87	13	0	15
Political stability of country of project performance	100	0	0	15
Potential economic growth of country of project performance	53	47	0	15
Potential project size	20	67	13	15
Status of project	20	47	33	15
Potential for future projects	80	20	0	15
Cultural language / similarities	27	33	40	15
Ability to earn adequate return	100	0	0	15
Levels of foreign competition	33	54	13	15

Source: Interview

Howes & Tah (2003) argue that the over riding internationalisation driver is the perceived opportunity to achieve an improved rate of return on investment (59), and fits with the second joint top ranked response - the ability to earn an adequate return. Linder (1994) confirms this and cites the original reason for British firms to internationalise was the valorisation of capital (20). This behaviour complies to the third condition of the eclectic theory of international production.

The third ranked appraisal condition was access to finance through London. Historically, UKICC had had a comparative advantage over their competitors because of the sizeable British portfolio investment in overseas loans financing infrastructure projects, which favoured construction of projects by home firms (Linder, 1994:84). This comparative advantage complies to the first condition of the eclectic theory of international production. Strassman & Wells (1998) stress that finance is still a major barrier to entry (5), with attractive packages tipping the scales in favour of an otherwise competitive tender

(Stallworthy & Kharbanda, 1986:23). However, the advent of electronic commerce may herald a geographic end for this advantage (Dunning, 2000:166).

What is also interesting is that the size and project status are not considered very important, but the potential economic growth and the potential for future projects ranks high, when appraising international opportunities. This links with the top ranked response to the motives for operating overseas -increase long term profitability (Table nineteen). These responses are also in line with previous research by Crostwaite (1998) and validate the eclectic paradigms third condition.

Table 19: Motives for operating overseas

	Very important	Important	Not important	Sample size
Increase short-term profitability	80	20	0	
Protect firm against business cycles	67	33	0	15
Increase turnover	80	20	0	15
Preserve size and dominance of the UK market	33	47	20	15
Increase long-term profitability	100	0	0	15
Diversify risk / achieve balanced growth	73	27	0	15
Tap new and emerging markets	27	33	40	15
Make better use of resources	73	27	0	15
Maintain edge over competitors	60	20	20	15
Serve foreign customers	33	20	47	15
Help poorer countries develop	13	33	53	15

Source: Interview

5.6 Participant present and expected location in overseas markets

Thirty per cent of participants claimed to operate overseas on a project-by-project basis. This fits with Lorraine's (1992) findings that contractors are adopting a project-by-project strategy, although may be endemic of

its time as pointed out by Enderwick (1989), who claimed that this [early nineties] was a period where there was growth in the domestic economy and as such UKICC could pick and choose the most lucrative projects (139). However, the emergence of a project-by-project strategy was confirmed when several interviewees responded that their firms built relationships with major firms, 'following' their overseas investment. One interviewee confirmed 'they' had established overseas offices to service clients, with the eventual aim of establishing long-term relationships undertaking 'value-based commissions.'

Table 20: Market entry strategy

	Yes %	No %	Sample size
Does your firm pursue a policy of international coverage i.e. strategically entering new overseas markets and building turnover within that region?	70	30	10
Does your firm operate overseas on a project-by-project basis undertaking similar work regardless of location?	30	70	10

Source: QS

This highlights a shift of UKICC, from conducting on-site activity, to international construction service organisations, adding value to the corporate strategy of their clients. However, the growth of UKICC to full service organisations cannot be achieved without a cultural change from execution orientation activity, to value-adding actions and, coalitions of partnered alliances (Pietroforte, 1997:91).

There was a maximum response detailing the requirement of higher returns in developing the international strategic direction of the firm. This confirms the responses provided in table nineteen. Eighty per cent of interviewees [Table twenty one] and seventy percent of QS respondents [Table twenty two] claimed that their firms overseas project workload favour developed over developing countries. These results

corroborate Crosthwaite's (1998) findings and, cast further doubt on Seymour's (1987) thesis. However, a lot of economic activity has occurred since Seymour's publication, and further work now needs to be undertaken in this area.

Table 21: International strategic direction of firm

	Yes	No	Unsure	Sample size
Do you envisage overseas workloads increasing in developed countries?	80	0	20	15
Does your firms overseas project workload favour developed over developing countries?	80	20	0	15
Are overseas projects undertaken to generate a track record for domestic work?	27	53	20	15
Is there a target for overseas operations to contribute to overall firm turnover?	67	0	33	15
Do you envisage overseas workloads increasing in developing countries?	86	0	16	15
Does your firm require higher returns to consider overseas projects?	100	0	0	15

Source: Interview

Sixty seven per cent of interviewees stated there is a target percentage for overseas activity to contribute towards turnover, demonstrating the desire of UKICC to continually internationalise. Strassman & Wells claim that this target is five to ten percent of turnover (1988:3). However, analysis of the ENR data set shows that the top performing UKICC, in 2005, average an international contribution to turnover of forty five percent.

Table 22: Overseas market by location

	Africa	Nth Am	Asia	Eur	Lat Am	Mid East	Oceania
Largest overseas market at present?	20	20	10	30	0	20	10
Where do you expect your firm's largest overseas market to be in 2011+	30	30	10	10	0	20	0

Source: QS

With regard to future expectations eighty percent of interviewees expected their turnover would increase in developed countries, compared to eighty six per cent in developing countries. This emphasises a non biased internationalisation strategy, which divides both Seymour's, and Crosthwaite's findings.

'we are expanding in several geographical areas, in both developed and developing countries' - Director

'one of our main target markets will be Africa. We have a presence in several African countries and are looking closely at investment in new areas, but ever mindful of corruption and economic shocks' - CEO

The QS secured geographical identification of future expectations with regard to overseas markets. Interest in the North American and Middle-East markets are visible, although the European market has become less favourable. ENR (2004) suggests that the European market is vast, but cross-border activity for UKICC modest, with many not wishing to be general contractors in sophisticated markets (06), which was also observed by Enderwick (1989:139). This fits with Nachums theory that MNEs tend to specialise and concentrate in a few countries (1999).

Expectations about the African market pose interest. However, a recent report by the OECD estimate that Africa's economy grew by almost five

per cent last year, and is expected to perform better in 2006 / 2007 (The Economist, 2006:71). Angola, reported a fifteen per cent increase in its economy, brought about by soaring windfalls from oil production (ibid). Will Africa be the scene of the next petro-dollar fuelled bonanza? Therefore, some African nations will be moving through LDC status, towards NIC status, generating business opportunities for UKICC, as the outputs of the international construction industry are demanded.

