A Multi-dimensional Exploration of Global Software Outsourcing Projects in the UK's Financial Services Sector

Key Project Issues and Areas for Improvement

By

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Declaration

I certify that this thesis, and the research to which it refers, are the product of my own work, and that any ideas or quotations from the work of other people, published or otherwise, are fully acknowledged. No portion of the work referred to in this thesis has been submitted in support of an application for another degree or qualification at this or any other university or other institute of learning.

Thesis Abstract

Along with the increasing popularity of offshore outsourcing in the last two decades, global software outsourcing (GSO) has become a very topical and emotive subject in recent years. Even in the current financial crisis, it is still relatively insulated due to the growing global demand for software services. However, in practice, many western companies are not entirely satisfied with the outcome of their outsourcing projects. Thus, although the GSO model has been widely accepted in many industrial sectors, it is still far from maturity at the present time.

This PhD research aims to explore development issues and areas for improvement in software offshore outsourcing projects. In particular, the author is interested in investigating the performance of GSO projects in the UK's financial services companies. In order to fulfil this aim, four stages are designated in the exploration: 1) the first phase studies the subject of IT/IS outsourcing and IS research methodology to establish a sound foundation of the study; 2) with aims of improving the author's understanding of GSO practices, a multiple-case study was conducted in the preliminary industrial study; 3) in the detailed study, a mixed methods approach (i.e. interviews and questionnaires) has been employed to gain insights into practical matters throughout the software development lifecycle; 4) in the last part of the research, the collected data are analysed, based on which findings, implications, limitations, and suggestions for future research are summarised and discussed.

According to the exploration, it is evident that the performance of GSO projects can be strongly impacted by five areas' issues: 1) project arrangements, 2) relationship management, 3) development process, 4) project and people management, and 5) communications. Furthermore, findings from the study indicate that some early development phases (e.g., requirements definition, project initiation, systems analysis and design), several later phases (e.g., quality control, verification, and maintenance), and project level management need to be improved in GSO practices.

Keywords:
Global software outsourcing, GSO projects, project issues, development phases, multiple-case study, interviews, questionnaire survey, qualitative and quantitative approaches

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Dedication

To the memory of my dearest grandmother

(Monday, 10^{th} of January 2005)

To my loving mum and beloved wife

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Chapter 1 Introduction

The first chapter of this PhD thesis concentrates on introducing the phenomenon of global software outsourcing (GSO), research motivations, the author's objectives, and this PhD study. The beginning of the chapter broadly reviews a popular phenomenon in the business world – software offshore outsourcing. After that, the chapter specifies issues and trends of this phenomenon, which forms into research motives for studying GSO projects in the UK. The second half of this chapter discusses the aim of this PhD research, research objectives, motivations, and the significance of this exploration.

1.1 Global IT software outsourcing

Similar to the universal belief that technological innovation was the heart of the Industrial Revolution in the 19th century (Ashton & Hudson 1962), the IT software industry is widely regarded as the most important component of the new wave of the third industrial revolution (Greenwood 1997). Since the late 1970s, the industrial applications of computer software have made a significant influence on the western countries' prosperity and their continuous growth. Especially from the middle 1990s, with the speedy development of Information and communication technologies (ICTs) such as the Internet and World Wide Web (WWW), the New Software Economy (NSE) quickly spread its power to most of the nations on the planet (Damian & Moitra 2006). The NSE has provided enormous opportunities to developed countries as well as developing countries. It extended the international collaboration between the East and the West (Jorgenson & Wessner 2002). In the last decade, the increased global integration led a radical change in the software industry – from the traditional software research and development (R&D) model to the increasing globalised software services (BCS 2006).

In the UK, the centre of the country's economy has been shifted from the heavy manufacturing to the service industry since the 1970s. Along with a rapid expansion of the knowledge-based economy (e.g. selling business services and commercial solutions) in last 30 years, the IT software industry, including computer-based information systems development (ISD), publication of computer software, and other IT and IS (information systems) services, has led the country stepping into the era of modern globalisation (Abramovsky *et al.* 2004). Noticeably, organisational decisions such as sub-contracting IT/IS services were emerged during the same period of time. Based on some general outsourcing studies (Carmel & Tjia 2005; Sako 2005; Hatonen & Eriksson 2009; Raiborn *et al.* 2009), in a broad sense, there are three development stages of software outsourcing in the West:

1) **Onshore and nearshore outsourcing** (from 1970s to the middle 1990s) – some middle size and large-scale organisations partially contracted out their internal IT/IS functions to several major domestic or nearshore software services companies such as EDS and IBM;

2) **Offshore outsourcing** (from the middle 1990s to the present) – due to significant economic and political changes in the last two decades, the offshore outsourcing model gradually replaced the onshore/nearshore outsourcing and occupied the majority of the IT software services market;

3) **Multi-sourcing** (from 2007 onwards) – the current economic downturn leads to diverse organisational decisions on offshore outsourcing: some companies began to bring outsourced work back to in-house IT/IS development teams; some started to reuse onshore and nearshore services; some have utilised the 'Crowdsourcing' model to deliver IT/IS projects (Trategy & Fitzgerald 2008); and, some firms decided to expand the scale of their GSO employment.

In the late 1990s, a large amount of blue-chip companies in the UK began to adopt the GSO model and contract out some of their internal IT/IS functions to countries such as Ireland, India, Israel, Poland, China, Russia and South Africa (Erber & Sayed-Ahmed 2005; Sparrow 2005). Since then, the impact of employing globalised software solutions could be found in many areas, from systems development to software testing, from professionals in the software industry to people in the financial sector, from the business world to the society, from the national economy to the country's policies (Nicholson & Sahay 2001; Abramovsky *et al.* 2004; Dibbern *et al.* 2004; BCS 2006; Smith 2008).

In the current global recession, due to the speedy change of the international economic environment, most of the large-scale multinational companies in the West have adjusted their organisational IT/IS strategies (Merriman 2009). Thus, two dissimilar opinions are emerging in the marketplace. Some companies believe that the GSO services industry is relatively insulated from the recession, for instance, the figure provided by NASSCOM (the National Association of Software and Services Companies, the premier trade body and the chamber of commerce of the IT software outsourcing industry in India) illustrates that the global demand for India's software services is still steadily increasing during the recession (NASSCOM 2009). However, some market reports such as the Interactive (2009) and Cummins (2010) suggest that, as the offshore outsourcing model provides great flexibility to outsourcing client companies, therefore some client firms are taking short-term actions to weather the recession. For example, because onshore/nearshore IT software services suppliers have become more efficient and cheaper than before, therefore, some western business giants (e.g., Aviva, Citigroup and BT) are reconsidering their software services models and planning to bring some outsourced work back to the UK (Interactive 2009).

1.2 Why the UK

Along with GSO employment in the UK, three key drivers were behind many companies' decisions on employing the GSO model. These are: to cut costs, to access global resources, and to improve the quality of software services (Sako 2005; BCS 2006). Especially in the 21st century, these drives have enabled GSO services to quickly develop in the UK.

1.2.1 A concise history of the UK's GSO practices

Shortly after the Conservative Party took power and introduced compulsory competitive tendering (CCT) to cut costs in the public service sector in the early 1980s, the employment of offshore outsourcing began to expand in the UK (Abramovsky *et al.* 2004; McIvor 2005). According to Sako (2006), most of the UK's outsourcing practices were initiated by local government and soon spread to central government in the early 1990s.

During the 1990s, together with a huge change in the political and economic conditions in Europe, the growth of the UK's software outsourcing accelerated. Throughout this period of time, management in many firms started to search for IT experts and IT/IS outsourcing services suppliers in a number of offshore locations, for example, Republic of Ireland, Middle Europe, and Israel were some popular outsourcing destinations at the time (Bisson 2006). In the middle 1990s, following the *Competing for Quality* White Paper (Harland *et al.* 2005) and Prime Minister Tony Blair's *best value* speech (Guardian 2003), the UK government began to officially advocate using cheaper and good quality overseas resources in the local labour market. One particular reason for this decision was the changing environment of the UK's business world in the middle 1990s – the Y2K issue and the first wave of the dot-com economy caused significant IT/IS skills shortages in the domestic labour market; at that time, IT/IS related skill shortages ranged from implementation level activities (e.g., mainframe programming and testing) to design and analysis level work (e.g., e-commerce platform architecture and design) (Aspray *et al.* 2006). Since then, many UK companies have recruited hundreds of offshore software services providers and hundreds of thousands of foreign IT professionals into their businesses (BCS 2004; Microsoft 2006b).

The increasingly robust online technology and the high speed internet access in the 21st century have seen the world become more interrelated and interdependent. However, the crash of the dot-com bubble and the increasing uncertainty in the global economy forced decision makers and senior managers in many western organisations to pay extra attention to short-term targets (Miozzo & Grimshaw 2005). Thus, it naturally led to organisational decisions to tighten the spending on IT/IS projects and to request a much shorter systems development lifecycle (SDL) for their IT/IS projects (CBI 2005; Aspray *et al.* 2006).

A similar situation also can be found in the UK's business world – a large number of companies chose to employ or extend their GSO employment to face challenges in the global market (BCS 2004). For example, British Airways (BA) established back-office IT support centres in India; Adecco, the UK labour recruitment agency, opened several overseas branches to supply GSO professionals across the world; Reuters launched a data analysis centre in Bangalore, India; what is more, a number of major UK financial companies such as Aviva, Barclays, and RBS announced corporative decisions to contract out tens of thousands of IT/IS jobs to some offshore software services suppliers based in developing countries such as India and China (Abramovsky *et al.* 2004; BCS 2006; Bain & Taylor 2008). Hence, by the year 2005, more than 80% of the UK's blue-chip companies had employed the GSO model in their daily business; what is more, some of them kept on increasingly internationalising their internal IT/IS R&D capabilities to reduce IT/IS costs, time to market (TTM), and development risks involved in their IT/IS projects (TPI 2005; DIUS 2008).

1.2.2 Why perform this research in the UK

Since the beginning of software offshore outsourcing, the UK has been regarded as one of the most important markets for the global software services industry. According to an EU market survey issued by the CBI (2005), amongst European countries, the UK has become the leading nation for utilising global software services since the 1990s.

In the 21st century, the country initiated the iconic GSO services shift from cost saving to access to skills, flexible resources, and guaranteed service levels. In the last decade, although the expansion of GSO practices has been strongly challenged by the UK's local software services industry and the traditional software R&D (research and development) sector (BCS 2004), the GSO model still successfully embedded into many UK organisations' daily operations as well as assisted them with their process enhancement and structure refinement (BCS 2006). Particularly after 2004, along with the enlargement of the European Union (EU), new opportunities were opened up by Eastern European countries – it was the UK who pioneered Eastern Europe software services, which grounded the EU's alternative selection of GSO services providers since 2005 (Sparrow 2005; BCS 2006).

From 2005 to the present, the UK grows into a more critical market for GSO providers across the world (CBI 2009a). Similar to the US, a large number of client companies in the UK were enthusiastic to develop long-term strategic partnerships with their providers (DIUS 2008). Although the current economic crisis has hit the UK market severely – causing a sharp drop in the demand for software services between 2008 and 2009, the UK still maintains its market leadership as the largest IT software market in Europe (worth over £58 billion in 2008, with an annual increase of 5% from 2006 to 2008) (CBI 2009a). For software offshore outsourcing, the UK is evidently one of the major players in Europe – it accounts for over three-quarters (76%) of the EU's software offshore outsourcing trade (including offshore and nearshore outsourcing) (Eurostat 2009). Even during the current economic crisis, in comparison to other EU countries, GSO services are still in relatively high demand. As the CBI (2009b) predicts, by the year 2011, the UK will retain its market leadership in the EU; more significantly, together with the recovery of the global economy, it is possible that more and more domestic companies will seek ways to expand their GSO employment in order to improve their market positions and business efficiency after the recession.

Although the above discussion suggests that the UK is a major market for GSO services and the development of GSO in this country is steady and strong, it is evident that the performance of GSO practices (e.g., software offshore outsourcing projects) in the country is still complicated and far from maturity (Sako 2005; Aspray *et al.* 2006; Deloitte Consulting 2008; Microsoft 2008; Baumer *et al.* 2007). In fact, the GSO model has brought a number of negative consequences to this nation, from legal and security issues to sociological problems, from hidden costs to collaboration patterns (see section 2.5). Therefore, in order to look into GSO practices from a different angle, the following section reviews some representative issues in the UK's GSO employment.

1.3 Various issues in the GSO employment

Together with the increasing employment of GSO services, a range of problems emerged in the GSO industry. On the one hand, offshore outsourcing is becoming more and more acceptable; but on the other hand, it has fetched different types of problems such as wage decrease, job losses, project failures, and quality decline (Nicholson & Sahay 2001; Sako 2005; Sparrow 2005). Hence, some academic and industrial studies (Overby 2003; Sako 2005; Microsoft 2006a; Hatonen & Eriksson 2009; Heath 2009) have strongly questioned the performance of GSO practices.

Sociologically, offshore outsourcing is a very topical and emotive subject which attracts growing public attention. For example, since the rise of IT software offshore outsourcing in the last decade, tens of thousands of British professionals have lost their jobs and struggled with finding new positions in the domestic market (BCS 2006). Furthermore, due to the decreasing demand for local IT/IS workers, many youngsters and professionals have chosen a career other than IT, which can expectedly lead to serious IT related skill losses in the near future (Abramovsky *et al.* 2004; Sako 2005). Take the discussion one step further, since 2003, over 75% of the UK's blue-chip companies have partially or wholly outsourced their internal IT/IS functions to overseas services providers, compared with less than 10% in the 1990s (BBC 2007). It seems that more and more UK companies are willing to exploit the global IT/IS resource, in order to chiefly concentrate on their core business competences without maintaining a costly internal IT/IS department (Minevich & Richter 2005; Hatonen & Eriksson 2009). However, based on some standard project measurements (e.g., the quality of the delivery, project satisfaction, and project management), many GSO client companies are not fully satisfied with the outcome of their software offshore outsourcing projects (Abramovsky *et al.* 2004; Minevich & Richter 2005; Sako 2005; Brown-Wilson 2008; Smith 2008; Khan *et al.* 2009; Raiborn *et al.* 2009). Project related issues – especially for those at the implementation level, urgently require immediate thoughts and feasible resolutions. According to much IT/IS outsourcing related research (Lacity & Hirschheim 1993; Arora *et al.* 2001; Dibbern *et al.* 2004; Walsham 2004; Gallagher *et al.* 2005; Sako 2005; Microsoft 2006a; Hatonen & Eriksson 2009; Khan *et al.* 2009), the author summarises some recognised questions which are listed as follows:

1) **GSO project arrangements** – In order to arrange a GSO project with one or multiple external software services providers, GSO service level shall be determined in advance, for example, *body shopping* for short-term demand; *managed outsourcing* for outsourcing specific parts of an IT/IS project; or, *total outsourcing* for using the external provider(s) to be in total control of the development. However, questions still need to be answered in this category, for instance, how to decide which service level is appropriate; how to measure a client company's capability in outsourcing; and how to arrange GSO services between different onshore and offshore project stakeholders. (See sections 2.4.5, 2.4.6, 4.5.1, and 5.5.3 for further detailed discussion)

2) **Conducting GSO projects** – According to GSO project arrangements and agreed service level, development related questions need extra attention, for instance, which part(s) of the development can be outsourced; how to measure the outsourced work; and more importantly, how to evaluate a company's capability of conducting GSO projects? (See sections 2.4.3, 2.4.4, 5.5.3, and 6.8.10)

3) **GSO project management** – Questions in this category mainly focus on managerial issues, for example, how to deploy a client company's project/people management in GSO projects; what types of management style shall be followed during the collaboration; and, how to manage communications and the progress between onshore and offshore development teams? (Sections 2.4.5, 2.4.6, 4.5.3, and 5.5.3 for detailed discussion)

4) **Development methods and processes** – Based on GSO project agreements (e.g., project level contracts), which methods shall be followed by various project stakeholders, for example, Blended methods (e.g., SSADM), Rapid methods (e.g., XP), organisational oriented methods (e.g.,

PRINCE or PRINCE II), or client/provider companies' own development methods? Furthermore, which processes shall be followed in order to improve the quality of the delivery – CMM/CMMI, ISO (international standard for quality assurance), or some companies' internal processes (Gallagher *et al.* 2005)? (See sections 4.5.1, 5.5.4, 6.8.6, and 6.8.9 for details)

1.4 What the future holds?

The above sections discuss the drivers and some typical issues in GSO practices. According to Hatonen and Eriksson (2009), outsourcing related studies can be more indicative if extra attention can be paid to themes that are likely to happen in the near future. Following this line of thought, it is important to take some interrelated areas into consideration in order to fully comprehend the tendency of the research domain (Dibbern *et al.* 2004; Gonzalez *et al.* 2006). Hence, this section examines some growing tendencies in software offshore outsourcing.