5.7 Summary analysis

The results from the QS and SSI highlight behaviour consensus from the firms in the sample. Analysis of the data provided in the project case studies sought to test hypothesis two.

H2: Subcontractors with a formal partnering agreement with a UKICC secure higher levels of GVPT than subcontractors with other forms of agreement.

The results of the analysis, from the data presented in table thirteen, confirm that UKICC favour the engagement of partnered suppliers when operating overseas. Therefore, H2 is proven. Analysis has discovered that the establishment of formal relationships and adding value to a main contractors offer will increase the success rate of UK subcontractors securing contracts with UKICC. Therefore, subcontractors with formal partnering agreements secure superior levels of GVPT than firms with other forms of agreement, and provides an answer the second research question. The research also discovered that business development skills hindered subcontractors securing greater proportions of the UKICC turnover, and negated main contractors claiming a larger share of the international sub-market.

The report was unable to appraise and analyse data pertaining to international KPIs. Only two of the QS had this section completed, with the remaining not attempted, or, ticking the 'no exercise completed' box.

This further reinforces the situation discovered during the development of this project. In attempting to garner ICC KPIs, Construction Excellence (CE) was contacted. Unfortunately CE revealed that they have not assembled KPIs relating to any aspect of the internationalisation of the UK construction industry. This situation needs to be resolved if UKICC are to regain their place as the top exporter of international construction contracting services.

This chapter presented and analysed the industrial structure of UKICC gross value added. The next chapter appraises the future of international contracting.

Chapter 6

The future of international construction contracting

6.1 Overview

This chapter appraises future ICC opportunities available to UKICC by applying the relationships identified between construction and economic development and, appraising the industry literature addressing this subject area.

6.2 Economic theory and ICC opportunities

Historical studies Berry (1973), Burns & Grebler (1977), Turin (1978) demonstrated the relationship between construction and economic development. However, more recent studies[xxx] (Bon & Crostwaite, 2000) show that constructions share of GDP grows during LDC status, peaks during NIC status and then declines absolutely in AIC status. Demand can therefore be determined by a country's stage of economic development (ibid:34).

Economically stable countries with a strategy to invest out of LDC to NIC status will offer opportunities for UKICC specialising in infrastructure and major development projects. In its early stages NIC countries will offer similar, but an increased volume of opportunities. This demand will last for decades as the country progresses through NIC status. For example, countries such as Poland, Czech Republic have large infrastructure needs, fuelled by growing EU investment (ENRb, 2005:46). Demand in these and other countries, led by public sector clients, require contractors that will develop, plan, finance, built and operate projects (ibid:40). This demand will provide opportunities for PFI contractors, as the global demand for this method of procurement is utilised further.

However, AICs cannot be discounted from future ICC opportunities. Although previous studies show relationships between construction demand and economic development, no research has been conducted on the relationships between construction and GDP as a country moves through AIC status. I hypothesis that infrastructure constructed during the earlier stages of development will become obsolete and need to be replaced / upgraded at some stage an AIC's life-cycle. It could be debated several countries are currently undertaking such exercises, such as the UK, USA and Australia.

Demand for ICC will also be derived for the need to exploit energy, and new sources of energy. Emerging nations, once thought not profitable places to exploit resources, are becoming areas of petro-fuelled demand, as countries construct facilities for extraction and refinement. These countries could be the next paradigm of ICC. In addition, the next Kondratief cycle will bring with it the need to develop new energy sources and this demand will provide international opportunities.

UKICC should have a balanced portfolio of contracts and investments, divided proportionally between developing and developed countries, undertaking new build and repair & maintenance work, across different project types. In addition, investment in private finance projects, of a similar nature, will provide an income stream and contribute to long-term profits and growth. This combination of interests will protect the firm against business cycles, and spikes in the global and regional economies.

This chapter presented a brief overview of the potential opportunities available to UKICC. The next chapter introduces model assisting with the identification of retained levels of GVPT in construction projects.

Chapter 7

Congruence

7.1 Overview

This chapter introduces a KPI matrix and conceptual model,[xxxi] assisting in identifying anticipated levels of initial GVPT retained by a CPP, separated into distinct economic classifications.

7.2 GVPT identification

The KPIs have been assembled with aggregated mean data secured from QS and SSI. Participants provided information on the GVPT retained for general projects, while interviewees provided data for a range of different projects, and classifications of CPP. The data will provide outline KPI on the levels of GVPT a CPP can expect to retain.

Table 23: Retained levels of GVPT

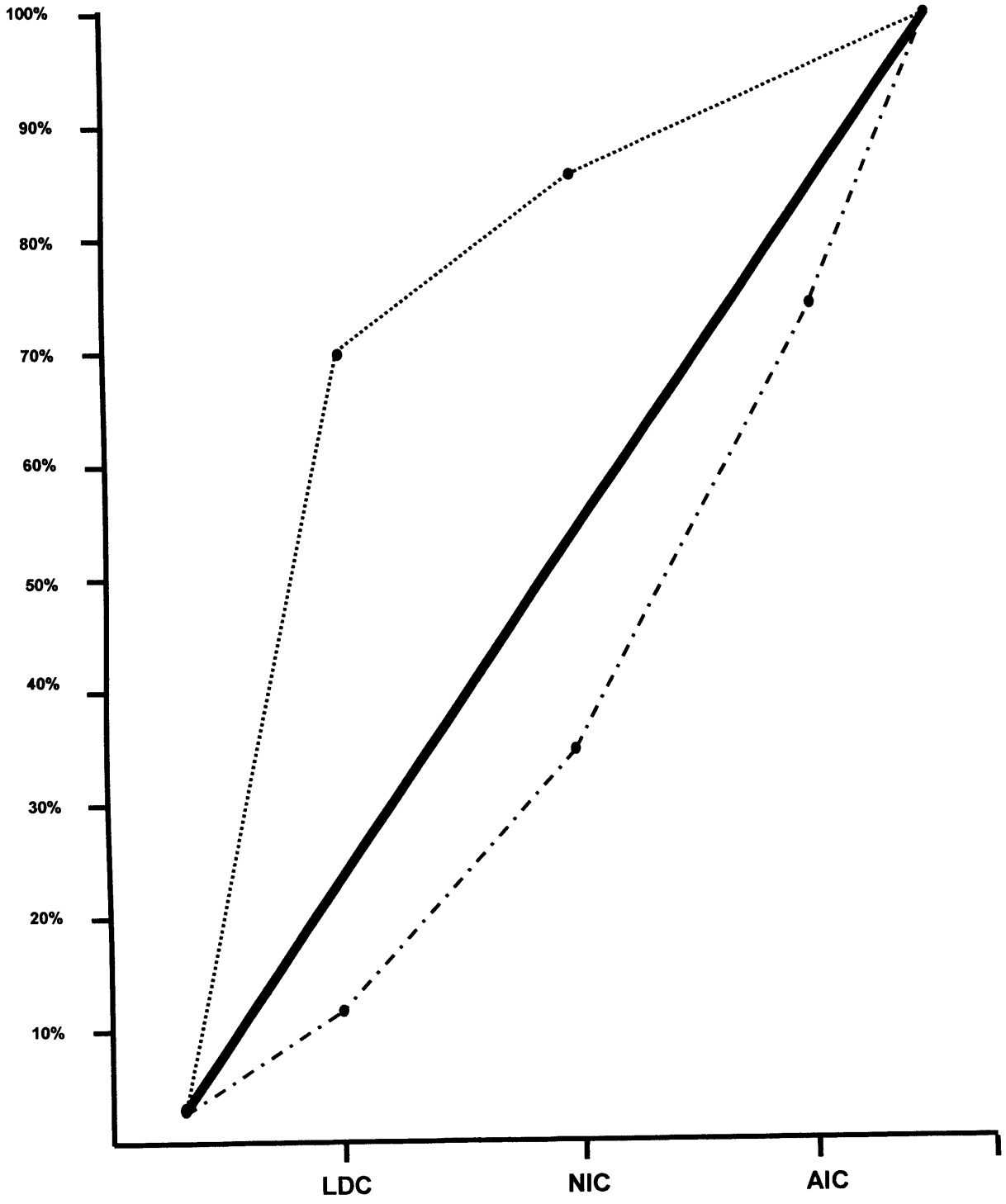
Project Complexity	LDC	NIC	AIC
Low	70%	85%	100%
Medium	25%	50%	85%
High	15%	35%	75%

Source: QS and interviews

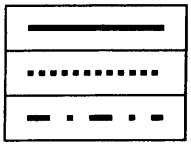
7.3 Conceptual model

This model [Figure 01] has been developed from the data presented in table twenty three. The model illustrates the levels of GVPT a CPP can expect to initially retain, and provides a facility which allows the plotting of project types which fall within those classified.

Figure 01: Retained levels of GVPT - a conceptual model



Legend



This chapter has introduced methods which will assist CPP quantify the levels of GVPT it can expect to initially retain from a construction project. The next chapter summarises the reports main points and draws conclusions from the findings presented in earlier chapters.

Chapter 8

Summary, conclusions and recommendations

8.1 Overview

This chapter provides a summary of the reports main points and draws conclusions from the findings. Emphasis in this chapter is also on making recommendations for future improvements. These have been categorised into primary stakeholders, with the aim to increase their share of the construction sub-market. Finally, suggestions for further research are offered.

8.2 Summary

The aim of this report was to assess the initial GVPT destination for a sample of international construction projects. Two research questions provide the focus and direction for the research.

Analysis of the primary data highlighted concerns about the appointment of subcontractors in the CPP by UKICC, revealing that LDCs can expect to retain less of the GVPT than a NIC. Comparison on the GNI per capita database, revealed several LDCs secure a higher percentage of GVPT than countries ranked above them. Therefore H1: the lower a country of project performance ranks on the scale of level of economic development - GNI per head - the lesser the level of gross project turnover is initially retained by its economy - was refuted.

The research sought to discover why an LDC may expect to secure less GVPT than an NIC. Responses revealed that one fifth of UKICC had a target to engage subcontractors, and generally only appointed subcontractors towards the lower end of the supply chain, as a consequence of their higher risk rating. It was concluded that the reasons LDCs retain less of the initial GVPT than an AICs is because

UKICC disfavour the engagement of subcontractors indigenous to the country of project performance, and answered the first research question.

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Further analysis of the case study data confirmed that UKICC favoured the engagement of partnered suppliers when operating overseas. Therefore, H2: subcontractors with a formal partnering agreement with a UKICC secure higher levels of GVPT than subcontractors with other forms of agreement - was proven.

In addition, analysis of the data supplied through the QS and SSI, concluded that subcontractors with formal partnering agreements secure superior levels of GVPT than firms with other forms of agreement, and answered the second research question.

8.3 Conclusions

The ICC sub-market is in a constant state of change. First, the arena is no longer the exclusive preserve of firms from the developed world and second, there have emerged a group of international firms for whom overseas activity is central to their operations. Hence, it is now possible to conceive ICC as an international industry.

Governed by the need to procure construction services in support of sustained economic development, and to re-build areas after natural disasters and conflict, the ICC collective dynamic is largely influenced by the location, distribution, and type of project that fall within its purview. UKICC therefore need to be geared to manage the construction process in a dynamic and flexible manner such that the indigenous environment, both social and economic and, other factors associated with these complex projects, such as targets for indigenous engagement and technology transfer, can be effectively controlled to achieve a

successful outcome, for all stakeholders. The primary aim for developing countries construction industries is to shift activity from the periphery primary production of low value-addition, to centre production, and the servicing of high value-addition.

For ICC to exist there must be some imperfections which separates international markets. In a world of perfect-competition indigenous contractors would have an advantage over international firms. As such overseas investment makes no sense unless UKICC possess some advantage, which cannot be acquired by local firms in the short-run.

Therefore the strategic management of UKICC needs to develop this advantage. Corporate strategy, the art of adding value, defines the way UKICC link together the resources that matter in the modern complex economy: core competencies, supply chain management and relationships with clients. Traditional thinking about value addition, grounded in the industrial economy, is now obsolete and contemporary value addition fashions a better fit between knowledge and purchasers. However, a value chain position is no longer a sustainable strategy. Increasingly, sustainable organisations do not just add value, they reinvent it, through analysis of the value-creating system itself, and it is incumbent on UKICC and their partnered supply chains to achieve this.

8.4 Recommendations

8.4.1. Governments of procuring nations

- Compile approved lists of subcontractors, who have secured accreditation by independent assessment against established pre-qualification standards.
- Approved suppliers details available on www.
- Firms not receiving approved list status should have access to government supported business development programmes.