According to Sparrow (2005) and Zinnov Management Consulting (2007), although many western companies purchase IT software services across the world to remain competitive in the global market, the demand for domestic professionals with both IT/IS skills and business background is steadily increasing in the recent years. For instance, many UK companies tend to recruit people with both IT background and business knowledge with aims of bridging the gap between GSO client companies and their services providers. A recent software offshore outsourcing survey (Iacovou & Nakatsu 2008) reveals that the success of outsourcing projects mostly depends on adequate project stakeholders' involvement and explicit requirements, which are primarily supported by client companies' in-house IT staff. Moreover, based on BCS (2006), in order to assure the quality of the GSO employment, jobs such as requirements capture, business background clarification, and project coordination are *not* likely to be outsourced to external services providers in the future. Based on the above discussion, it is predictable that the GSO client companies in the UK will continuously maintain a certain proportion of qualified IT/IS professionals within their organisations.

Besides the above discussion, according to Sparrow (2005) and Microsoft (2006), major investment has been devoted to the UK's burgeoning industries since the 1990s. Some growing industries are: bioinformatics, bio-inspired computation, experimental computing, nanotechnology, new energy, and the pharmaceutical industry. These industries are expected to create fresh market requirements and tens of thousands of professional positions to replace those lost in GSO practices. Hence, due to the innovative nature of these industries, more and more local professionals with advanced expertise and IT/business skills will be required.

Another potential trend in this area is the possible shift of the outsourcing location of the IT software services providers. As discussed in section 1.2.2, some multinationals are planning to bring outsourced IT software work back to onshore or nearshore suppliers. In practice, amongst European countries, the UK not only took benefits from offshore outsourcing, but also gained adequate knowledge of how to locate global resource wisely (Sparrow 2005). After the enlargement of the EU in 2004, countries such as the Czech Republic, Hungary, Poland and Russia initiated new possibilities for IT software related services. Although companies in Eastern Europe are still growing and not very well organised compared to their Indian counterparts (e.g. TCS, Wipro and Infosys), the situation has been dramatically changing in the last two to three years. Some Eastern European countries are increasingly investing on their software services industry in order to win major contracts (ITCRussia 2008; Hatonen & Eriksson 2009). Based on that, together with the challenge in the current economic downturn, it is likely that onshore outsourcing (with respect to domestic IT/IS services suppliers) and nearshoring (with respect to services suppliers on the European continent) will regain a certain proportion of the UK's software services market.

1.5 Definitions of terms used in the thesis

Previous sections have briefly discussed GSO and its development in the UK, strengths and weaknesses of this phenomenon, and some rising tendencies. Before proceeding to discuss this PhD research, the author needs to clarify some important terms and definitions, which are popularly used throughout this thesis. However, due to the dynamic nature of the research domain, the author does not claim that these terms and definitions are *correct* or *accurate* in an absolute sense (for terms such as IT/IS outsourcing and GSO, refer to sections 2.2.3, 2.4.1, and 2.5 for further explanation).

1.5.1 Definitions of outsourcing terms

The immaturity of IT/IS outsourcing research has produced various mutually inclusive terms (Gonzalez & Gasco 2006). Even for the relatively mature research branches (e.g., "why to outsource"), many terms have been inconsiderately produced and inconsistently explained (Dibbern *et al.* 2004; Gonzalez *et al.* 2006). Therefore, it is important to promote unity of terms and definitions in the beginning of this research, so that the author can remove ambiguity when denoting these terms in this thesis. Following that, some key terms and their definitions are listed as follows:

Outsourcing – A client company subcontracts some business functions to one or several local/overseas suppliers with interests of lowering costs, improving efficiency, developing flexibility, or accessing specialisation (Lacity & Hirschheim 1993).

Offshoring – The process to relocate some of a client company's business processes and some internal functions from one country to another, where costs are cheaper and labours are adequate. The process usually requires opening overseas branches to support the client company's offshoring decisions (Sako 2005; Overby 2007).

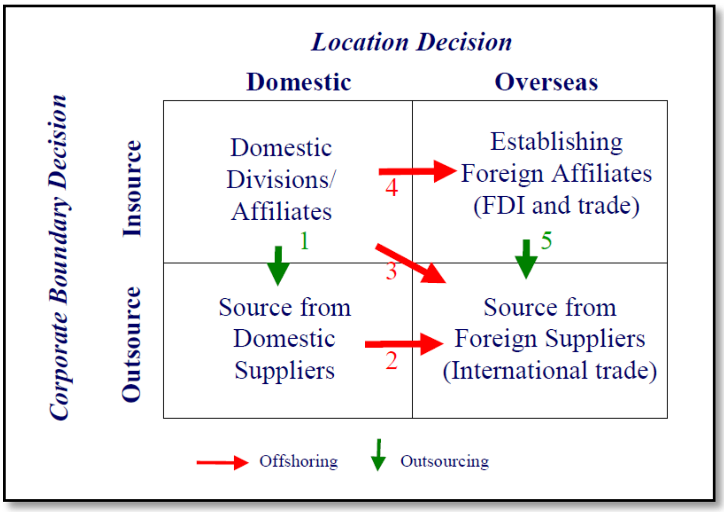


Figure 1.1: Defining outsourcing and offshoring [Source: (Sako 2005)**]**

The difference between offshoring and outsourcing – The usage of these two terms has been blended in much IT/IS outsourcing research (Erber & Sayed-Ahmed 2005; Carmel & Tjia 2005; Smith 2008). Therefore, with aims of clarifying the difference between these two terms, Figure 1.1 is utilised. In the above figure, offshoring activities are coloured red and outsourcing actions are coloured green. It is evident that in order to distinguish between offshoring and outsourcing, decisions shall be made on the basis of its location decision and corporative boundary. For example, outsourcing is often undertaken between different organisations, whereas offshoring is mainly conducted between varied geographical locations. The figure also defines a variety of sources in offshoring and outsourcing, for instance, domestic affiliates (upper left), foreign affiliates (so-called *captive offshoring*, upper right), domestic suppliers (lower left), and foreign suppliers (lower right).

IT/IS outsourcing (Arrow 1 or 5 in Figure 1.1) – In a broad sense, the term refers to a process of contracting out part or all of a client company's IT/IS functions to one or several external services providers, either locally or internationally. The outsourced work contains software applications development, systems maintenance, and IT/IS support. However, it usually excludes activities such as the client's business services, for example, core competence consultancy, after-sale services, or front-line customer services (Lacity & Hirschheim 1993; Willcocks *et al.* 1995; Dibbern *et al.* 2004).

Offshore outsourcing (Arrow 3 in Figure 1.1) – Different to *offshoring*, this term refers to a client company's strategic decision to employ offshore services providers to perform internal functions in a country other than the one that the client is mainly based in (Dibbern *et al.* 2004; Sako 2005).

IT offshore outsourcing – This term is also called *Global IT outsourcing* (abbreviated as 'GIO') or *IT/IS outsourcing* (Sahay *et al.* 2003), when describing an industrial phenomenon that a client company employs offshore IT services providers to achieve the client company's internal IT/IS related targets (Lacity & Hirschheim 1993; Gonzalez & Gasco 2006; Lacity & Rottman 2008).

Global software outsourcing – This term is also named as *software offshore outsourcing* and abbreviated as 'GSO'. It represents a vital sub-field of the subject of *IT/IS outsourcing* (see section 2.5.1 for details), which describes a globalised software solution – one or several overseas IT software services firms carry out part or all of the software development process for a client company (Heeks *et al.* 2001; Zhou & Mayhew 2009).

Global software development – This term is abbreviated as 'GSD', which derives from *geographically distributed development* (GDD). It means that a software project is conducted by teams dispersed in different time zones, space and societies (Agerfalk *et al.* 2005). Whilst GSO emphasises on the procedure of conducting software development between different parties, GSD gives attention to development activities that carried out in different geographical locations. Recently, due to the increasing inter-continental and cross-national software development, both GSD and GSO are used when describing the internationalised software related solution (Lings *et al.* 2007).

1.5.2 A framework for IT/IS services outsourcing

The above definitions suggest that GSO is part of IT/IS outsourcing and has strong relation to global IT/IS services. Figure 1.2 presents a framework of IT/IS services outsourcing summarised by the International Data Corporation (2007), which illustrates the interrelationship between GSO and IT/IS outsourcing. The diagram indicates that IT/IS outsourcing can be divided into three areas: information systems outsourcing (IS outsourcing, coloured blue), information process outsourcing (IPO, coloured dark green), and software services outsourcing (coloured dark red). IS outsourcing consists of three exceedingly popular components: KPO (knowledge process outsourcing, coloured purple), BPO (business process outsourcing colour purple), and ITO (information technology outsourcing, colour purple). The recent definitions of these terms can be found in the *Black Book of Outsourcing* (Brown-Wilson 2008). The figure illustrates the important role that GSO are playing in IT/IS outsourcing services, which indicates that GSO is the basis of many IT/IS outsourcing activities.

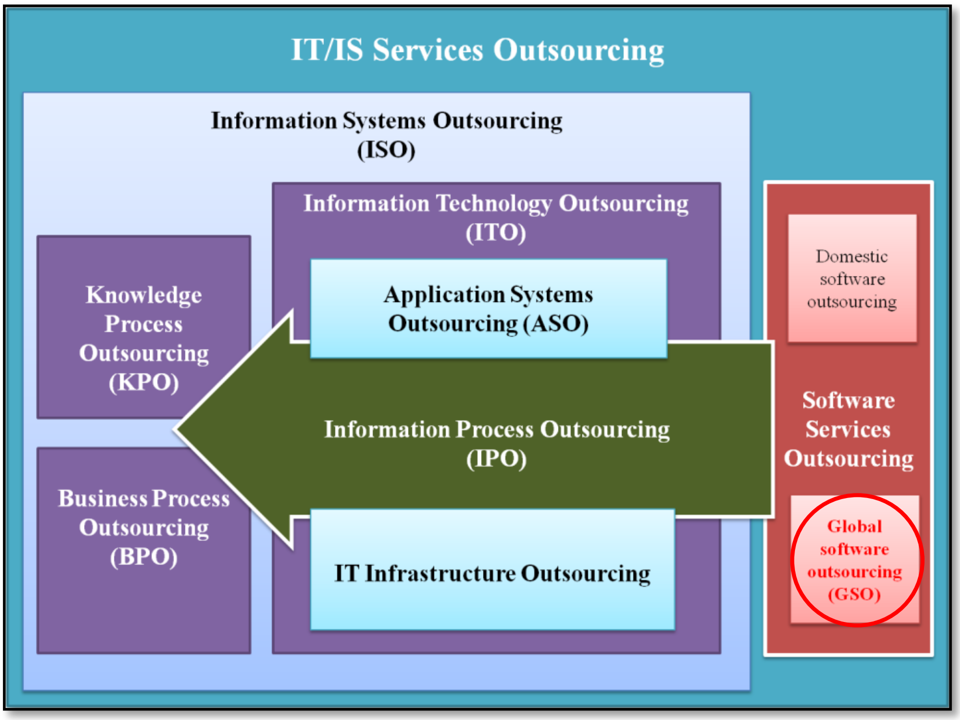


Figure 1.2: A framework for IT/IS services outsourcing
[Derived from: (IDC 2007b)**]**

1.6 Research opportunities

Although there is much research on IT/IS outsourcing (Dibbern *et al.* 2004; Gonzalez *et al.* 2006; Hatonen & Eriksson 2009), it is noticeable that studies in this area lack a coherent focus on practical themes (Paasivaara & Lassenius 2003; Gonzalez *et al.* 2006). According to Khan *et al.* (2009), few studies have investigated GSO projects from operational perspective. Thus, based on the discussion in section 1.3, some research opportunities emerge:

1) **Operation level issues** – Due to the changeable nature of GSO projects, an in-depth exploration is required to examine *various development issues* during the development (Rao 2004; Microsoft 2006a; Hatonen & Eriksson 2009; Khan *et al.* 2009).

2) **Project arrangements** – Although it is understandable that GSO *project arrangements* can affect the performance of GSO practices, questions such as how to deploy and arrange GSO projects still require further research (Dibbern *et al.* 2004).

3) **Outsourced development phases** – As many development phases have been outsourced to external GSO services providers at the present moment, project measurement systems need to be

established in order to ensure the feasibility and viability of *outsourced development phases* (Sabherwal 2003; Microsoft 2006a).

4) **Areas for improvement** – Based on some GSO project related studies (Gallagher *et al.* 2005; Sparrow 2005), researchers are questioning some outsourced IT/IS functions and their performance during the collaboration; therefore, detailed studies are required to identify which *development areas* shall be improved in GSO practices.

1.7 Research motivations

Between 2005 and 2009, the author was working on several GSO projects in a leading UK financial services company (Company Alpha, the company name is intentionally changed according to the confidential agreement agreed between the company and the author). Until early 2008, he was acting as a main systems analyst (SA) and involved with many software offshore outsourcing projects between Company Alpha and its domestic/global IT software services provider firms. In the second half of 2008, he became a project consultant in the strategy and governance department; hence, his duty turned from software development into overseeing the company's IT/IS outsourcing projects. During the period of time, he accessed many GSO projects (e.g., multi-sourcing, geographically distributed development) and collected much first hand industrial data for this exploration.

Through the author's three-year industrial study (from 2005 to 2008) and professional practice in Company Alpha, the great variety of IT/IS outsourcing projects and organisational changes caused by a company's GSO employment have inspired this study and the author's research focus. In brief, the author's improving understanding of GSO projects in the UK's financial services sector motivated this research. For example, research motivations of this exploration can be divided into two areas: 1) in industry, although a large amount of UK organisations have employed the GSO model, most of them are not entirely satisfied with the outcome of their GSO projects (see details in section 1.3); 2) in academia, while much research has been accomplished towards IT/IS outsourcing, project level GSO research, especially for issues at implementation level, still requires a further exploration (Dibbern *et al.* 2004; Gonzalez *et al.* 2006; Lacity & Rottman 2008; Khan *et al.* 2009).

1.8 The research aim and objectives

The recognised research opportunities explained in section 1.6 indicate the importance of devoting time and energy to this research domain. In order to fill the research gap in the subject of IT/IS outsourcing, the overall aim of this PhD research can be seen as follows:

To explore project level issues and development areas for improvement in GSO projects in the UK's financial services sector.

As discussed in section 1.7, due to time and funding limits of a PhD research, it is not possible for the author to concentrate on every research opportunity highlighted in section 1.6. Thus, the author concentrated on four main research objectives in this exploration, which have strong connections with the performance of GSO projects and software development activities:

1) **The knowledge of the research domain** – To study the subject of IT/IS outsourcing, GSO projects and related studies, so that a high quality research foundation can be established. In order to fulfil this objective, literature review (Chapter Two) and the preliminary industrial study (Chapter Four) are conducted.

2) **IS research methodologies** – To research the IS research methods, proper research methods can be utilised in the exploration. In order to satisfy this research objective, the study of IS research methodologies is carried out in Chapter Three (research approach).

3) **GSO project level issues** and **areas for improvement** – To discover project level issues and areas for improvement in the development lifecycle in GSO projects, a preliminary study (Chapter Four) and a detailed study (Chapter Five and Six) are accomplished to fulfil this objective.

4) **Next step of this research –** In order to recognise opportunities and suggestions for future studies, the research findings are discussed in the final chapter (Chapter Seven – summaries and conclusions), together with implications of the research and discussions of what types of future work required for this exploration.

1.9 Significance of the research

The primary research (i.e. from section 1.1 to section 1.6) explains reasons of exploring GSO projects in the UK. This study is expected to contribute towards the following areas:

1) To deliver a synthesis and integrated analysis of the research area and key contributions donated by leading researchers, such as Avison, Dibbern, Fitzgerald, Lacity, Sparrow, Walsham, and Willcocks (see Chapter Two).

2) To provide an in-depth analysis of several GSO projects in a leading financial services company in the UK, which can help other IT/IS outsourcing researchers to conduct their GSO project studies (see Chapter Four).

3) To offer key research findings of this PhD research to the IT/IS outsourcing research community, which includes detailed development issues discovered in a mixed methods research approach (see Chapter Five and Chapter Six).