- Approved suppliers should have access to information concerning internationally procured contracts.
- Suppliers should have access to business clubs allowing networking, and the opportunity of attending ICC seminars.

- Governments should consider guaranteeing the financial status of accredited subcontractors.
- Brokerage services should be supplied so that subcontractors can engage professionally with main contractors.
- Governments should organise trade missions to countries with high levels of international trade in construction services.

8.4.2 Subcontractors indigenous to the CPP

- Complete a gap analysis exercise against their AIC competitors, with the results informing an action plan.
- Adopt marketing strategies similar to AIC competitors.
- Engage the services of a professional broker to liaise with the procurement departments of international contractors.
- Concentrate on higher technical skill attainment, and adding value to ICC.
- Train supervisory staff in AIC management methods and techniques.

8.4.3 UK construction industry policy makers

- Increase the levels of sponsorship for export shows and trade missions.
- There is still a requirement for the UK Government to appoint a senior Minister for Construction. However, lobbying should concentrate on the appointment of a Minister for the Built Environment, with a specialist department representing ICC.
- Develop, through CE, a set of ICC KPI's.

- Provide grants for R&D, with a policy focus on SMEs, adding value to UKICC.

8.4.4. UK subcontractors seeking appointment with UKICC

- Align the international aspect of the firm to UKICC activities.

- Ensure all pre-qualification requirements are met, including higher level requirements such as ISO, TQM and IIP.
- Develop partnering relationships with UKICC through a dedicated member of staff.
- Employ multi-lingual staff members and train staff in cultural awareness.
- Write the internationalisation of the firm into business plan and involve relevant UKICC in its development, review and evaluation.

8.4.5 UK subcontractors seeking appointment with non UKICC

- Develop an international marketing strategy.
- Retain the services of brokering agents overseas.
- Employ multi-lingual staff members and train staff in cultural awareness.
- Add value to main contractors offer through advanced levels of R&D and knowledge of clients drivers.

8.4.6 UKICC increasing volume of the sub-market

- Develop business development programmes that assist indigenous subcontractors to comply with pre-qualification requirements.
- Report levels of engagement and technology transfer.
- Establish strategic alliances and partnerships with suppliers in CPP.
- Develop keiretsu with strategic international suppliers to achieve competitive advantage.

- Implement the philosophy of value management throughout the firm, and encourage staff to achieving added-value for the client and end user.
- Evaluate international marketing plan and align to MNEs displaying signs of superior competitive advantage.

8.5 Suggestions for further research

During the undertaking of this report it became apparent that there are gaps in the knowledge pertaining to the ICC sub-market and construction's role in economic development. Due to limitations, this research report is deficient in some respects. However, its demarcated areas highlight areas for future research. These include:

- More data needs to be collected from LDCs and NICs to identify further relationships that may be present between construction and economic development.
- Situate a researcher within a UKICC providing the opportunity of collecting a wider variety of data on the subject area of this report, and allowing the opportunity of interviewing construction process participants resulting in valuable conclusions for the built environment research community.
- Time series data needs to be performed on ENR data to test the relationships between construction and economic development identified in this report.
- Specific research need to be conducted on the on-going relationship between construction and economic development in AIC, identifying un-thought of relationships that may exist. Specifically, research needs to identify when AIC countries would expect to replace or upgrade FCF constructed during the formative stages of economic development.

- Further research should be undertaken testing H1 with a greater volume of countries, for the same project type. This would provide an increased level of accuracy indicating the levels of project turnover a CPP could expect to retain.
- The spread of concession contracting globally poses key issues. This specific subject area warrants a considerable amount of research, especially on the geographical and industrial structure of the projects value added, and how these projects can be delivered for the benefit of UK plc.
- ICC is constantly changing, as are its determinants of demand. The results of this research cast doubt on the theories concerning the future international direction of UKICC. Further research should be undertaken updating the work of Seymour and Crostwaite et al.

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[i] Not in the sense of a global steel industry, or global textile industry.
[ii] To current date
[iii] Traditionally construction firms from developed countries.
[iv] The actual level of real national income in any particular country is not stable. Any change in autonomous investment will change the equilibrium level of real national income (Maunder et al, 1999:286). A change in the level of national income will always be larger that th change in autonomous investment. This is the multiplier effect i.e. the ratio to the change in income to the change in expenditure which brought it about (ibid:287) and, the larger the marginal propensity to consume, the greater will be its effect (ibid:288).
[v] Investment in the means of production is based on the expected sales of the goods to be produced, by the additional plant and machinery in additional buildings required (Ive & Gruneberg, 2000:209). A small change in the demand for goods and services may cause a large change in the demand for plant, equipment and buildings used in their production (ibid:209). This is based on the accelerator principle, which is based on the amount of fixed capital stock required for a given level of output (ibid:210). The size of the accelerator coefficient and the required change in output will provide the change in capital required (ibid:214) to cater for the anticipated extra demand for goods and services.
[vi] The world's first underground railway - 1863.
[vii] 1890
[viii] 1897
[ix] Traditional society, preconditions to take-off, take-off, drive to maturity and mass consumption society.
[x] Three firms, Amec plc, Bovis Lend Lease and Balfour Beatty plc.
[xi] African and Asian countries in particular.
[xii] Output of $150bn dollars
[xiii] Europe, United States, Canada
[xiv] The origins of the paradigm date back to 1958, when the distinction between ownership advantages of the firm and the locational advantages of countries was first made by Dunning.
[xv] Initially the paradigm synthesised elements from economic theory such as: the product life cycle theory, theory of the firm and internationalising theory, but more recently it has given attention to the

dynamic competitiveness and locational strategy of firms, and particularly path dependency of the upgrading of their core competencies - Dunning, 2000:167.

[xvi] Some researchers use the concept of method in the context of 'the scientific method,' and usually refer to a logic of enquiry rather then to specific research techniques. Additionally, some researchers use the concept of a research strategy to refer to the logic of enquiry. Blaikie, 2005.

[xvii] 13/06/05

[xviii] 11/06/05

[xix] 10/06/05

[xx] 10/06/05

[xxi] While it is accepted that there are many ways to identify the national identity of a firm, the location of the headquarters remains the most prominent indicator - Crostwaite, 2000:52.

[xxii] Different coloured pages were used for instructions and the strap-line encouraged respondents to check the survey was complete, encourage a swift return and, thank for their assistance. . In an attempt to illicit a high response rate the respondents were offered an incentive in the form of a summary of the finished research.

[xxiii] Size of the firm: Department of the Environment (1997) notes that almost ninety percent of UK overseas construction activity is carried out by the top ten domestic firms (cited Crostwaite, 1997:21.

[xxiv] UKICC possess superior levels of managerial and technical knowledge.

[xxv] By Government, development agencies, funders etc....

[xxvi] Firms who have been independently assessed against the pre-qualification requirements laid down by international construction contractors.

[xxvii] From inception through to post completion evaluation.

[xxviii] Export shows and trade missions are already sponsored by UK Trade and Investment. The research highlighted that several interviews felt that these actions were not enough to assist the UK construction industry secure more of the international sub-market and that the current level of intervention by government organisations such as UK Trade and Investment was merely cursory.

[xxix] The ideals of lean construction dovetail perfectly with the requirements to deliver projects in an uncertain environment. The result will be a new project delivery system that can be applied to any kind of construction, but is particularly suited for complex, and uncertain projects.

[xxx] This hypothesis was formulated from their ECERU survey, which is based on eight hundred and forty eight respondents from some forty five countries and all six continents (Bon & Crostwaite, 2000:45).

[xxxi] The curves used throughout this chapter are not intended to represent any particular mathematical relationship. The model is a mere visual aid showing the main features of trends discussed.

Bibliography

Abdul-Azis, A-R (1995) Examination of the eclectic paradigm as applied to international contracting, Engineering, Construction and Architectural Management, 2, 105-120

Bell, J (1993) Doing Your Research Project, Open University Press, Buckingham

Cohen, L & Manion, L (1989) Research Methods in Education, 3rd Edition, Routledge, London.

Collis, J & Montgomery, C (1999) Creating Corporate Advantage. In Harvard Business Review on Corporate Strategy, Boston, Harvard Business School Press.

Delanty, G (2002) "Knowledge as communication: a review of recent literature on method and theory in science," International Journal of Social Science Research Methodology, Vol 5, No 1, pp 83 - 90.

Farthing, S., Allinson, J., et al (1999) Research Frameworks, Faculty of the Built Environment, University of the West of England, Bristol.

Farthing, S., Allinson, J., et al (1999) Research Frameworks, Faculty of the Built Environment, University of the West of England, Bristol.

Guba, E & Lincoln, Y (1994) 'Competing Paradigms in Qualitative Research.' In Denzin, N & Lincoln, Y (eds), Handbook of Qualitative Research, London, Sage.

Hammersley, M. (1995) The politics of Social Research, London, Sage

Mawhinney, M (2001) International Construction, Blackwell, Oxford.

Moore, R (2001) 'Basil Bernstein: theory, models and the question of method', International Journal of Social Research Methodology, Vol 4, No 1, 13-16.

Robson, C (2001) Real World Research, Blackwell, Oxford

University of Westminster (2000) Student Guide to the Major Project, London, Harrow Business School,

References

Abdul-Azis, A-R (1995) Foreign labour in the Malaysian Construction Industry, Geneva, International Labour Office.

Badger, W & Mulligan, D (1993) "Alliances in International Construction", A report to the Construction Industry Institute, CII, Summer Document, No 8, April.

Banister, D & Berechman, J (2000) Transport Investment and Economic Development, London, UCL Press

Bennett (1991) International Construction Project Management: theory and practice, London, Butterworth-Heinemann

Berry, B (1973) The human consequence of urbanisation, Macmillan, London.

Bon, R (2000) Economic Structure and Maturity, Ashgate

Burns, L & Grebler, L (1977) The housing of nations, Wiley, New York.

Bon, R & Crostwaite, D (2000) The Future of International Construction, Thomas Telford, London.

Cheah, C & Garvin, M (2004) "An open framework for corporate strategy in construction", Engineering, Construction and Architectural Management, Vol 11, No 3, pp 176 - 188.

CITB (2002) Skills Foresight Report, Bircham Newton, CITB

Collier, P (1999) "On the economic consequences of civil war", Oxford Economic Papers, Vol 51, No 1, pp 168 -183.

Collier, P & Hoeffler, A (2004) "Greed and grievance in civil war", Oxford Economic Papers, Vol 56, No 4, pp 563 - 595.

Construction Federation (1998) A framework for business improvement, London, Construction Confederation.

Crostwaite, D (1997) The internationalisation of British Construction Companies, M.S.c thesis, Bartlett School of Graduate Studies, University College London.

Crostwaite, D (1998) The internationalisation of British construction companies 1990 – 96: an empirical analysis, Construction Management and Economics, 16 (4), 389-395.

Crostwaite, D (2000) 'The Internationalisation of Construction Professional Services', unpublished PhD, University of Reading.

Cypher, J & Dietz, J (2003) The process of Economic Development, London, Routledge.

Department of the Environment (1997) Overseas construction by British Firms - 1996, London, HMSO.

Department of Trade & Industry (2005) Construction Statistics Annual, The Stationary Office.

Drewer, S (1978) 'In Search of a Paradigm', Habitat International, Vol 3, No, ½, pp 47-51.

Drewer, S (1980) 'Construction and Development: A new prespective,' Habitat International, Vol 5, No 3-4, pp 395 - 428

Dunning, J.H. (1993) The Globalisation of Business, Routledge, London.

Dunning, J.H. (2000) "The eclectic paradigm as an envelope for economic and business theory of MNE activity," International Business Review, Vol 9, pp 163 - 190.

Economist, The (2006) "Africa's economy: a glimmer of light at last", 24th June, pp 71 - 72.

Edkins, A & Winch, G (1999) The performance of UK construction industry: an international perspective, Bartlett Research Paper 4, University College London

Enderwick, P (1989) "Multinational Contracting." In P. Enderwick (ed), Multinational Service Firms, London, Routledge,

ENR (2002) The Top 225 International Contractors, August 26th, pp 26 - 37

ENR (2003) The Top 225 International Contractors, August 25th, pp 28 - 34

ENR (2004) The Top 225 International Contractors, August 23rd pp 34 - 40

ENR (2005) The Top 225 International Contractors, August 22nd pp 40 - 53

ENR (2005) 2004 Global Construction Sourcebook: The Top 225 International Contractors, McGraw Hill, New York.

ENR (2006a) 'An Industry Evolving', April 08th, 2006, p30-32.