4) To discuss the implications and relations of the research findings, together with some recognised research opportunities for future studies in this area (see Chapter Seven).

1.10 Structure of the thesis

The remainder of this thesis explores GSO services and its projects in the UK. The subject of IT/IS outsourcing and the adopted IS research approach are explored in chapters to come (i.e. Chapter Two and Three). The subsequent chapters (i.e. Chapter Four, Five and Six) are to look into areas of detailed software outsourcing issues at project level, which provides an in-depth investigation of GSO projects and areas for improvement.

Chapter Two reviews the context of global IT/IS outsourcing, the theoretical foundations of the research domain, and the subject of IT/IS outsourcing. When examining the subject of IT/IS outsourcing, much academic and industrial research in the field are addressed together with an in-depth review of the field of GSO. At the end of the chapter, key issues of this research area are discussed in detail.

Chapter Three follows the foundation established in the primary research and the literature review. This chapter firstly examines the philosophical basis of IS research, the quantitative research approach, and the qualitative research approach. After that, it examines reasons to choose a mixed methods research approach in this exploration. The chapter also considers some typical IS research methods in order to choose appropriate research methods for this PhD research. In the second half of the chapter, the PhD project and selected research methods are explained in detail.

Chapter Four describes a preliminary industrial study undertaken before the detailed industrial study. In this chapter, multiple cases studies are used to examine three GSO projects in a leading financial services company in the UK. After analysing case study findings, three types of practical issues (GSO project arrangements, relationships in GSO projects, and other project level problems) are discussed, which also establish a research framework for the following detailed study to follow.

Chapter Five addresses the qualitative research approach in the detailed study – the GSO interview survey. This chapter includes the design of the GSO interview survey, the progress of the interviews, interview data collection and analysis, and key research findings. The chapter also describes main advantages and disadvantages of GSO practices according to the interview participants' experiencing GSO projects; more importantly, it discovers critical project level factors and important areas in GSO projects, which can be examined in the GSO online questionnaire survey.

Chapter Six investigates GSO projects in the UK's financial services sector through a quantitative research approach – an online questionnaire survey. This chapter explains the online survey, which includes the introduction of the survey, the questionnaire design, survey questions, and discussions of the survey results. The second half of the chapter addresses various results of the survey, which includes the performance of outsourced development areas, the adopted development methods, communicative issues, GSO benefits, and critical project factors. Furthermore, it also discovers development factors that have strong connections with the performance of the implementation during the GSO collaboration.

Chapter Seven summarises this rich and diverse GSO exploration in several key points. The chapter concludes the most general and compelling lessons that have learned from this PhD project, which integrates findings such as communications, GSO project arrangements, important project factors, and GSO project issues in different research phases. Based on these findings, implications, opportunities, and suggestions for future research are discussed in the second half of the chapter.

Chapter 2 IT and IS Outsourcing

Based on the primary research conducted in the first chapter, Chapter Two explores the subject of IT/IS outsourcing. It firstly reviews the increased globalisation and its relation to the IT industry and the emerging industrial phenomenon – IT/IS outsourcing. After that, the chapter studies the evolution of IT/IS outsourcing, which indicates the importance of GSO studies for the industry. Although the field of software offshore outsourcing is still young and dynamic, the author manages to examine academic/industrial research on IT/IS outsourcing based on a thorough theoretical foundation. In the last part of the chapter, the sub-field of IT/IS outsourcing (i.e., GSO) is examined together with some further discussions towards key issues in IT/IS outsourcing practices.

2.1 Introduction

The first chapter looks into global software outsourcing (GSO), the development of GSO in the UK, current issues in GSO practices, and some possible trends in the area. Based on the primary research, research opportunities are identified, together with research objectives and significance of this study. In order to enrich the researcher's knowledge of this emerging research domain, the second chapter reviews literature in globalisation, IT/IS outsourcing, and the topic of GSO in particular.

As introduced in Chapter One, the representative IT/IS outsourcing publications in the past two decades illustrates that GSO belongs to the subject of IT/IS outsourcing and has a strong connection with the increased globalisation (Lacity & Hirschheim 1993; Nam *et al.* 1996; Heeks *et al.* 2001; Dibbern *et al.* 2004). Thus, in order to comprehend this research domain and its industrial impacts, it is necessary to appreciate the historical context of this topic as well as related research areas such as company strategies, determinants of outsourcing, and GSO risks (Currie 2003; Khan *et al.* 2009). Following this line of thought, the following sections review the IT/IS outsourcing literature from two different angles: 1) to understand the context of this subject; 2) to examine IT/IS outsourcing and its sub-field (i.e. GSO), along with related research areas such as theoretical foundations of IT/IS outsourcing, outsourcing practices in industry, and key issues in this industrial phenomenon.

To be specific, the following sections contain five parts: section 2.2 describes the historical context of global IT/IS outsourcing – the increased globalisation and outsourcing in general; section 2.3 discusses the theoretical foundations of this subject; section 2.4 examines academic/industrial research of IT/IS outsourcing, which includes the prominent outsourcing stage model, categorised outsourcing research findings, and the field of GSO; section 2.5 focuses on key issues in IT/IS outsourcing practices. The outcome of this chapter provides guidelines and a research foundation for this PhD project; additionally, the literature review can also help the author to identify decisive project factors and issues that the author needs to focus on in the following industrial exploration.

2.2 Globalisation and IT/IS outsourcing

Despite people's likes or dislikes, global integration and international interdependence in the areas of economy, society, culture, technology, and even politics have dramatically changed our planet during last two decades. To describe this global process, the term 'globalisation' was introduced and popularised by Levitt (1983) in the early 1980s. Levitt declares that *new technologies* are the key force to drive "the world toward a converging commonality" on an unimaginable scale. New Technologies, especially information communication technologies (ICTs), have led the emergence of a globalised market which standardised production, distribution, marketing, and management in the international trade (Hopkins 2002). Thus, with aims of understanding this globalised software services solution, it is essential to firstly study its historical context – globalisation.

2.2.1 A brief history of globalisation

According to Baker (2001) and Hopkins (2002), the history of globalisation can be traced back to the modern era, over four hundred years ago. Following a rapid expansion of international trade and cross-country investment, the first wave of globalisation flourished between the European countries and their colonies in the 17th century. The second wave of globalisation flourished during Britain's imperial century (1815-1914), when victory over Napoleonic France left the British Empire enjoying a century of unchallenged dominance across the world. During that period of time, Britain invested large amounts of capital and resources to control economies of many countries and territories in Africa, America and Asia, where its international trade networks enormously benefited Britain and its global empire (Ashton & Hudson 1962; Stavrianos 1994). Particularly in the second half of the 19th century, Britain extended its economic and political superpower by its superior manufacturing technology and improved global transportation (e.g. steamships and railroads), which moved globalisation towards its modern form – the "modern globalisation" (Hopkins 2002).

World War One (WWI) and World War Two (WWII) (1915-1945) radically reformed the shape of the modern globalisation in the first half of the 20th century. The sharp decline of the European nations after the World Wars time indicates that the balance of global power was shifted from the European continent to the US and the ex-Soviet Union (Louis & Brown 1999). After the 1940s, globalisation experienced a short period of stagnation due to anti-colonial movements in the colonies of European countries and the growing intensity between the US and Soviet Union. The Cold War (1945-1991) particularly complicated the international collaboration and integration between the Soviet Union

(USSR) and the Western world (Painter 1999). Noticeably, during the Cold War, western multinational companies originated most of the international trade and cross-country cooperation in areas such as technology, services, capital, labour and products (Greenwood 1997). From 1945 to the early 1980s, many international institutions were founded to oversee the process of the international cooperation and integration. For example, some famous organisations are: the World Bank, the International Monetary Fund (IMF), and the General Agreement on Tariffs and Trade (GATT), which was replaced by the World Trade Organisation (WTO) in 1995.

The latest surge of globalisation began in 1995, straight after 110 countries signed trade agreements to become contracting parties in the Uruguay Round (1986-1994). The GATT has been transformed into the WTO, which formalised a global cooperation platform to regulate trades between countries and recommend resolutions to disputed international trading. Since then, a series of worldwide agreements have been achieved – major global restrictions such as cross-country tariffs and political barriers on free trade have been removed in the international trade (Pashricha 2005).

2.2.2 The IT industry and globalisation

The accelerating pace of modern globalisation has spread prosperity to many developed countries as well as developing countries since the end of the 20th century. In the 1990s, the Internet and WWW (World Wide Web) have been quickly popularised to the whole world. The growth of IT and IT enabled services (ITES) industries has increased the possibility for companies to employ globalised IT solutions in their business operations (e.g., customer service and back-office) to improve business efficiency (Friedman 2005). Hence, according to the BBC special report on globalisation (BBC 2008), the scope of the globalisation has been dramatically increased in the last twenty years – the total world trade value was increased from around US$5,100 billion in 1995 to over US$10,000 billion in 2005.

As shown in Figure 2.1, IDC (2006) states that, the market value of worldwide IT services has also been steadily increasing in the last two decades – from just over US$90 billion in 1990 to US$540 (projected) in 2008. The diagram suggests that the share of IT/IS outsourcing in the worldwide IT services market rose from less than 10% (US$8 billion) in 1990 to over 40% (over US$205 billion, projected) in 2008. Between 1998 and 2002, its market value surged from US$65 billion (26% of the IT services market) to US$125 billion (36% of the services market), which verifies the primary research – global software outsourcing increased speedily due to the Y2K problem and the first wave of the dot-com economy (see section 1.2.1). Although IDC did not update the most recent market data for the worldwide IT and ITES industry since then, based on the discussion in section 1.4, there are strong indications that IT/IS outsourcing will continue to grow in the future.

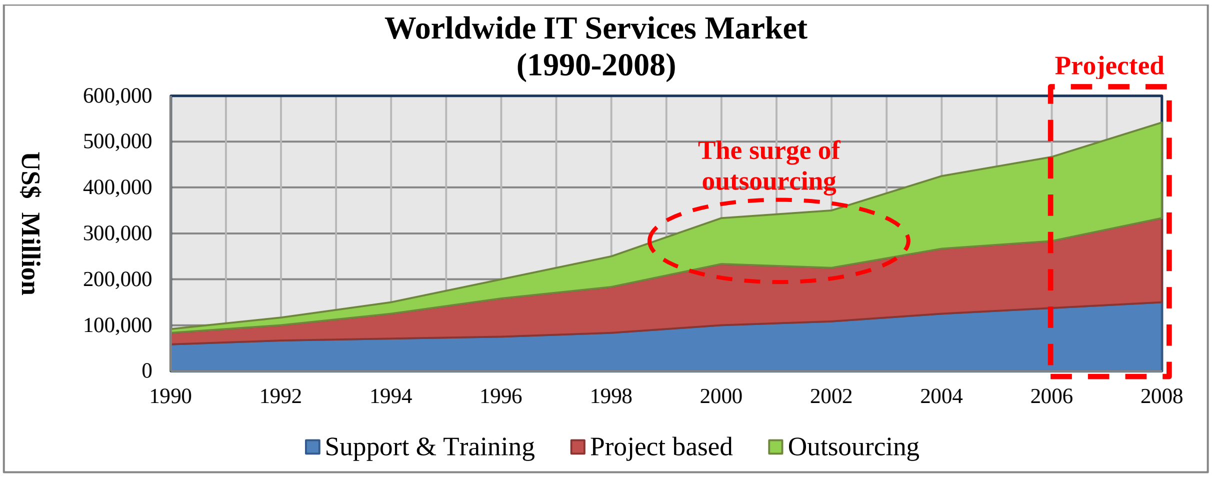


Figure 2.1: Worldwide IT services market (1990-2008) [Source: (IDC 2006)**]**

In the beginning of the 21st century, more and more western companies were willing to employ cheap but quality labour force from developing countries in order to maintain profits and improve core competences (Gonzalez *et al.* 2006). Recently, even some middle size and small scale companies started to utilise foreign resources to deliver their internal IT/IS tasks (Oshri *et al.* 2007; Schifferes 2007). However, the development of international integration also caused a range of problems. For example, it jeopardises the living environment of some types of western industries (e.g., the IT software services sector) and shifts political and technical power to several major developing countries such as Brazil, Russia, China, and India (the so called BRICs) (Schifferes 2007).

According to much research (Arora *et al.* 2001; Hatonen & Eriksson 2009; Khan *et al.* 2009), since the IT software services boom in the late 1990s, many western multinational companies became depending on cheap overseas services providers (e.g. Indian services companies) to complete their internal IT/IS tasks. In the past decade, the burst of the dot-com bubble and continuously altering market demands forced organisations to reconsider their IT/IS strategies. Hence, compared with maintaining an expensive and occasionally superfluous internal IT/IS sector, it is more reasonable to employ low-cost and flexible (can be dismissed if not required) overseas IT professionals. Therefore, since the middle 2000s, many multinational companies have made their IT/IS professionals redundant and replaced them with foreign services providers. Presently, with nearly two-decade expansion, the annual revenue of some main IT software services provider nation (i.e. India) has exceeded over US$320 billion. For instance, India's IT and ITES companies recruit over 1.6 million workers and account for around 60% of the world's IT/IS outsourcing market (NASSCOM 2009); what's more, some leading Indian companies such as Tata Consultancy (TCS), Infosys, Wipro and Mahindra Satyam (SAY) are so well-developed that they are able to globally challenge their western counterparts (e.g. IBM, CSC, Accenture) for major contracts (Hirschheim & Dibbern 2009).

Due to these latest industrial trends discussed above, concerns are emerging in the western countries. Deloitte's (2006) survey suggests that in 2005 over 50% of western IT/IS workers were afraid that their jobs would be outsourced to developing countries; around 30% of them wanted to force companies or their government to bring jobs back to the West; and more than 70% of the interview participants had negative experiences with the increasing globalisation and their companies' outsourcing decisions. Recently, even the US president Barack Obama raised his concerns towards globalisation and offshore outsourcing practices in organisations in the US. He accused several major US multinational companies for outsourcing business to India through unfair business practices; with aims of retaining jobs within the US and bringing certain types of outsourced work back, he warned that heavier tax could be proposed to stop endlessly outsourcing activities (IBNLive 2010).

2.2.3 Outsourcing and the evolution of IT/IS outsourcing

The previous sections mainly introduce the evolution of globalisation and its profound effects on the IT and ITES industry. Based on that, the author highlights that IT/IS outsourcing as an industrial phenomenon is playing a critical role during this global process. In this section, the author looks into the development of outsourcing and the evolution of IT/IS outsourcing.

2.2.3.1 A concise introduction of global outsourcing

Although the idea of outsourcing was not formally introduced until the late 18^{th} century, in a broad sense, outsourcing as a social and economic phenomenon had existed for centuries (Hirschheim & Dibbern 2009). It is very hard to trace back to the exact origin; however historians (Stavrianos 1994) believe that outsourcing-like activities emerged a few thousand years ago along with the formation of the small communities and human societies, when certain persons were required to be specialised in some social positions, so essential work such as food hunting or other daily activities had to be undertaken by other people. Many historical events also witnessed outsourcing-like activities. For example, the ancient Roman Empire outsourced its tax collection service to private individuals and Jewish groups to replace the official efforts (Kakabadse & Kakabadse 2002); in order to work more efficiently and cheaply, in the late 18^{th} century, North American firms contracted out certain production to Scotland (Stavrianos 1994).

With many centuries' development, it was the well-known Scottish political economist Adam Smith who first formulated a theory of "competitive advantage" to introduce the concept of outsourcing as a way to cut costs in commercial operations and transactions. In his book "The Wealth of Nations", he states that a firm can improve its effectiveness if certain production activities are contracted out to specialised individuals (Smith 1937). More importantly, he indicates the possibility to achieve business benefits by hiring cheaper labour in less developed countries to lower operational costs and access economical resources.

In fact, according to Ashton and Hudson (1962), in the beginning of the Industrial revolution, the idea of economic concentration was dominating the business world. Few western companies were willing to contract out their business operations to external suppliers in a different geographical location. Firms preferred to be internally integrated so they could tightly control production, management, and marketing. However, the situation has been radically changed in the 19th century. The improvement of industrial technologies and the increased western colonisation required adequate low-cost labour and natural resources from neighbouring countries or colonial territories to satisfy the expanding market (Berlanstein 1992). For instance, during the Industrial Revolution, the competition between the efficient English textile industry and India's traditional manufacturers led England becoming the premier regional provider of textile goods. The victory brought some significant benefits to the British Empire – opening up a large consumer market, and accessing sufficient low-cost labour and various natural resources.