ENR (2006b) 2005 Global Construction Sourcebook, McGraw Hill, New York

Ganeson, S & Kelsey, J (2006) 'Technology transfer: international collaboration in Sri Lanka', Construction Management and Economics, Vol 24, pp 743 - 753.

Godbout, A.J (2000) 'Managing Core Competencies', Knowledge and Process Management, Vol 7, No 2, pp 76-86.

Han, S.H. & Diekmann, J.E. (2001) "Making risk-based decisions for overseas construction projects", Construction Management and Economics, Vol 19, pp 765 - 776.

Haksever, A.M et al (1996) "Benefits of long term relationships: UK Construction Industry Experiences", in D.A. Langford & A. Retik (eds), The Organisation and Management of Construction, London, E + FN Spon.

Henriod, E et al (1984) Issues and Strategies in Developing Countries, Washington, Construction Industry Development Unit, The World Bank.

Hable-Selassie, S (1978) "Construction Estimates and National Income in Developing Countries", In Koeingsberger, O.H. & Groak, S (eds), Essays in Memory of Duccio Turin, Oxford, Peragmon Press.

Hillebrandt, P (2000) Economic Theory and the Construction Industry, 3rd Ed, London, Macmillan.

Howes, R & Tah, J (2003) Strategic Management Applied to Intenational Construction, London, Thomas Telford.

HSBC (2005) Outlook 2006, London, HSBC.

Imbert, I (1990) "Human issues effecting construction in developing countries", Construction Management and Economics, Vol 8, No 2, pp 21 - 32.

Ive, G & Gruneberg, S (2000) The Economics of the Modern Construction Sector, London, Macmillan.

Langford, D & Male, S (2001) Strategic Management in Construction 2nd Ed, Oxford, Blackwell Science.

Lorraine, R.K. (1992) Construction Management in Developing Countries, London, Thomas Telford.

Kirmani, S (1988) The Construction Industry in Development: Issues and Options, Washington, The World Bank.

Kumaraswany, M et al (2004) "Integrating procurement and operational innovations for construction industry development," Engineering Construction and Architectural Management, Vol 11, No 5, pp 323 - 334.

Kuznets, S (1965) Economic Growth and Structure, London, Heinemann.

Langford, D & Rowland, V (1995) Managing Overseas Construction Contracting, London, Thomas Telford.

Lloyd-Reason, L & Mughan, T (2002) "Strategies for Internationalisation within SMEs: the key role of the owner manager", Journal of Small Business and Enterprise Development, Vol 9, No 2, pp 120-129.

Lucas, C (1986) International Construction Business Management, New York, McGraw Hill.

Linder, M (1994) Projecting Capitalism: A history of the International construction industry, Greenwood Press, London.

Macneal, I.R. (1978) "Contracts: adjustment of long-term economic relations under classical, neoclassical, and relational contract law," North Western University Law, USA, Part 2, Vol 72, No 5, pp 854 - 905.

Marcos, J.-L (2003) Subcontracting versus Delocalisation?, United Nations Industrial Development Organisation, Vienna, Austria.

Mitullah. W.V. & Wachira. I.N. (2003) Informal labour in the construction industry in Kenya:A case study of Nairobi, Geneva, International Labour Office.

Miles, D & Neale, R (1991) Building for Tomorrow: International Experience in Construction Industry Development, Geneva, International Labour Office.

Myers, D (2004) Construction Economics, London, Spon Press.

Nachum, L (1999) The Origin of the International Competitiveness of Firms, Cheltenham, Edward Elgar.

Office of Science and Technology (1995) Progress Through Partnership, Construction No.2, Technology Foresight Programme, London, Office of Science and Technology.

Ofori, G (1982) Forgotten Developments, Building 23rd April, p 51-52.

Ofori, G (1993) Managing Construction Industry Development, Kent Ridge, Singapore University Press.

Ofori, G (1989) "The Singapore Construction Industry: An analysis of current problems and possible solutions," The Professional Builder, Vol 4, No 1, pp 21 - 27.

Ofori, G (1990) The Construction Industry: Aspects of its Economics and Management, Kent Ridge, Singapore University Press.

Pass, C & Lowes, B (1993) Dictionary of Economics, Leicester, Unwin Hyman

Pearce, D (2003) The Social and Economic Value of Construction, London, nCRISP.

Pietoforte, R (1997) Building International Construction Alliances, London, E + FN Spon.

Rostow, W.W (1960) The Stages of Economic Growth, Cambridge; MA, Cambridge University Press.

Sachs, J (2005) The End of Poverty, London, Penguin.

Seymour, H (1987) The Multinational Construction Industry, Croom Helm, New York

Seymour, H (1989) "International Construction", In P. Hillebrandt & J. Cannon (eds) The Management of the Construction Firm, London, Macmillan Press.

Stallworthy, E.A. & Kharbanda, O.P. (1985) International Construction and the role of project management, Gower, Aldershot.

Strassman, W & Wells, J (1998) The Global Construction Industry, Unwin Hyman, London

Szirmai, A (2005) The dynamics of Socio-Economic Development, Cambridge, Cambridge University Press.

The Londoner (2006) "Crossrail is the key to the capital's prosperity", London, Greater London Authority.

Turin, D (1973) The Construction Industry: Its economic significance and its role in development, 2nd Ed, UCL Environmental Research Group.

Turin, D (1978) The Construction Industry: Its economic significance and its role in development, UNIDO.

Wells, J (1986) The Construction Industry in Developing Countries: alternative strategies for development, London, Croom Helm.

Winch, G (2002) Managing Construction Projects, Oxford, Blackwell.

World Bank (1984) Issues and Strategies in Developing Countries, Construction industry Unit, Washington DC, World Bank.

World Bank (1988) The Construction Industry in Development, Infrastructure and Urban Development Department, Washington DC, World Bank.

World Bank (2006) World Development Indicators Database, Washington DC, World Bank

Websites

http://www.ons.gov.uk

http://www.dti.gov.uk

http://www.ersc.ac.uk

http://www.hm-treasury.gov.uk

http://www.statistics.gov.uk

http://www.enr.com

Appendix 1

International construction contracting: a UK perspective

Confidential survey

The **aim** of this research is to assess the initial contract value 'destination' for a representative sample of international construction projects. The hypotheses that form the foundation of this research as a theoretical investigation are:

H1: 'The lower a country of project performance ranks on the scale of level of economic development - GNI per head - the lesser the level of gross project turnover is initially retained by its economy'

and

H2: 'Subcontractors with a formal partnering agreement with a UK international construction contractor secure higher levels of gross value project turnover, than subcontractors with other forms of agreement'

Data from questionnaires will be pooled and analysed. No data identifying or traceable to a particular firm or project will be published, or in any way made available to third parties.