Due to WWI/WWII (1915-1945) and the Great Depression (from 1929 to the late 1930s), global outsourcing suffered a period of stagnation (Friedman 2005). However, although the volume of international trade and global collaboration was shrinking, a new form of cross-country cooperation was driven by western companies (Gereffi 2005). For example, during WWII, Caterpillar Inc. developed a global service and distribution network for producing heavy construction equipment and therefore was appointed as the primary supplier for the Allied forces across the whole world (Gitlin 2008). In the second half of the 20th century, the US together with a broken Europe and Japan integrated into the Western World economy. The global trade and international distribution created significant advantages for western countries to recover after the war (Stavrianos 1994; Friedman 2005). Furthermore, with the quick development of transportation facilities and public utilities in the West in the 1960s, the commercial value of undertaking global outsourcing activities became more recognisable towards the business world (Hopkins 2002).

After the war, there are three waves of global outsourcing in the business world. The first wave of outsourcing began in the1960s, with a mass exodus of manufacturing jobs (e.g., making shoes, clothes, electronics, and toys) from the West to some developing countries (Gereffi 2005). This wave of outsourcing led varied industrial production to be undertaken by some offshore suppliers, who could deliver the same work more cheaply and efficiently. After that, the second wave of offshore outsourcing (the late 1970s to the 1980s) contracted out simple service work such as back-office support, call centres, and fundamental software programming to global services provider companies located in some territories such as South Korea, Taiwan, and Hong Kong (Hirschheim & Dibbern

2009). The latest wave of global outsourcing (from the 1990s to the present) was driven by digitisation (e.g. the Internet, high-speed data communications) and the increased globalisation (e.g. the founding of the WTO) (Gereffi 2005). Due to the nature of the knowledge-based work, high-tech work such as hardware and software R&D was proved suitable to be completed almost anywhere across the world (Friedman 2005). Thus, many high-tech positions have been globally outsourced to IT/IS professionals located in developing countries such as India, China, Philippines, Mexico, Russia, South Africa and some eastern European countries (Hirschheim & Dibbern 2009).

2.2.3.2 The evolution of IT/IS outsourcing

Widespread IT and its industrial applications have integrated into many industries. As introduced in section 2.2.2, ICTs have increased global interconnection and accelerated the process of the recent globalisation. The improved global communication in conjunction with new ICTs is changing the way that many organisations implement their businesses (Quinn 2000; McIvor 2005).

A widely accepted opinion is that IT/IS outsourcing firstly emerged in the US market in the 1960s, when several large scale US companies began to contract out data processing tasks due to the enormous costs of computers and physical storage (Aspray *et al.* 2006). Moschovitis *et al.* (1999) claim that the first big IT software outsourcing contract was signed in 1963, when a large US health federation (Blue Cross of Pennsylvania) contracted out its entire data processing operations to Electronic Data Systems (EDS). Between 1960s and 1970s, some large-scale firms pioneered exporting costly computer data processing and data storage to several representative professional domestic IT software services suppliers.

According to Dibbern *et al.* (2004), in the 1980s the real interest in IT/IS outsourcing occurred when EDS signed contracts with Continental Airlines, First City Bank and Enron. These deals indicate a general acceptance of outsourcing practices in the western business world. Although the size of these IT/IS outsourcing contracts were not enormous during that period of time, the situation became varied when ICTs revolutionised the world since the late 1980s. In 1989, a landmark outsourcing deal was agreed between Eastman Kodak and IBM, DEC, and Businessland (Rao 2004). The agreement was worth over US$250 million and strategically handed over Kodak’s entire data centre operations and IS function to external services suppliers. Previously, as systems level functions (see explanation in section 2.3.3) were often considered as a company’s strategic assets which should only be operated internally, therefore, Kodak’s move (also known as the “Kodak effect”) symbolised a new wave of IT/IS outsourcing (Willcocks & Fitzgerald 1993; Willcocks *et al.* 1995; McIvor 2005). Since then, together with the rapid growth of ICTs, the Kodak effect led many large-scale companies to reconstruct their organisations so that they could employ the outsourcing model to cut costs and to increase flexibility (Gouge 2003).

Many researchers (Lacity & Fitzgerald 1995; Sahay *et al.* 2003; Rao 2004) claim that IT/IS outsourcing became a global phenomenon in the middle 1990s. Since the Y2K (Year 2000) problem required enormous reprogramming efforts, companies across the world had to look increasingly beyond their national borders in order to seek overseas services providers to assist their internal IT/IS work such as design, development, testing, and maintenance. Additionally, according to Galbraith and Hale (2004), the development of telecommunication infrastructures enabled numerous Internet-based companies to be founded during the first wave of the dot-com boom (1995-2000). Similar to the Y2K problem, the growth of these firms also required qualified IT workers – since the local labour market could not supply enough skilled IT/IS workers, these companies also had to source internationally.

2.2.3.3 IT/IS outsourcing in the new century

In the 21st century, the evolution of global IT/IS outsourcing has dramatically changed the traditional way of doing business. IT/IS outsourcing is widely regarded as a critical factor for organisations to improve their business efficiency and resources flexibility (Quinn 2000). Innovations in ICTs also fuelled the global collaboration in the IT software services industry (Arora *et al.* 2001; Aspray *et al.* 2006). Thus, since the beginning of this century, many western multinational companies have increasingly employed IT/IS outsourcing in their businesses (Sako 2006; Hatonen & Eriksson 2009; Willcocks & Lacity 2009). Figure 2.1 in section 2.2.2 validates this tendency – IT outsourcing services increased rapidly between 1998 and 2002, from US$65 to US$125; after 2005, outsourcing services accounted for nearly 40% of the worldwide IT services market.

Since 2005, at organisational level, IT/IS outsourcing has moved beyond cost savings to promoting flexibility, adding value, increasing productivity and competitiveness (Lacity *et al.* 2008). Recently, many major global IT/IS outsourcing services providers are treated as long-term strategic partners, which means that both clients and their services providers are responsible for risks as well as rewards in outsourcing practices (Hatonen & Eriksson 2009). The relationship has evolved from a traditional one-to-one relationship (i.e. one Provider with one client) to a more complicated arrangement which involves multiple providers and multiple clients (Gallivan & Oh 1999; Dibbern *et al.* 2004).

Because of the speedy development and changeable nature of IT/IS outsourcing, much research has been conducted on this emerging topic. Figure 2.2 shows the growth of IS outsourcing articles published in internationally recognised IS related journals (see Table 2.1 for detailed definition) from 1988 to September 2010 – the number of journal papers between 2006 and September 2010 are summarised through search results from *Google Scholar* search engine and MetaLib@UEA electronic library. The diagram below suggests that academic interests on this domain are growing speedily in the new century (107 IS outsourcing papers have been published since 2006, coloured green).

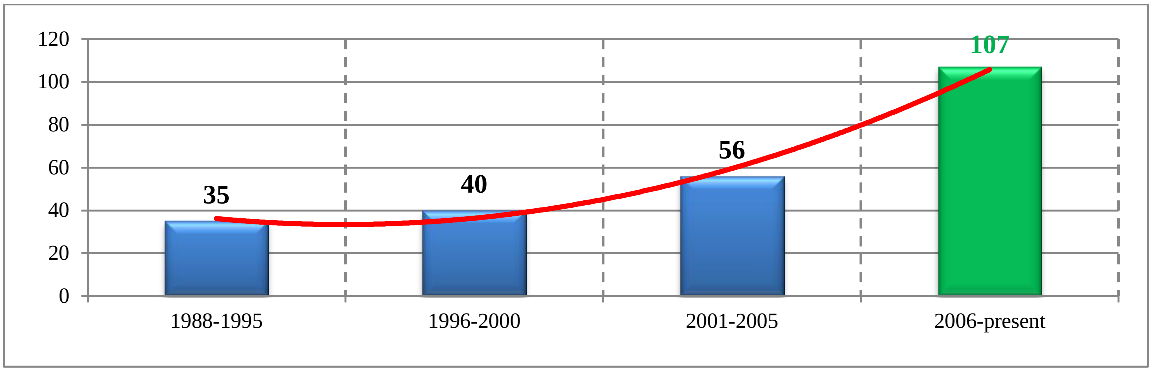


Figure 2.2: Number of IS outsourcing papers since 1988

[Derived from: (Gonzalez *et al.* 2006) **&** *Google Scholar* **&** MetaLib@UEA**]**

In the current financial crisis (2007 – the present), the changeable economic climate forced a lot of outsourcing client companies in the West to reconsider their organisational IT/IS outsourcing strategies. As introduced in section 1.1, some client companies choose to concentrate on their core competencies, so they expand IT/IS outsourcing employment; some decide to closely control internal IT/IS functions, hence they bring outsourced work back to onshore or nearshore; whereas others adopt a multi-sourcing approach in order to increase flexibility for their IT/IS services (Lacity *et al.* 2008; Merriman 2009; NASSCOM 2009). However, no matter which decision client companies will choose, it is evident that IT/IS offshore outsourcing and its industrial application are widely accepted by the business world, which also indicates that it is expected to continue its growth in the future.

2.3 Theoretical foundations of IT/IS outsourcing

Almost every major scientific discipline has some dominant foundational theory that helps scientists to explain the data they study. In computer science (including the discipline of IS), although it is a relatively young science subject in comparison with fields such as physics and chemistry, strong theoretical foundations are still required to explain the research data in an accurate, coherent, and functional manner (Denning 2000; Gregor 2006). In order to comprehend the theoretical foundations for outsourcing research, this section examines several famous reference theories in the domain.

2.3.1 Transaction cost theory

As discussed in section 2.2.3.1, in the late 18th century, Adam Smith first formulated the notion of outsourcing in his book “The Wealth of Nations”, in which he states the possibility of operating effectively by contracting out production in order to utilise cheaper resources in the market. In academia, Smith's thought disclosed the underlying concept of the outsourcing model – to acquire quality services and products with relatively low costs through continuous interaction between different trade parties (Coase 1937; Williamson *et al.* 1993).

The concept has gradually formalised into the prominent *transaction cost theory* (also known as *Transaction Cost Economics*, TCE) in the 20th century (Williamson, 1975, 1981, 1998). TCE theory states that whether or not to organise production or transaction within a firm should be decided by the cost. For instance, if the cost of utilising the market is lower than the cost of conducting the production or transaction in the firm, then outsourcing should be a preferred option. Along with the popularisation of the theory, many researchers in diverse areas began to follow it. In IT/IS outsourcing, many studies are evidently based upon this theory (Gonzalez *et al.* 2006; Thouin *et al.* 2009). For example, after having generally reviewed 131 IS outsourcing papers published by several mainstream IT/IS journals from 1988 to 2005, Gonzalez *et al.* (2006) found that reference theories such as agency theory, transaction cost theory, game theory, resource-based and resource-dependence theories were frequently adopted in IS outsourcing research. Noticeably, amongst 19 articles which wholly focus on outsourcing reference theories, 12 of them are grounded on TCE.

2.3.2 Other outsourcing reference theories

Besides TCE, some theories have also been employed by researchers when examining reasons behind IT/IS outsourcing. A thorough literature review completed by Dibbern *et al.* (2004) provides an in-depth analysis on 84 highly cited IT/IS outsourcing papers published in the 18 prestigious journals and two major international conferences on IS, from 1992 to 2000. Table 2.1 lists these journals and conferences. As mentioned in section 2.2.3.3, they are also main academic sources for this literature survey when searching outsourcing publications.

Table 2.1: IT/IS outsourcing literature sources [Source: (Dibbern *et al.* 2004)**]**

IT/IS Journals and IS Conferences	Management Related Journals
Information & Organization (I&O)	Academy of Management Journal (AMJ)
European Journal of Information Systems (EJIS)	Academy of Management Review (AMR)
Journal of Information Technology (JIT)	Administrative Science Quarterly (ASQ)
Journal of Management Information Systems (JMIS)	Decision Sciences (DS)
Information & Management (I&M)	Management Science (MS)
Information Systems Journal (ISJ)	Organization Science (OS)
Information Systems Research (ISR)	Strategic Management Journal (SMJ)
Management Information Systems Quarterly (MISQ)	Harvard Business Review (HBR)
International Conference of Information Systems (ICIS)	California Management Review (CMR)
Hawaii International Conference on System Sciences (HICSS)	Sloan Management Review (SLR)

In Dibbern *et al.*'s literature review, five categories of reference theories are identified and explained, according to the function and academic applications of these theories:

1) **Strategic theories** focus on how a company develops and implements strategies in order to achieve a defined target. This category includes game theory, resource-based theory, resource-dependence theory, and strategic management theories;
2) **Economic theories** concentrate on how to coordinate and govern trade parties during their transactions, which contain agency theory and transaction cost theory;
3) **Social/organizational theories** look into relationships that exist between individuals, groups and organisations, which include social exchange theory, innovation theories, power politics theories, and relationship theories;
4) **Others category** consists of theories that are not representative reference theories or have only been referenced once during the literature review; and,
5) **Undefined category** (i.e. *not applicable*, N/A) reflects those papers that no specific reference theory can be applied or the theoretical foundations cannot be identified.

Noticeably, for much empirical outsourcing research such as direct observation, action research, industrial explorations, and outsourcing projects studies, it is perceptible that reference theories are either not representative (category four) or unidentified (category five). Thus, such research has been categorised into either the 'Others' group or the 'Undefined' group. Figure 2.3 presents the number of IT/IS outsourcing papers reviewed as well as their recognised references theory categories.

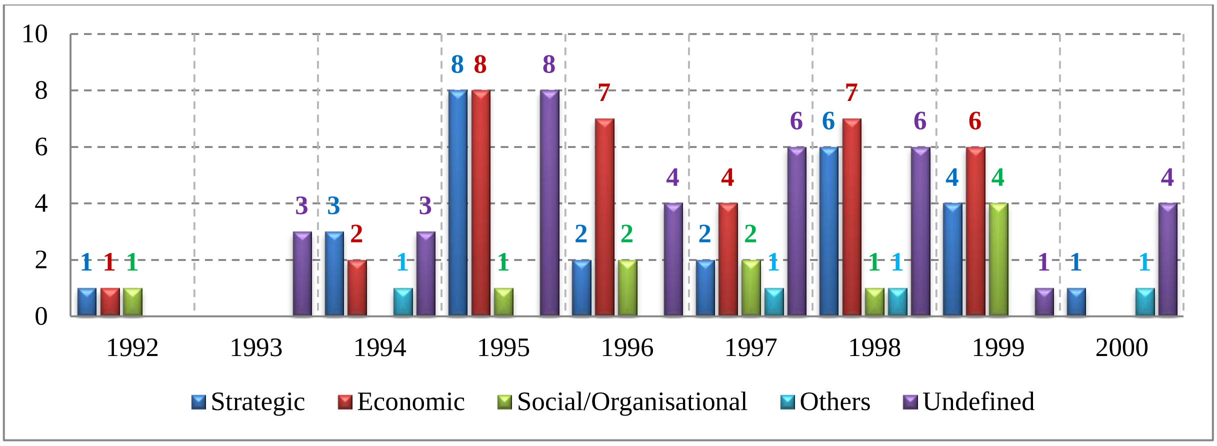


Figure 2.3: Number of papers according to five reference theory categories
[Derived from: (Dibbern *et al.* 2004)**]**

In the above figure, the primary theoretical approach to IT/IS outsourcing is economic (35 papers), followed closely by strategic theories (27 papers). Reviewed papers are almost equally divided between using a single theoretical approach (33 papers) and without using a well-defined theoretical foundation (34 papers). According to Dibbern *et al.*, the main reason for *not* having a clear theoretical foundation is that some papers derived their research questions from concepts, case studies, or quantitative data, where theories were still being developed. Notably, due to the complex and developing nature of IT/IS outsourcing, the number of papers using multiple and unclear theoretical approaches have been increasing in the 21st century (Dibbern *et al.* 2004; Gonzalez *et al.* 2006).

Another finding disclosed in Dibbern *et al.*'s literature review is the connection between reference theories and main research objectives, i.e. why, what, which, how, and outcomes (see detailed explanation in section 2.4). For example, for studies on "why to outsource" and "what to outsource", researchers chiefly employed economic or strategic theories; for papers focused on "which process to outsource", most of researchers depended on economic theories or social/organisational theories; however, for practical topics such as "how to outsource" and "outsourcing outcomes", 'Others' and 'Undefined' theories were widely followed.