Many thanks for your co-operation. An executive summary of the completed report will be send to you in due course.

I would be grateful if you could return the completed questionnaire to: **William Hetherington, 15 Worsley Road, Leytonstone, London, E11 3JL.**

Part 1: General project questions.

1. Type of project - please circle:

Power & utilities	Defence
Public building	Education
Private building	Healthcare
Renewable	Manufacturing
Sustainability	Mining
Transport	Nuclear
Urban renewal	Oil & Gas
Pharmaceutical	Other - please state

2. Circa value of project:

3. Country of project performance:

Part 2: Project specific questions.

1.Breakdown of project turnover:

The table below has split a project into four principle categories; Design, Supply & Fix, Supply only, and Labour only. Please indicate, for these four principle project categories, the **approximate percentage** of total project turnover disbursed, against the five proposed supply routes [1A - 1E]. Please note the instruction on 1B and the key at the bottom of the matrix. Please circle **a, b** or **C** as appropriate.

	1. Design work %	2. Supply & fix %	3. Supply only %	4. Labour only %
1A - Work done in-house				
1B - Work subcontracted to members of the firm's UK supply chain #	a b c	a b c	a b c	a b c
1C - Work subcontracted to other UK subcontractors				
1D - Work subcontracted to foreign subcontractors				
1E - Work subcontracted to subcontractors indigenous to the project location				

# a = Work subcontracted to another company within the group
b =Work subcontracted to a firm with a formal partnering agreement.
c = Work subcontracted to a firm with an informal but regular relationship.

Please use this space for any further comments on this question.

2. International contracting Key Performance Indicators (KPIs):

Your firm may have undertaken some project specific analysis concerning international KPIs. **Please circle** the percentage figure approximately corresponding to your results. Results will analysed in the aggregate and compared against domestic project KPIs, from which a series of suggest recommendations for both international construction contractors and business support policy makers will be offered. *If there has not been an exercise completed to gather such data, please tick box below and move onto Part 3.*

KPIs	**-%**									**0**	**+%**								
Project predictability - Cost	9	8	7	6	5	4	3	2	1	**0**	1	2	3	4	5	6	7	8	9
Project predictability - Time	9	8	7	6	5	4	3	2	1	**0**	1	2	3	4	5	6	7	8	9
Project predictability - Profit	9	8	7	6	5	4	3	2	1	**0**	1	2	3	4	5	6	7	8	9
Client satisfaction - Product	90	80	70	60	50	40	30	20	10	**0**	10	20	30	40	50	60	70	80	90
Client satisfaction - Service	90	80	70	60	50	40	30	20	10	**0**	10	20	30	40	50	60	70	80	90

No exercise completed ☐

Part 3: Future strategic direction of international construction operations:

1. Does your firm pursue a policy of international geographic coverage i.e. strategically entering new overseas markets and building turnover within that region? YES / NO

or,

Does your firm operate overseas on a project-by-project basis undertaking similar work regardless of location? YES / NO

2. Pooling the intended strategic direction of overseas operations will assist this report to influence the scope for international business support policy. Please indicate, by numbering up to seven - where applicable, your firm's position concerning the three categories listed below, against the geographical areas identified.

	Africa	N America	Asia	Eur	Latin America	Middle East	Oceania
1A - Where is your firm's largest overseas market at present? (1 for largest - 7 for smallest)							
1B - Where is your firm's overseas profitability the greatest?							
1C - Where do you expect your firm's largest overseas market to be in 2011+							

END

Project 2

Part 1: General project questions.

1. Type of project - please circle:

Power & utilities	Defence
Public building	Education
Private building	Healthcare
Renewable	Manufacturing
Sustainability	Mining
Transport	Nuclear
Urban renewal	Oil & Gas
Pharmaceutical	Other - please state

2. Circa value of project:

3. Country of project performance:

Part 2: Project specific questions.

1.Breakdown of project turnover:

The table below has split a project into four principle categories; Design, Supply & Fix, Supply only, and Labour only. Please indicate, for these four principle project categories, the **approximate percentage** of total project turnover disbursed, against the five proposed supply routes [1A - 1E]. Please note the instruction on 1B and the key at the bottom of the matrix. Please circle **a, b** or **C** as appropriate.

	1. Design work %	2. Supply & fix %	3. Supply only %	4. Labour only %
1A - Work done in-house				
1B - Work subcontracted to members of the firm's UK supply chain #	a b c	a b c	a b c	a b c
1C - Work subcontracted to other UK subcontractors				
1D - Work subcontracted to foreign subcontractors				
1E - Work subcontracted to subcontractors indigenous to the project location				

# a = Work subcontracted to another company within the group
b =Work subcontracted to a firm with a formal partnering agreement.
c = Work subcontracted to a firm with an informal but regular relationship.

Please use this space for any further comments on this question.

Appendix 2

International Contracting: a UK perspective

Confidential 'semi-structured' interview

Hi **XXXXXX** many thanks for agreeing to speak to me concerning this piece of research.

Some background - this research project centres on the role of construction in economic development, and appraises the performance of UK construction firms / service organizations in overseas markets. Although there is a growing body of knowledge on the gross value [turnover] of international construction contracting, the body of knowledge on the geographical and industrial structure of the value-added represented by this turnover is still in its infancy.

The **aim** of this report is to assess the initial contract value 'destination' for a representative sample of international construction projects. I believe that the output of this study has a good prospect of being modestly but valuably useful to firms such as yours in refining and improving strategy for achieving success in international markets.

The objective of this interview is to provide qualitative commentary for analysis against polled quantitative data.

Respondent's name: .....

Respondents position: .....

Respondent's firm: .....

Date.....

Time.....

Part 1: Firm characteristics

WH to complete 1, 2 + 3 from secondary sources.

1. Firms primary area of work [infrastructure, utilities etc.]						
2. Present age of firm (years)	0-5	6-12	13-20	21-30	31-50	>50
2. Current number of employees	<50	50-100	101-500	500-1000	1001-2000	2000+
3. Number of overseas countries served	1	2-5	6-9	10-14	15-19	20+
4. How many years has your firm been operating overseas	0-5	6-12	13-20	21-30	31-50	>50

Rationale for questions: Do older / larger firms; firms that serve a greater number of overseas countries/ firms with differing primary purposes show different responses from other firms.