The above discussion regarding theoretical foundations of IT/IS outsourcing verifies that, for industrial exploration such as this PhD research, which mainly focuses on exploring GSO project issues and development areas for improvement, its theoretical basis is normally grouped into the 'Undefined' theoretical category. The main reason is that the aim of a research with such a nature does *not* intend to prove any reference theories and merely generates a new theory based on data collected in the process of the research (for example, a grounded theory, GT). Thus, only 'Undefined' theory category in the above theories list is suitable for this PhD exploration.

2.3.3 The level of analysis

To take the discussion one step further, in order to structurally differentiate these IS studies according to their dissimilar research contexts *the level of analysis* is often used by IT/IS scholars. According to Pfeffer (1982, 1991), in order to understand causes and consequences of IT/IS changes in organisations, three levels of analysis can normally be applied in these studies – they are individuals, organisations, and society.

Based on that, Markus and Robey (1988) developed the level of analysis into a "two dimensional classificatory theory schema", which structures studies and their theories employed when examining IT/IS enabled organisational changes. Due to the rigorousness of this theory schema, according to Gregor (2006), it has been popularly followed by IS researchers since 1990s. In the subject of IT/IS outsourcing, representative scholars (Willcocks & Fitzgerald 1993; Kern & Willcocks 2000; Dibbern *et al.* 2004) have applied "the level of analysis" to classify their objects of organisational studies into two areas: macro-level and micro-level. The macro-level analysis includes investigation on social system level (e.g., outsourcing trades between countries), industry level (e.g., outsourcing practices between industries within a country), organisation level (e.g., outsourcing activities inside a company), systems level (e.g., strategic IS functions of a company's computer-based information systems), and systems functional level (e.g., functional requirements in a computer-based system). Whereas the micro-level analysis looks into more detailed implementation level components, for example, critical project factors, project issues, relationship between different project stakeholders, and employees' motivation and perception.

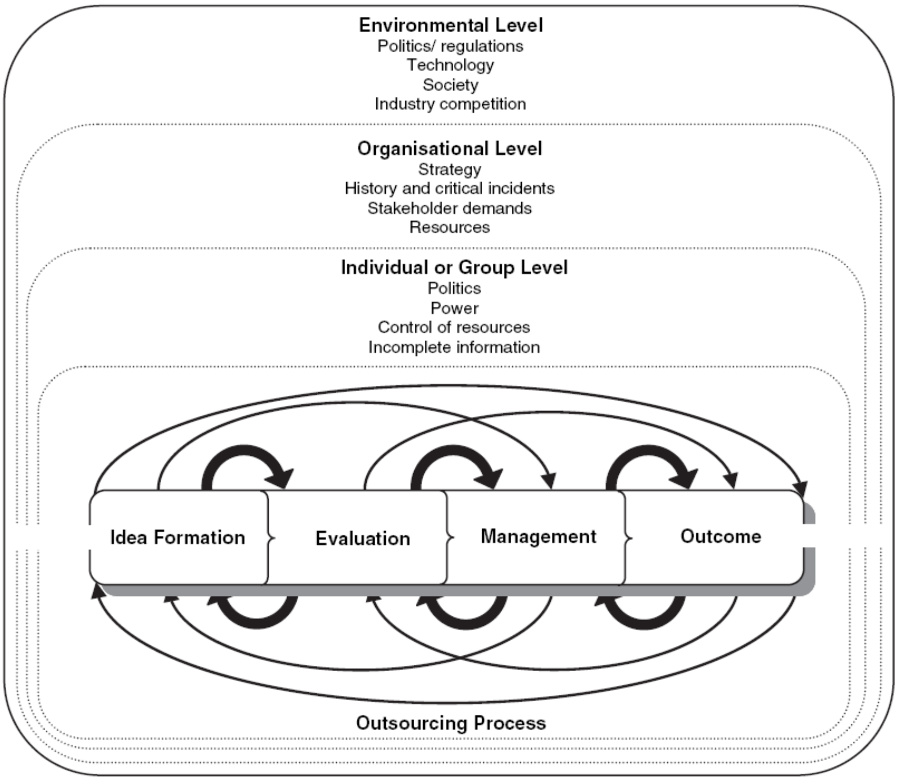


Figure 2.4: The dynamic outsourcing process [Source: (Marshall *et al.* 2005)**]**

Marshall *et al.*'s (2005) apply the level of analysis when studying high-level outsourcing processes. Based on a static four-step outsourcing process model designed by Zhu *et al.* (2001), Marshall *et al.* add three levels of impacts to present possible influences on outsourcing processes. Figure 2.4 illustrates a dynamic outsourcing process model together with three levels of impacts:

1) **Environmental Level** factors (at social system level and industry level) include high-level impacts such as politics, technologies, industries, and societies.
2) **Organisational Level** factors (at organisation level and overall systems level) contain organisational and systems level issues such as organisational strategies, company stakeholder's demands, and companies' outsourcing capabilities.

3) **Individual or Group Level** factors (at micros project level) consist of detailed issues such as project deployment and arrangements, project/people management, cross-cultural issues, communicative issues, and process/quality control.

This outsourcing process model provides a general view of the development stages and possible external impacts. It assists outsourcing researchers to consider outsourcing activities from a dynamic perspective. However, it is understandable that the model is too general to provide any practical usefulness. Therefore, an in-depth exploration is required to investigate each stage of the outsourcing process and its related external impacts (refer to section 2.4.1 for further discussion regarding outsourcing sub-processes).

2.3.4 Lack of practical outsourcing studies

Before moving onto the second part – key findings in the subject of IT/IS outsourcing, this sections discusses concerns over lack of practical outsourcing studies in this area. It reinforces the importance and necessity of this research (also see section 1.6 for research opportunities). According to a recent literature analysis accomplished by Khan *et al.* (2009), after having studied 191 highly quoted IT/IS outsourcing articles published between 1990 and 2008, Khan *et al.* indicate that IT/IS outsourcing research in the 1990s were mainly focused on industry level and organisation level (e.g., determinants of outsourcing, companies' outsourcing strategies, and outsourcing risks); whereas the centre of research has been gradually shifted to systems level and systems functional level (e.g., best practices in outsourcing, client/provider capabilities when undertaking IT/IS outsourcing activities, and how to manage relationships between clients and providers) until the middle of 2000s. From the middle 2000s, IT/IS outsourcing studies have been particularly improved in fields related with outsourcing practices, for example, GSD, BPO, KPO, outsourcing models, application service provision (ASP), and software as a service (SaaS) (see section 2.5).

Based Khan *et al.*'s research data, the author derives the number of IT/IS outsourcing papers and their associated research objectives in Figure 2.5. Most of the IT/IS outsourcing research objectives can be classified into four groups, for example, in the diagram below, articles related to "why to outsource" are coloured purple (73 papers), connected with "what to outsource" are coloured with blue (122 papers), associated with "which process to outsource" (e.g., to choose outsourcing guidelines, stakeholders, and evaluation criteria) are coloured green (86 papers), and concentrated on investigating "how to outsource" (e.g., how to implement IT/IS outsourcing practices) are coloured with red (49 papers). Compared with relatively mature research topics such as "why to outsource", "what to outsource", and "which process to outsource", the diagram below clearly shows that the number of articles related to "how to outsource" is still recognisably less than those published in mature outsourcing domains such as "why to outsource", "which process to outsource", and "what to outsource". As practical topics often provide explicit pictures for industries to follow (Gregor 2006), therefore, it is comprehensible that more practical IT/IS outsourcing research is required so that researchers can not only provide suggestions for companies to consider, but also develop the relatively immature outsourcing topic, i.e. "how to outsource".

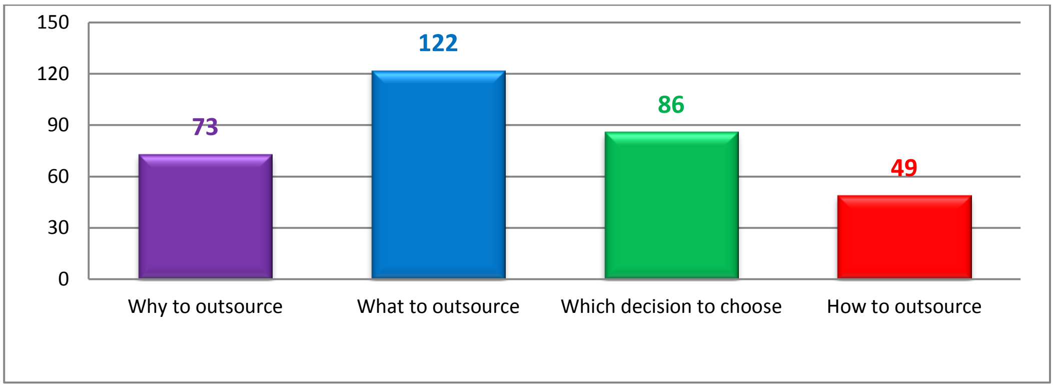


Figure 2.5: Number of papers and their research objectives

[Derived from: (Khan *et al.* 2009)**]**

2.4 Research into the subject of IT/IS outsourcing

Over twenty years' IT/IS outsourcing research provides a relatively sound framework. When reviewing the literature, it becomes clear that most of the works published in the last two decades can be positioned in this research framework – the IT/IS outsourcing stage model.

2.4.1 The stage model of IT/IS outsourcing

The IT/IS outsourcing stage model is derived from Simon's prominent decision-making model (1977). The decision making model (to the left of Figure 2.6, highlighted with rectangle with red dash outline) presents four stages when making decisions: 1) intelligence stage identifies problems which need to be solved; 2) design stage seeks various solutions; 3) choice stage chooses among the designed solutions; and, 4) implementation stage executes the solution decision made in the earlier stages. Dibbern *et al.* (2004) expands Simon's model and modifies it into a five-phase process model, which suggests how a company shall evaluate and implement its IT/IS outsourcing activities:

1) **Stage One** (*why to outsource*) – A company shall consider the main advantages and disadvantages of its IT/IS outsourcing decision;
2) **Stage two** (*what to outsource*) – A company shall judge alternative arrangements as well as review to what degree they want to employ IT/IS outsourcing;

3) **Stage three** (*which process to outsource*) – A company shall make decisions based on the findings at first two stages and choose appropriate guidelines/processes in outsourcing;
4) **Stage four** (*how to outsource*) – A company shall carefully decide its services providers, negotiate contracts, and deploy/arrange outsourcing projects.
5) **Stage five** (*outsourcing outcomes*) – A company shall cautiously review outcomes of its outsourcing projects, the success or the failure of outsourcing practices, and lessons learned from its IT/IS outsourcing projects.

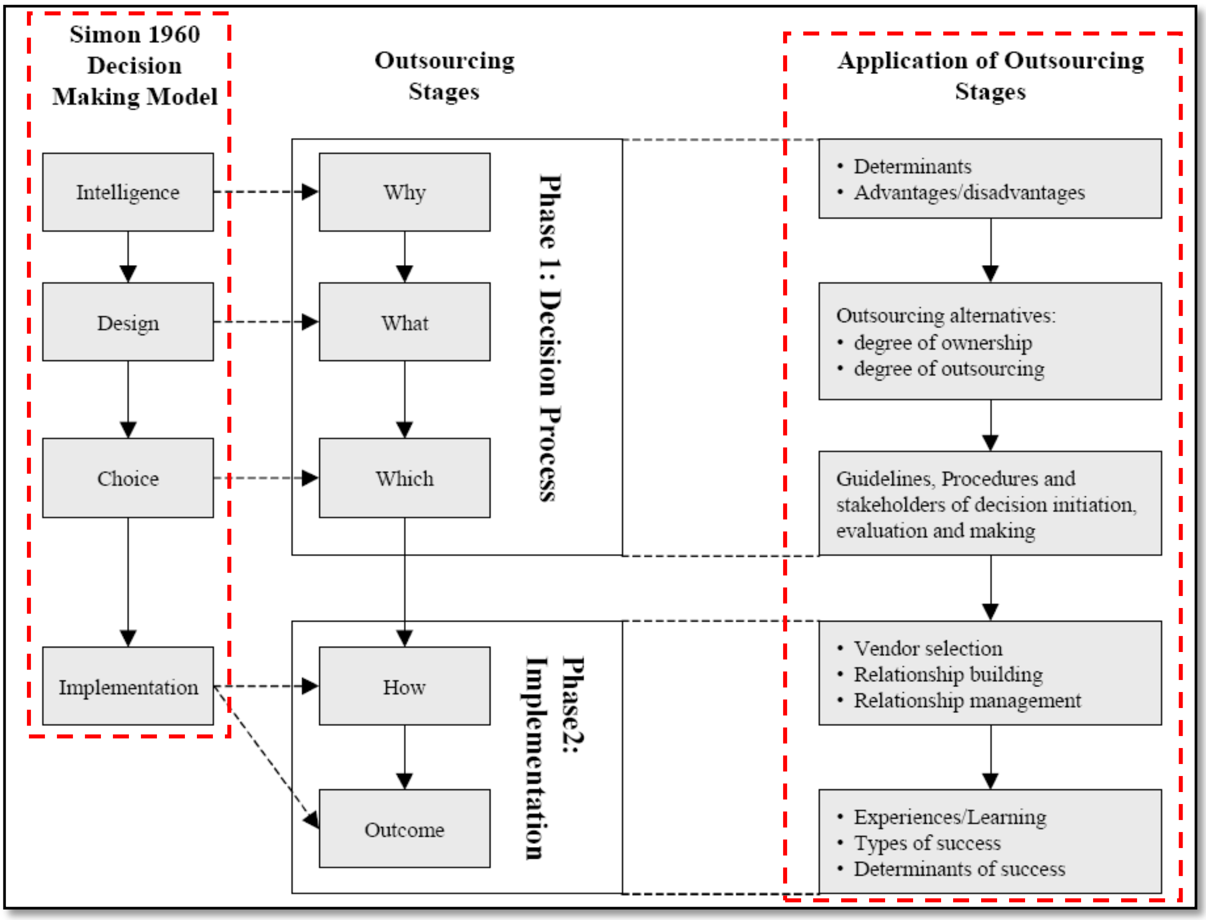


Figure 2.6: Stage model of IT/IS outsourcing [Source: (Dibbern *et al.* 2004)**]**

The first three stages can be combined into the phase of decision process; whereas stage four and five can be combined to the phase of implementation. The outsourcing stage model also lists some essential activities and tasks (highlighted with rectangle with red dash outline). In a broad sense, most of the IT/IS outsourcing studies can be categorised into this stage model (Dibbern *et al.* 2004; McIvor 2005; Hirschheim & Dibbern 2009; Khan *et al.* 2009) – the following sections (from section 2.4.2 to section 2.4.6) look into IT/IS outsourcing research in accordance with this model.

2.4.2 Stage one: why to outsource

There are many reasons why a company employs outsourcing in its business. According to a survey implemented by Deloitte Consulting (2008), cost reduction is still the primary reason that motivates CEOs (chief executive officers) of many large-scale companies to choose outsourcing. Figure 2.7 shows that 64% of the CEOs wanted to reduce operating costs when they were considering outsourcing; the second most important reason (56%) was to access technology expertise (both of them are coloured with red in the diagram below); while 49% executives believed that to obtain less expensive and sufficient global labour was their main driver (coloured red), in comparison with 40% of the interviewees who were worried about lack of in-house resource (coloured blue); around 37% of the interviewees chose outsourcing to improve customer value, compared with only 27% said that they were keen to gain competitive advantage through outsourcing (both coloured with blue); only less than 20% of the CEOs selected other reasons for outsourcing such as improving flexibility, consolidating resources, and increasing shareholder value (coloured green in the figure below).

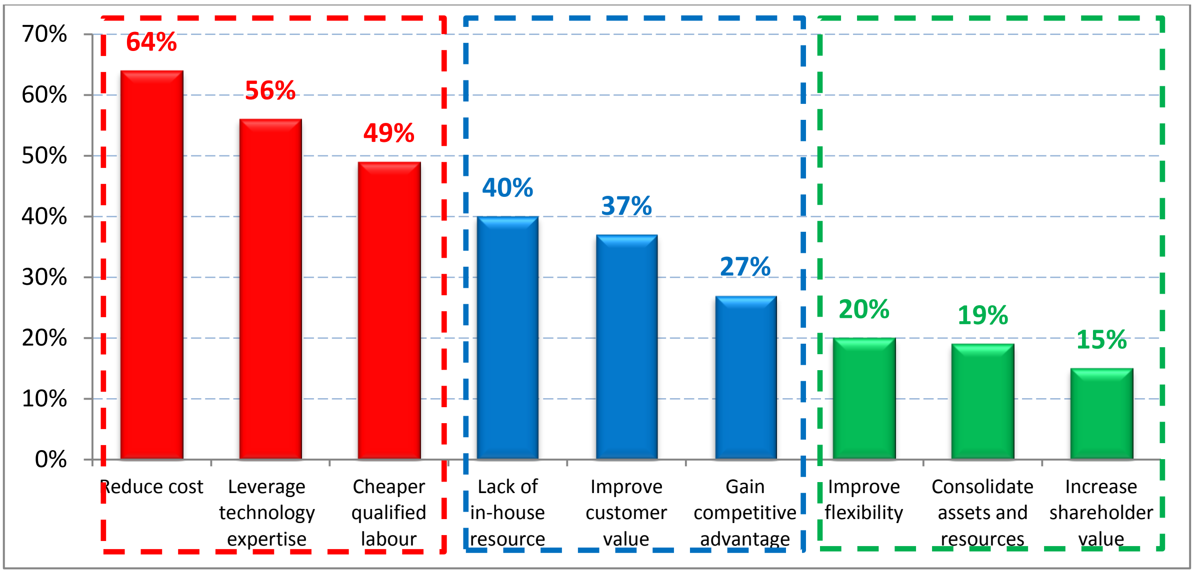


Figure 2.7: Main drivers for outsourcing [Derived from: (Deloitte Consulting 2008)**]**

In academia, much research has been conducted on reasons of IT/IS outsourcing in the last two decades. McIvor (2005) reviews many reasons why companies chose outsourcing, which include cost reduction, performance improvement, specialisation employment, access to innovation, and flexibility enhancement. In this section, an in-depth review is provided to discuss these key motives.

2.4.2.1 Cost reduction

As discussed in section 2.3.4, in the early stage of IT/IS outsourcing research (from the 1980s to the middle 1990s), there is a strong research focus on "why to outsource". At that time, the most influential theory was TCE which has driven outsourcing studies almost exclusively concentrating on topics related to cost saving. An industry study carried out by PwC (1999) (PriceWaterhouseCoopers) shows that western companies largely followed the cost reduction trend when employing IT/IS outsourcing in the 1990s. At that time, the main motivation for organisations to employ the outsourcing model was to reduce costs and to benefit from cheaper overseas labour resources.

It is a crucial cost saving factor that *labour rates* in developing countries are much lower than those in western developed countries. According to Overby (2003), in the early 21st century, general IT/IS short-term contract work could cost up to US$100 an hour in the US, compared with less than US$20 an hour in other geographic locations such as Bangalore or Beijing. For middle term or long-term IT/IS outsourcing contracts, between 2001 and 2005, software services companies normally spent around US$8,000 per year to maintain a permanent junior level IT/IS professionals in developing countries such as India or China, whereas to retain a junior level position in some western industrialised countries could cost between US$17,000 and US$23,000 per year (Minevich & Richter 2005). Hence, due to cost advantages in developing countries, many North American companies have outsourced over US$160 billion worth of business per year, since 2005 (Thouin *et al.* 2009).

Besides lower labour rates, another cost effective factor (i.e. *economies of scale*) has also been repeatedly reported by researchers (McIvor 2005; Overby 2007; Thouin *et al.* 2009). For example, according to many outsourcing agreements (Kern & Willcocks 2002), services provider companies usually take a big responsibility for software and hardware R&D and their associated costs. Because of external providers' IT/IS speciality (e.g., advanced R&D expertise and experience) and sufficient human resources, client companies' IT/IS expenses can be largely reduced, together with lower R&D risks. Furthermore, as services providers can adjust the number of IT/IS professionals according to a client company's requirement, therefore, a client company no longer needs to maintain a large group of in-house IT/IS workers – most of the IT demand fluctuations can be handled by external providers. As a result, due to the advantage of economies of scale brought by IT services providers, many client companies can reduce their operational costs through adjusting requirements of service levels (Gonzalez & Gasco 2006; Han *et al.* 2007; Khan *et al.* 2009).

2.4.2.2 Performance improvement

Besides cost reduction, another main driver for companies to choose outsourcing was to increase the quality of IT/IS services. Many IT/IS services provider companies can achieve a high-quality performance in certain development activities (PriceWaterhouseCoopers 2005). On the one hand the performance advantage can assist client companies to reduce development spending and risks; on the other hand it can provide clients with a high-quality IT/IS services towards its customers. According to Willcocks and Fitzgerald (1993) and Vassiliadis *et al.* (2006), since the 1990s, many IT/IS outsourcing contracts started to include service level agreements (SLAs) terms. SLAs can normally define various factors of IT/IS services, which includes objectives, metrics, remedies and even penalties if agreed levels of services could not be fulfilled. Based on SLAs, both clients and providers can decide which functions will be outsourced or remained in-house. Miozzo and Grimshaw (2005) states that in the 21st century more and more western outsourcing client companies are willing to include SLAs into their outsourcing contracts with aims of verifying the improvement of their outsourcing performance; however, in order to consider the IT/IS outsourcing model to improve client companies' services performance, client companies should ensure that an effective quality and performance measurement system shall be established first.

2.4.2.3 Flexibility enhancement

Generally, traditional commercial organisations tend to control the majority of their core business activities within their companies, so that they can closely manage supply sources and eliminate risks such as resources shortages and imbalanced market demands (Williamson *et al.* 1993). However, due to issues such as rapid updates in new technologies, reduced time to market, and increasingly changeable economic environment, it is very difficult for a modern company to completely control every business process as well as to maintain a competitive advantage in every area inside the company. Therefore, researchers (Arora *et al.* 2001; Jahns *et al.* 2006) indicate that it is inflexible to control the majority of business activities internally. In fact, as discussed in section 2.2.3, since the 1980s more and more western companies have employed onshore and offshore outsourcing with aims of achieving contractual and technological flexibility. According to Lacity *et al.* (1995), by employing IT/IS offshore outsourcing, client companies can respond quickly to the market change, shorten products' time to market, access latest technologies, and speedily adjust IT/IS capacity; additionally, a well-defined IT/IS outsourcing agreement can increase client companies' contractual flexibility if client companies want to switch their suppliers (PriceWaterhouseCoopers 2005; Overby 2007).

2.4.2.4 Core competence and IT/IS specialisation

Global IT/IS outsourcing involves greater specialisation when client companies switch from internal sectors to specialised services supplier companies in the global market (Sako 2005). In the beginning of the 21st century, one of the outsourcing trends in the business world is towards improving core competence by adopting external IT/IS specialisation. According to McIvor (2005), employing outsourcing can allow a client company to focus on areas of its *core competence*, so it can improve their business competitive advantages and contract out some peripheral operational activities. To take one step further, Quinn (2000) argues that, compared with many highly integrated organisations, specialised firms in supply markets usually have better understanding in their own fields, as they invest more on these specialised areas (e.g. technology and internal training systems); therefore, they can deliver some professional tasks more efficiently and attract more qualified people to join them. These advantages ensure that specialised firms can deliver better services to their customers at a competitive cost. Besides that, according to BCS (2004, 2006), although IT/IS offshore outsourcing brought challenges to western workers, IT professionals in specialised IT software companies were rather positive towards the challenges, as most of them treated offshore outsourcing as another opportunity for them to develop their careers.

Perceptibly, through extensive IT/IS outsourcing in the last decade, client companies in the West not only created an increasing international IT software outsourcing services market, but also facilitated the development environment for global IT/IS services providers to grow in this emerging market (Hatonen & Eriksson 2009). As introduced in section 2.2.3.3, recently, some Indian IT software services providers (e.g., Wipro, TCS, InfoSYS, and SAT) have become so competent and international that they are capable to compete with traditional IT/IS services companies in the West for major western contracts and global leadership.

2.4.2.5 Access to innovation

Together with the development of IT/IS outsourcing in the last decade, an industrial report (BCG 2007) focusing on the innovation power of India's IT and ITES industry claims that Indian leading software services companies have begun to make aggressive investments in innovation to accelerate its business growth as well as to develop new sources of competitive advantages to maintain their global leadership. In fact, a lot of western outsourcing client companies have also recognised the innovation opportunities provided by IT software outsourcing (Maskell *et al.* 2007). With around two-decade development, IT/IS offshore outsourcing have moved from mechanical IT development (e.g., basic coding and testing) to innovation in business process and knowledge (e.g., BPO and KPO) (Rao 2004). The relationship between clients and providers has also improved to the strategic level (Hatonen & Eriksson 2009). Recently, major outsourcing services providers are widely treated as their clients' long-term strategic partners – this change naturally leads to a strong innovation motive associated with the outsourced IT/IS functions (Maskell *et al.* 2007).

Although some companies are reluctant to IT/IS offshore outsourcing due to the fear of losing the internal capability for innovation in the future, international supply markets can provide significant opportunities for companies to leverage their innovative capabilities in various business areas (Jahns *et al.* 2006). For example, according to Friedman (2005), global third-party supplier companies provide almost every piece of software and hardware that Dell requires in the production, from hardware components to essential utility software; Dell only needs to invest in areas where unique innovative values can be added. Hence, by employing outsourcing, Dell has avoided large inventory, production facilities, and varied development risks associated with the production procedure.

2.4.2.6 Other important reasons

Besides the above reasons of employing IT/IS outsourcing in client companies, much recent research indicates other advantages emerged from practices. Some representative ones are listed as follows:

1) **Contract assurance** – With a robust contractual agreement in outsourcing, both clients and providers can have a clear view of agreed services and expected outcomes. However, it is manifest that some outsourcing services providers might take advantage of some inexperienced client companies (Gopal *et al.* 2003);

2) **Time zone difference** – According to Rao (2004) and Minevich and Richter (2005), theoretically, time zone differences are beneficial as offshore outsourcing providers can arrange a development schedule with possible 24 working hours a day, which suggests that a longer working period could be achieved due to time zone difference.

3) **Optimising the client's organisational structure** – As more and more outsourcing client companies concentrate on their core competences, some of them are taking this chance to restructure the vertical integration of their companies (McIvor 2005). Moreover, some client companies also promote their business competitiveness by removing redundant departments, standardising processes, and improving quality control through IT/IS offshore outsourcing (Kern & Willcocks 2000; Kshetri 2007).

4) **Tax Benefit** – Tax incentives have been effective in encouraging large-scale western companies to invest on offshore outsourcing since the late 1990s (Minevich & Richter 2005). According to NASSCOM & EXL (2007), in order to avoid high corporate taxes in many western countries, some major multinationals in the US and the EU are keen on transferring their non-core business functions to offshore locations or overseas services providers in order to lower corporate taxes.

2.4.3 Stage two: what to outsource

According to the outsourcing stage model (see section 2.4.1), at the second stage, a client company designs its IT/IS outsourcing arrangements and also considers the suitability of its outsourcing arrangements. Practically, "what to outsource" is always interdependent on "why to outsource", as results from the first stage are normally used as an evaluation basis of designing functions/components to outsource (Harland *et al.* 2005). Additionally, according to the stage model, in order to understand "what to outsource", a client company shall consider two types of matters: 1) the *level* of outsourcing, and 2) to what *degree* IT/IS outsourcing shall be employed.

Based on the level of analysis discussed in section 2.3.3, client companies' overall IT/IS function could be treated as a collection of various sub-functions which are supported by dissimilar sources (Gregor 2006). Thus, in order to understand the level of a client company's IT/IS outsourcing, it is necessary to realise sub-functions of the company's overall IT/IS function and its related supporting sources. For instance, to outsource a client company's back-office information system, the company needs to recognise the area that the back-office system operates (e.g., operational support, hardware and software maintenance, accounting support, or company inventory databases). By knowing functions associated with the back-office system, the company can identify components of the system and accordingly decide which parts are suitable for outsourcing (Lacity *et al.* 2008). However, treating a client company's IT/IS functions independently could potentially fail to notice interdependencies between these functions. For example, according to McIvor (2005), in order to arrange offshore outsourcing practices, the interdependence between the outsourced functions and remained components should be carefully examined; otherwise some potential impacts could be neglected when conducting outsourcing. Therefore, it is essential to treat outsourced functions as a combination of many interrelated elements, when examining the level of outsourcing (Ang & Straub 1998).

When reviewing the literature, it is noticeable that no standardised ways can be followed to measure the degree of IT/IS outsourcing within organisational contexts. Harland *et al.* (2005) claim that the degree of outsourcing should be derived from reasons of why a company chooses outsourcing, or how close between the company's core competences and those to-be-outsourced functions. Following this point, the degree of outsourcing shall follow a company's strategy – to concentrate on fewer and more manageable core activities and to gain benefits from contracting out non-core practices. In practice, according to Marshall *et al.* (Marshall *et al.* 2005), to decide the degree of IT/IS outsourcing shall depend on a company's structure, decision making process, and long-term strategies.

2.4.4 Stage three: which process to outsource

After looking into "what to outsource", the next stage is "which process to outsource" – a phase to choose decisions based on possible options summarised in the first two stages. The first three stages are combined to structure the phase of an organisational outsourcing decision making process. A client company needs to consider two factors when choosing outsourcing decisions: 1) to follow a clear and coherent *strategic decision process*; and, 2) to review *key impacts* throughout the decision making process (Marshall *et al.* 2005).

Yang (2000) considers a range of internal and external factors (e.g., people and environment), which impact a client company's outsourcing decision. He groups these factors into tangible matters (e.g., cost and facilities) and intangible issues (e.g., strategy and quality), which are presented in Figure 2.8. Furthermore, he relates these factors with steps when making outsourcing decisions and produced a five-step decision process, which has been frequently quoted by outsourcing researchers in the last decade. The process consists: 1) *establish* an expert team; 2) *choose* related factors and attributes; 3) *construct* an analytical hierarchy; 4) *calculate* other alternatives; and, 5) *make* final decisions.

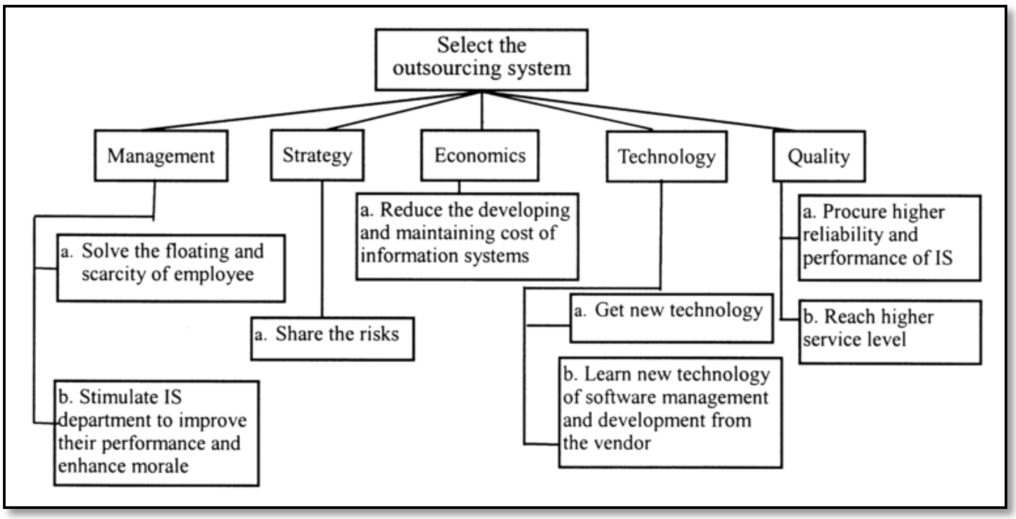


Figure 2.8: A structure of key impacts of outsourcing decision making [Source: (Yang 2000)**]**

Besides Yang's contribution, Verville (2003) also looks into the outsourcing decision making process. Verville indicates that three factors can impact decision-making process: 1) the *psychological characteristics* of the decision makers; 2) the *conditions* of the decision making; and, 3) the conflict *resolution procedures* to reach the final decision. Figure 2.9 presents Verville's "buy or make" decision process, which shows how to decide whether to *buy* (i.e. employ external suppliers) or to *make* (i.e. using in-house resources).