Part 2: Project specific questions.

1.Breakdown of project turnover:

In your opinion what would be the **approximate percentage** project turnover disbursement for overseas projects against the five primary supply routes [cite from table].

Work done in-house	
Work subcontracted to members of the firm's UK supply chain #	
Work subcontracted to other UK subcontractors	
Work subcontracted to foreign subcontractors	
Work subcontracted to subcontractors indigenous to the project location	

If interviewee if is cooperative expand on question further by asking opinion on division of percentages against four principle project categories; Design, Supply & Fix, Supply only and Labour only.

2. Do you think these percentages would change with different project types [infrastructure against building, more technical etc]

	Bld	Transport	Infrastruc	Health	Manu	Power
1]						
2]						
3]						
4]						
5]						

Which would be the highest ....lowest

3. What about [these percentages] for differing destinations of project performance i.e. LDC against NIC etc...

	DC	NIC	LDC
1]			
2]			
3]			
4]			
5]			

4. What actions would you suggest should be taken to strengthen the position of UK subcontractors [by government, business support agencies (UK Trade & Industry) etc...] in securing contracts on international construction projects.

With UK contractors

With non-UK contractors

5. In your opinion is there a shortage of skills within the UK construction industry (certain sectors) that subcontractors securing contracts on internationally procured projects?

Is there a case also for skills shortages within main contractors that also prevents UK forms from securing a greater percentage of international construction projects?

6. Again, what actions should be taken to strengthen the position of subcontractors indigenous to the project location [government,]development agencies, funders etc.] in securing contracts on internationally procured construction projects.

Part 3: General questions

1. In relation to your overseas activities does your firm have a policy of engaging with indigenous sub-contractors, in the country of project performance?

YES NO

Comments

If yes, is there a target for this?

Have you considered a JV to secure involvement of sub-contractors in country of project performance?

Would you anticipate any barriers in the realisation of a successful JV?

2. From your personal knowledge, at what stage of the project supply chain would are you most likely engage an indigenous sub-contractors in the country of project performance? Prompt

A] Developed Countries [Austria / Spain / US] Tier 1 - Tier 2 - Tier 3 - Tier 4 - other

B] Newly Industrialised Countries [Mexico, Turkey] Tier 1 - Tier 2 - Tier 3 - Tier 4 - other

C] Less Developed Countries [Bangladesh, 34 in Africa, East Timor] Tier 1 - Tier 2 - Tier 3 - Tier 4 - other

3. Specifically, does your firm consider engaging with indigenous sub-contractors in the country of project performance carrying higher risk than your existing UK based supply chain? [Expand?]

YES NO

[If the answer to Q6 is in the affirmative] can you briefly outline the risk in:

A] DC: Financial - Operational - Competency - other

B] NIC: Financial - Operational - Competency - other

C] LDC: Financial - Operational - Competency - other

[Operational: health & safety, policies procedures etc...]

4. From your experience, is this risk reduced the further down the supply chain an indigenous subcontractor is engaged in the country of project performance?

A] DC? YES / NO

B] NIC? YES / NO

C] LDC? YES / NO

5. Again, from your experience, from which category of constructional operational complexity [low - medium - high] is it most likely to engage an indigenous sub-contractor in the country of project performance:

A] DC: Low - Medium - High

B] NIC: Low - Medium - High

C] LDC: Low - Medium - High

6. Concerning, construction added-value, from which category of construction value addition [low - medium - high] is it most likely to engage an indigenous sub-contractor in the country of project performance:

A] DC? Low - Medium - High

B] NIC? Low - Medium - High

C] LDC? Low - Medium - High

Part 4: Market considerations and motives

1. What factors does your firm consider most important when appraising overseas project opportunities? [WH to cite prompts from list below.]

	Very important	Important	Not important
Home country links / Firm links			
Access to finance through London			
Political stability of country of performance			
Potential economic growth of country of performance			
Potential project size			
Status of project			
Potential for future projects			
Cultural / language similarities			
Ability to earn adequate return			
Levels of indigenous / foreign competition			
Availability of indigenous sub-contractors			
Strength of existing partnered supply chain			
Strength of existing regular supply chain			

2. What are your firms motives for operating overseas? [WH to prompt from list below and generate discussion around these points].

	Very important	Important	Not important
To protect firm against business cycles			
To increase turnover			
To preserve size and dominance of UK market			
To increase profitability: long-term; short-term			
To diversify risk / achieve balanced growth			
To tap new and emerging markets			
To make better use of resources			
To maintain edge over competitors			
To serve foreign customers			
To help poorer countries develop			

3. To what extent does overseas operation influence the strategic direction of your firm? [WH to generate conversation around the points listed below].

	Yes	Unsure	No
1. Is there a target for overseas operations to contribute to overall firm turnover?			
2. Does your firm consider overseas projects as carrying higher risk than domestic work?			
3. Does your firm's overseas project workload favour developed over NIC / LDC?			
4. Do you consider overseas projects in developed countries as carrying less risk than work in NIC, LDC?			
5. Are overseas projects undertaken to generate track records for domestic work?			
6. Where do you envisage overseas project capacity increasing? DC - NIC - LDC			
7. Does your firm require higher returns to consider overseas projects?			

Part 5: Non international construction projects

7. Is your firm currently delivering non-construction related projects overseas?

YES / NO

8. If yes; What level of risk do you consider the engagement of non-construction indigenous subcontractors in the country of project performance in:

A] DC? Low - Medium - High

B] NIC? Low - Medium - High

C] LDC? Low - Medium - High

Generate discussion around other points raised during interview. Attempt to generate comparison against non-construction sub-contractors for areas discussed during interview and why difference?

Extra

What is your tender success rate for overseas work

Was this higher or lower than UK domestic work

Does your UK supply chain achieve competitive advantage in overseas markets / overseas projects

What gives you competitive advantage in overseas markets

END

Thank the interviewee for their co-operation and express interest in their responses to the questions suggested. Offer to forward executive summary of report.

Appendix 3

	Average percentage of gross project value retained by country of project performance
Interviewee 1	15%
Interviewee 2	20%
Interviewee 3	20%
Interviewee 4	30%
Interviewee 5	30%
Interviewee 6	40%
Interviewee 7	25%
Interviewee 8	25%
Interviewee 9	40%
Interviewee 10	20%
Mean value	26.5%