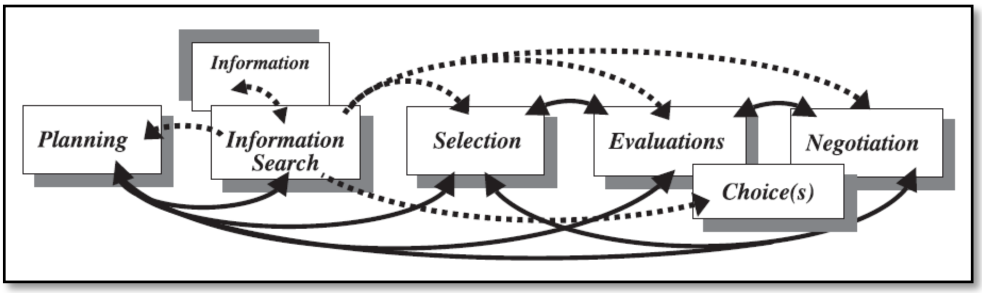


Figure 2.9: Model of the provider acquisition process [Source: (Verville 2003)**]**

Although the above research findings provide a relatively sound foundation for companies to follow at the stage of "which process to outsource", according to Dibbern *et al.* (2004), there is a big *gap* "between the mostly rationalist view of decision-making among academics and the actual behaviour in practice". It indicates that academics attempted to reproduce industrial decision making processes based on a small number of successful cases; thus the proposed rational models may only be suitable for some well-informed and likely to be successful cases. Hence, with aims of supporting more practical outsourcing decision making processes, some researchers (Assmann 2004; Dibbern *et al.* 2004; Hatonen & Eriksson 2009) suggest that a client company shall include factors such as long-term and equal partnership in the organisational outsourcing decision making process; what is more, more *critical research* is required to rigorously apply to studies on "which process to outsource".

2.4.5 Stage four: how to outsource

In the stage model (see section 2.4.1), the stage of "how to outsource" means that a client company is confronted with dissimilar organisational implementation issues, which often include how to select outsourcing providers, how to structure the relationship between clients and providers, and how to manage the relationship between different stakeholders.

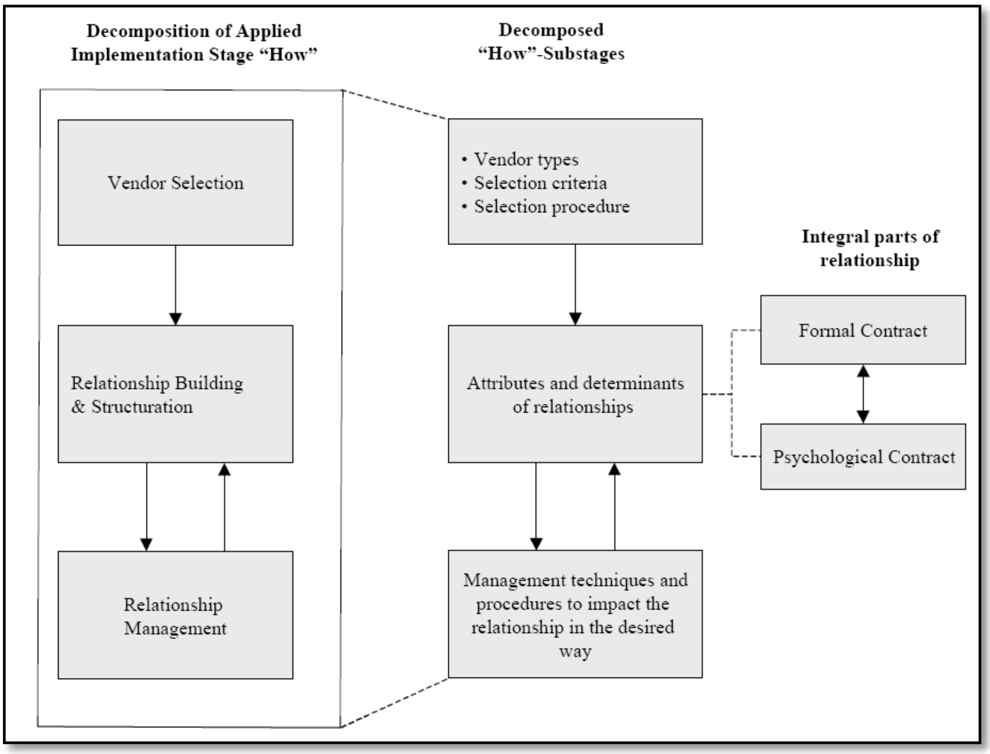


Figure 2.10: Model of how to implement outsourcing [Source: (Dibbern *et al.* 2004)**]**

Figure 2.10 structures the model of how to implement outsourcing activities. Based on options made at the stage of "which process to outsource", client companies need to begin the first sub-process of "how to outsource", i.e. *selecting appropriate provider(s)*. This step includes: how to choose providers from the IT/IS outsourcing services market (Gallivan & Oh 1999; Lacity *et al.* 1999; D. C. Chou & A. Y. Chou 2009); how to structure/address selection process to services providers (Lacity *et al.* 1999; Khan *et al.* 2009); and, how to evaluate against offers from various services providers (Gallivan & Oh 1999; Verville 2003; Assmann 2004). When selecting the provider(s), it is still possible for a client company to reconsider in-house IT/IS sector (i.e. 'insourcing'), if using the market could not entirely fulfil the initial requirements (Tanriverdi *et al.* 2007; Khan *et al.* 2009).

After having selected the outsourcing provider(s), both clients and providers are required to *construct relationships*, which are dependent upon sound contractual arrangements (Fitzgerald & Willcocks 1994; Lacity & Willcocks 1998). Although well-defined contracts do not automatically ensure the success of outsourcing, much research specifies that the quality of outsourcing contracts has a vital linkage with the performance of the projects (Fitzgerald & Willcocks 1994; Gopal *et al.* 2003). In a broad sense, outsourcing contracts can be classified into three different types:

1) **Fixed-price contracts** introduce a fixed fee for the outsourced IT/IS work in a project, which means that the services providers should burden the majority of the project risk under this type of agreement (Lacity & Willcocks 1998).

2) **Time-and-materials contracts** require provider companies to supply their services at a certain rate, which means the client is responsible for supervising the progress and controlling the cost – even it overruns (Dibbern *et al.* 2004; Torkzadeh 2008).

3) **Mixed or hybrid contracts**, both project risks and supervision are shared between the client and providers (Gopal *et al.* 2003), which were popularly followed in the 21st century. However, a mixed/hybrid contract requires both clients and their providers to present superior reputations and successful track record (Gopal & Koka 2009).

Recently, as IT/IS outsourcing is evolving from the traditional one-to-one relationship to more complicated arrangements involving multiple providers and multiple clients, client companies need to consider two forms of contracts when maintaining relationships. These are: 1) a *formal contract* which specifies the requirements and obligations in written form; 2) a *psychological contract* which presents mutual beliefs and benefits (Kern & Willcocks 2000; Gottschalk & Solli-Sather 2006; Torkzadeh 2008). The step of "how to outsource" relates to *managing the relationship* that can impact the outsourcing collaboration throughout the project lifecycle. Based on contractual agreements, many outsourcing processes need to be monitored, for example, supply chain management (Maskell *et al.* 2007), services performance evaluation (Verville 2003), project/people management (Aspray *et al.*

2006), knowledge exchange process (Blumenberg *et al.* 2009), technical expertise (Han *et al.* 2007), capability for IT/IS development (Assmann 2004).

2.4.6 Stage five: outsourcing outcomes

The last stage of the model is "outsourcing outcomes", which reviews results of an outsourcing project, for example, a success or a failure, lessons learned, and the performance of the project. As mentioned in section 2.4.1, stage four and five are combined to form the outsourcing implementation phase. When outsourced works have been implemented, results of the project shall be documented and reviewed. Much research has paid attention to factors that have direct impacts on the success/failure of outsourcing projects (Dibbern et al. 2004). According to Kern & Willcocks (2000), three "types of variances" can be adopted as performance measurements when evaluating outsourcing outcomes. These are: satisfaction, expectations and realisation, and practical performance.

In practice, the majority of IT/IS outsourcing projects are judged by these three variances and their related factors (e.g., operational satisfaction, the realisation of agreed objectives, and project performance) (Kern & Willcocks 2000; NASSCOM 2007). More explicitly, at organisational level, IT/IS outsourcing outcomes are often be measured by a company's share price and financial performance; at systems and systems functional level, outcomes can be judged by IT/IS services improvements, such as costs reduction, quality improvements, and service level enhancement; at project level, outcomes can be examined by project operational costs, the delivery quality, resources management, and time to complete the outsourced IT/IS functions (Khan *et al.* 2009). To take the discussion one step further, many studies (Dibbern *et al.* 2004; Torkzadeh 2008; Gopal & Koka 2009; Khan *et al.* 2009) have broadly recognised some important measurement factors:

1) **Organisational level** – Contract management, the quality of outsourcing decisions, hidden costs, cross-company relationship, management and communications.

2) **Systems and IS functional level** – Outsourced IT/IS functions, IT/IS infrastructure improvements, development capabilities, process maturity, development framework, and services measurement.

3) **Micro project level** – Outsourcing project arrangements, the delivery quality, project and people management, project level communications, relationship between different project stakeholders, and the performance of the collaboration.

Along with the progress of the literature survey, it becomes clear that studies on measuring outsourcing outcomes and evaluating outsourcing project performance are still at the initial stage. For example, although researchers widely accept that client readiness, sound contracts, company strategy, process maturity, and relationship management are key to success, many unanswered questions are still puzzling the research community, such as what are the conditions of these factors, what are the associated risks, which development methods shall be adopted, and how to deploy and arrange IT/IS outsourcing projects in order to include these successful factors. With aims of exploring the performance of GSO projects in the UK, the above measurement factors are adopted in the detailed industrial study – interview survey (see Chapter Five) and the questionnaire survey (see Chapter Six).

2.5 How to implement IT/IS outsourcing

According to Dibbern *et al.* (2004), theoretically, the stage model introduced in the last section can cover a complete life cycle of IT/IS outsourcing projects, from decision making to outcome evaluation and measurements. Although the model has discussed some practical topics such as the selection of providers, how to establish and manage relationships between different outsourcing development parties, and the evaluation of IT/IS outsourcing activities, the stage model does not include methodological topics that can guide companies to conduct their IT/IS outsourcing projects. For example, some themes are: how to arrange IT/IS outsourcing projects, how to measure the performance of outsourced functions, and how to conduct and monitor geographically distributed development. Because of that, with aims of surveying topics connected with the implementation of IT/IS outsourcing, this section reviews representative outsourcing project studies in the field of GSO.

2.5.1 The field of GSO

Generally speaking, to research the implementation of IT/IS outsourcing requires outsourcing researchers to explore practical topics such as systems development, process/quality control, outsourcing development methods, and outsourcing work distribution (Kurbel 2007). Much research (Herbsleb & Moitra 2001; Prikladnicki *et al.* 2003; Agerfalk *et al.* 2005; Layman *et al.* 2006; Conchuir *et al.* 2009; Smite *et al.* 2009) has categorised the implementation level studies into the subject of GSD (global software development), which is also known as GSO (global software outsourcing) from time to time (Heeks *et al.* 2001; Torkzadeh 2008). Studies in this research branch are often treated as a sub-field of IT/IS outsourcing (Herbsleb & Moitra 2001; Damian & Moitra 2006; Conchuir *et al.* 2009; Jaakkola 2009), which aim to provide research findings on geographically distributed development (Sengupta *et al.* 2006), GSO service level (Smite *et al.* 2009), and globalised software solutions (Jaakkola 2009).

Since the middle 1990s, together with the growing confidence achieved from software based offshore outsourcing practices, academia began to show great interest in the field of GSO. After some leading researchers (Lacity & Fitzgerald 1995; Nam *et al.* 1996; Lacity & Willcocks 1998; Avison *et al.* 2001) contributed towards this research domain, many researchers followed their steps. For instance, several important research themes have been established in the last decade: strategic decisions on GSO project arrangements (Herbsleb & Moitra 2001; Krishna *et al.* 2004; Pries-Heje *et al.* 2005), the GSO development model (Herbsleb & Moitra 2001; Yeo 2001), and organisational control on GSO projects (Herbsleb *et al.* 2005; Layman *et al.* 2006; Pilatti *et al.* 2006; Herbsleb 2007; Kurbel 2007; Lacity & Rottman 2008; Hatonen & Eriksson 2009). Recently, much research attention has particularly been paid to critical success factors (CSFs) (Prikladnicki *et al.* 2003; Gopal & Koka 2009) and how to establish and maintain the relationship between onshore and offshore development parties (Oshri *et al.* 2007; Lacity & Rottman 2008; Gopal & Koka 2009).

2.5.2 Outsourced software services

According to Aspray *et al.* (2006), there are at least five types of software work that have been outsourced internationally in the 21st century:

1) Programming, software testing, and computer software systems maintenance;
2) Low-end software support jobs such as call centres and back-office support;
3) High-end software jobs such as systems architecture, requirement analysis, systems design, IT/IS consultancy, and project management;
4) BPO and other software enabled services such as insurance quotation, online banking, accounting, and financial data analysis; and,
5) Middle-term and long-term software R&D.

In order to organise and manage these listed outsourced software work, two service models are popularly used in industry, i.e. application service provider (ASP) and software as a service (SaaS). Most specifically, the ASP model normally suppliers software-based services to customers, which includes tailor-made software applications, software solution packages at enterprise-level and project level, and different types of software enabled business support (Currie 2003; Vassiliadis *et al.* 2006); SaaS is a relatively new software service model, which provides variable software application licences to customers so that they can use software service on demand (Dubey & Wagle 2007). Because of the low-cost and flexible feature of the SaaS model as well as the growth of cloud computing (IDC 2007b) in the recent years, many software services companies (including some offshore GSO providers), began to shift from the traditional licensed model (e.g., SAP) to SaaS with aims of retaining their existing customers (see section 4.5.1 for discussions on the licensed model based on the multiple cases study). According to Fan *et al.* (2009), it is estimated that the SaaS model will become one of the major software services models in the near future.

2.5.3 Levels of project arrangements

Due to the dynamic and emergent nature of GSO practices, little literature can be found on practical studies such as development process and project issues. Based on the available scholarly publications, the author discusses different levels of project arrangements in this section.

2.5.3.1 Initial GSO Project Arrangements

According to Lacity & Hirschheim (1993) and Lacity *et al.* (1996), based on outsourcing scales, IT/IS budget, and outsourced development phases, three types of project arrangements can be found when deploying GSO projects:

1) **Mainly insourcing** – A client company takes full project management responsibility in the development. More than 80% of the project budget is delivered by in-house IT/IS departments. Services providers only work together with the client's staff on a number of development phases such as design, implementation and testing.

2) **Selective outsourcing** – Internal IT/IS sectors account for 20% to 80% of the delivery. Selected IT/IS functions are outsourced to external services providers who supply development work such as systems analysis/design, implementation, testing, verification, and maintenance/support.

3) **Total outsourcing** – Project management responsibility and internal development capabilities are transfers to one or several providers, who deliver over 80% of a client company's IT/IS functions. In the development lifecycle, the client only needs to be responsible for development phases such as project initiation and planning, requirement analysis, systems testing, and final verification.

2.5.3.2 The four-level GSO services model

Based on the initial GSO project arrangements, GSO services providers (e.g., Wipro and TCS) and outsourcing researchers have developed several more detailed project arrangements models (BCG 2007; Betz *et al.* 2008; Handley & Benton 2009; Zhou & Mayhew 2009).

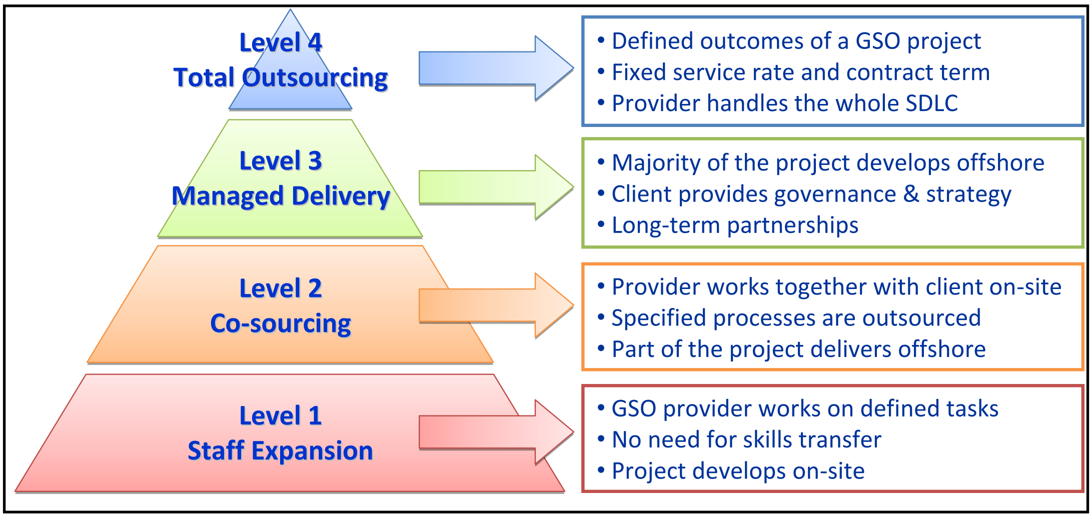


Figure 2.11: The four-level GSO project development model

[Derived from: (BCG 2007; Betz *et al.* 2008; Handley & Benton 2009; Zhou & Mayhew 2009)**]**

According to their studies, the author and the PhD supervisor produced a four-level GSO project development model, which includes the preliminary GSO services (staff expansion), the development of GSO service agreement (co-sourcing and managed delivery), and the highest service level (total outsourcing). Figure 2.11 illustrates this four-level services model and briefly explains the definition of each service level to the right of the diagram. There are four levels of GSO services arrangement which can be followed by GSO related companies in practice. These levels are:

1) **Level one (staff expansion)** requires shifting more IT professionals from the provider side to the client's site. GSO tasks are well defined. The expanded workforce can increase the onshore IT/IS capability and is only temporarily. At this level, no IT or business knowledge transfer is required between clients and their providers.

2) **Level two (co-sourcing)** needs the provider staff to work together with the client's in-house project teams. At this level, essential business knowledge and IT/IS skills need to be transferred, as specified project components are delivered by the provider's development teams.

3) **Level 3 (managed delivery)** requires the services provider to manage and deliver most of the development work. The client's main responsibility is to provide project management and strategy/governance at the organisation level. At this level, the client and its providers shall maintain a long-term strategic partnership.

4) **Level 4 (total outsourcing)** suggest a GSO services model which needs the provider to run a GSO project by itself (including project governance, management, cost and time control, development

method selection, and quality assurance). The client is only responsible for defining the outcome of a GSO project and related services costs.

2.5.4 The development process

Haag *et al.* (2006) investigate the necessary development process of GSO projects. They state that in order to arrange various development work in a GSO project, a company normally needs to experience eight stages during the development. Figure 2.12 shows these steps.

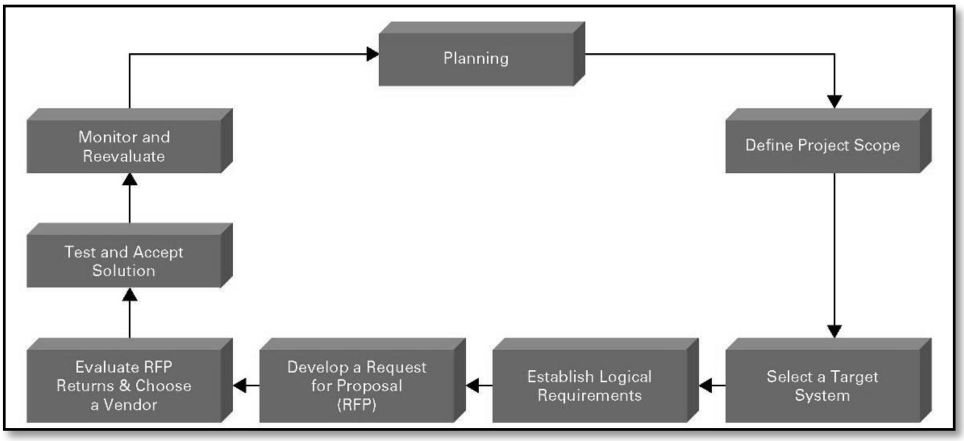


Figure 2.12: The process to arrange a GSO project

[Source: (Haag *et al.* 2006)**]**

According to the above diagram, these eight steps are: 1) planning step defines the required systems and the plan of the project; 2) definition step establishes requirements and the boundary of the service; 3) systems selection to explore which systems are suitable for outsourcing; 4) requirements step clarifies business logic and issues; 5) request for proposal step invites providers to review and bid on projects; 6) evaluation and selection step decides which provider(s) will be employed; 7) testing and solutions step engages the provider to work on the GSO project; and, 8) monitoring and re-evaluating step requires the client company to closely monitor the project progress and evaluate the delivery quality. In order to present more detailed sub-processes in the development procedure, an onshore and offshore development process model is designed by Kurbel (2007). Figure 2.13 shows this model, which contains five levels of outsourced development work.

Kurbel categorise development tasks into five levels – customer level, requirements level, functional level, technical level, and code level. Based on that, he points out that development work at code level, technical and functional level can be undertaken by offshore suppliers, whereas customer level and requirements level tasks need to be retained onshore. This model partially verifies the above GSO service model (section 2.5.3.2). What is more, it indicates that, whether to employ GSO services shall depend on the level of IT/IS services that a client company requires. However, similar to much research, Kurbel's model neither specifies why certain service levels shall be retained in-house nor explains how to perform the outsourced work between onshore and offshore sites. Thus, the practical significance of this model is very limited.

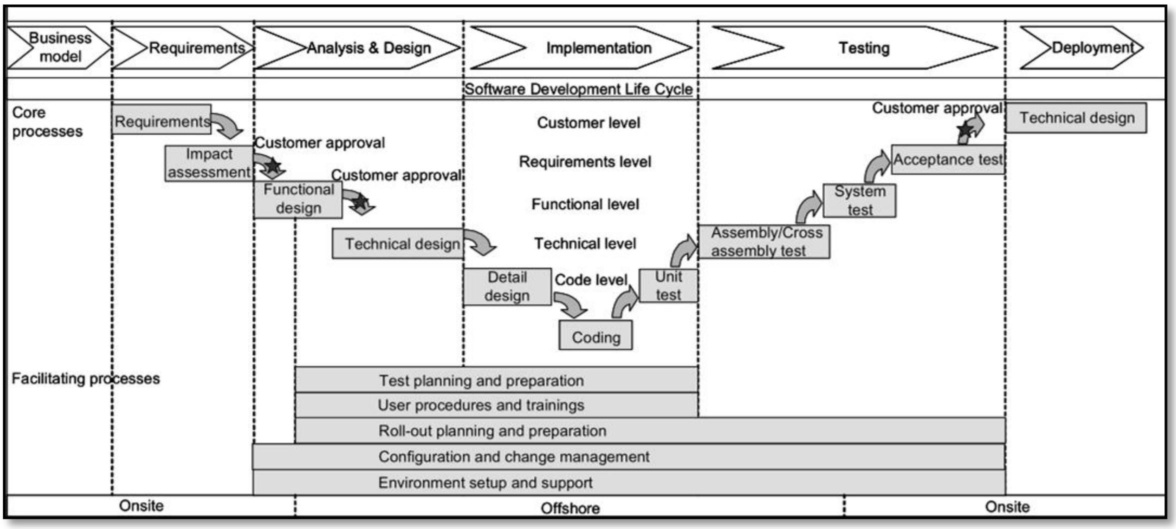


Figure 2.13: An onsite/offshore development model [Source: (Kurbel 2007)**]**

2.6 Key issues in IT/IS outsourcing

When reviewing the subject, the author shall also look into the negative side of the research domain. Some key issues need to be considered before making substantial GSO commitments. For this reason, this section examines some typical issues that have been raised by the research community. In the following sections, the author classifies these issues into three analysis levels – country and industry level, organisation and systems level, and project implementation level.

2.6.1 Country and industry level

There are several widely recognised country and industry level issues in GSO practices, which deeply connect with offshore governmental policies, legal differences and geographical locations.

Outsourcing infrastructure issues exist in some major GSO services provider nations. According to Minevich and Richter (2005), managing GSO relationships relies on offshore outsourcing services providers to supply a high-quality and dependable ICT infrastructure such as public transportation and telecommunication. However, as many outsourcing services provider nations are still under development at the moment, their business infrastructures are relatively underinvested. For example, excluding some major cities such as Bangalore and New Delhi, many areas in India (the world's largest software services provider nation) still lack of sufficient public transportation and ICT infrastructure (NASSCOM 2007). According to NASSCOM (2009), the inadequate ICT infrastructure can impact India's long-term competitiveness in the global software services market.

Legal and security issues are often caused by different countries' regulations on technology transfers, privacy laws, trans-border data, intellectual property (IP), and copyrights, in comparison to those in the West (Rao 2004). Unlike many developed countries, governments of developing countries have different policies on data privacy and security of IP. For instance, the EU's Data Protection Directive requires European companies to meet the EU's privacy standards when exporting data of EU citizens – failing to do so can lead to heavy financial punishment. However, until recently, India is just working on legislation to provide legal safeguards for privacy protection (NASSCOM 2009).

Social backlash issues for offshore outsourcing have been reported since the late 20th century. As introduced in section 2.2.3, offshore outsourcing has gradually stepped into almost every field of the western business world. Software services offshore outsourcing starts from low value-added activities (such as back-office and hardware/software support). It then develops to middle level knowledge-based work (e.g., programming and systems level testing). Recently, it has even entered high-end development areas such as systems analysis, systems design, and software architecture. Therefore, not only on junior level IT/IS jobs, but also middle and senior level positions are impacted by offshore outsourcing. Due to the continuous job losses in the western labour market, social backlash against offshore outsourcing drives a number of western countries to reconsider legal actions to prevent their major organisations from continuing their endless outsourcing activities (IBNLive 2010).

Time zone and **geographic differences** issues are evolving with the development of IT/IS offshore outsourcing (Hatonen & Eriksson 2009). Currently, many major IT/IS outsourcing providers are treated as long-term strategic partners by their clients. The strategic nature of the relationship requires rigorous and regular communications (Oshri *et al.* 2007). For this reason, although time zone differences and geographical distances theoretically allow a project to be conducted with extended working hours, in practice, geographically separated project teams prevent the collaboration from being as efficient as planned, for example, an afternoon project teleconference in the UK headquarters will require the Indian development team to participate in the midnight at local time. Therefore, according to Rao (2004), each time zone actually represents a potential loss for "simultaneous collaborative work and communication". In order to overcome the time zone and geographic differences issues, nearshore outsourcing services providers become more attractive, because they present an alternative to the common offshore destinations such as India and China (Khan *et al.* 2009). To be specific, North American companies can nearshore to Canada and Mexico, and companies in western European countries could search for providers in Czech Republic, Poland, and Ukraine, where the time zone is less than *three* hours away from client companies' headquarters (Carmel & Agarwal 2001; Gonzalez & Gasco 2006).

Talent shortage issues in developing countries have been discussed by several leading software services professional bodies in recent years (NASSCOM 2007; BCG 2007). According to their investigation, due to the constant expansion of the global software services outsourcing, the IT/IS labour shortage is emerging in several developing countries. For instance, more and more freshmen have been assigned to software offshore outsourcing projects due to the IT/IS professional shortage in India. Because of that, NASSCOM together with the Indian government had to launch several short-term programs in order to train more local people to work in the software services sector. Furthermore, due to lack of experienced junior level IT workers, some major ITES companies, such as TCS (India), Wipro (India) and Huawei (China), had to contract out mechanical coding and low level testing to other low-cost developing countries (e.g., Mexico and Philippines) (BCG 2007).

2.6.2 Organisation and systems level

Based on a recent survey accomplished by Torkzadeh (2008), outsourcing clients are not fully aware of the impacts of their organisational strategic decisions on offshore outsourcing. In practice, the IT/IS outsourcing decisions need to be supported by the clients' in-house development ability, learning ability, outsourcing knowledge, and competitiveness. If the clients want to benefit from short-term outsourcing arrangements, it only needs to organise outsourcing activities on a project-to-project basis; however, the long-term strategic collaboration requires client companies to fundamentally change its infrastructure and business operations (Deloitte 2006). Hence, with more and more firms employ IT/IS outsourcing as part of their organisational strategies, many researchers begin to consider outsourcing issues at organisation and systems level.

Hidden costs issues can be found in many outsourcing projects. Although section 2.4.2 discusses some convincing cost reduction factors, it is essential to realise that many hidden costs can associate with IT/IS outsourcing (Lacity & Fitzgerald 1995). According to Overby (2003, 2007), issues such as the decreased productivity and poor process control can enormously increase costs in outsourcing projects. After having interviewed several CIOs from some major outsourcing clients in the US, Overby states that to conduct outsourcing projects in an incorrect way could lead to considerable over-spending. Several typical areas which often contain hidden costs are: selecting providers, the transition period, making onshore IT/IS staff redundant, productivity lags, improving the client's measurement and quality assurance capability (e.g., ISO, CMM/CMMI), special IT/IS outsourcing management, and producing outsourcing contracts (Overby, 2003; PWC, 2005; Al-gharbi *et al.* 2009).

Management practices issues prevent better management practices from outsourcing practices, which require effectively monitor and control. Some well-known management issues include knowledge management (Currie 2003; Willcocks *et al.* 2004), people/project management (PriceWaterhouseCoopers 2005), project risk management (Harland *et al.* 2005), and supply chain management (Aspray *et al.* 2006).

Frameworks, measures, and criteria issues are also considered as part of a client company's organisational outsourcing governance problems. According to Harland *et al.* (2005) and Torkzadeh (2008), in practice, very few outsourcing client companies have a well-defined decision making framework to choose outsourcing locations as well as services providers. Although measurement systems of the outsourcing delivery is widely recognised as a critical success factor in IT/IS outsourcing, many client companies are still struggling to seek a standardised measurement procedure in order to evaluate the outcome of their IT/IS outsourcing projects (Gopal & Koka 2009). What is more, industrial criteria of the success of offshore outsourcing still require detailed explanations and organisational adjustments (Lacity *et al.* 1999; Gregor 2006; BCG 2007). For example, to achieve cost effectiveness, some companies chose to contract out sectors that could save most and reduce more headcount, which did not make any sense from a long-term business perspective.

Long-term viability study issues become more popular in recent years. Although strategic IT/IS outsourcing decisions are widely adopted, client companies still need to investigate the long-term viability of their decisions (Torkzadeh 2008). For example, a long-term viability study shall always contain topics, such as how to maintain the clients' core competencies with or without internal IT/IS capabilities (Jahns *et al.* 2006) and how to control risk if clients need to change their strategic outsourcing partners due to various contractual changes (McIvor 2005; Khan *et al.* 2009).

Critical success factors at organisational level also need further research. According to Torkzadeh (2008), how to identify critical success factors (CSFs) in offshore outsourcing arrangements still worries the management in many client companies. Han *et al.* (2007) describe some general success factors which shall be considered: the client's IT/IS capability, cross-company relationship, the client's management, communications, information sharing, collaborative participation, and trust and commitment. However, Han *et al.* also indicate that detailed research is urgently required to test/verify the actual performance of these factors in offshore outsourcing practices.

2.6.3 Project implementation level

According to different levels of offshore outsourcing service, varied project related issues have been examined and discovered in outsourcing practices. In this section, some broadly recognised problems in IT/IS outsourcing projects are discussed, which include process issues, cross-cultural issues (including culture differences and language barriers), and communication problems.

Process issues at project level refer to development framework, development phases, and their related processes and sub-processes. According to Hatonen and Eriksson (2009), many development processes are significant to the success of outsourcing practices. Some processes are: risk avoidance (Pries-Heje *et al.* 2005; Na *et al.* 2007; Torkzadeh 2008), resource control (McIvor 2005), development and maintenance (Smith *et al.*, 1996; Arora *et al.*, 2001; Ahmed, 2006; Aspray *et al.*, 2006), performance evaluation (Gallivan & Oh 1999; Harland *et al.* 2005; McIvor 2005; PriceWaterhouseCoopers 2005; Na *et al.* 2007), and quality assurance (Overby 2003; Ahmed 2006).

Cross-cultural issues have been discussed by the western IS research community since the 1990s. According to Nicholson & Sahay (2001) and Walsham (2004), offshore outsourcing has also brought diverse cultural contexts to world business, which caused cross-cultural issues in practice. As national and cross-cultural understanding usually requires a long time to achieve, outsourcing professionals with dissimilar culture backgrounds usually need time to improve their cross-cultural knowledge. However, due to the short-term nature of many IT/IS outsourcing arrangements, workers working on outsourcing projects could not have enough time to fully develop a knowledge of their client/provider company's work culture (e.g., work habits and various job routines) and communicative preference (e.g., face-to-face, discussion board, teleconference, or e-mails); hence, cross-cultural issues have continuously influenced the performance of IT/IS outsourcing projects in the last decade (Nicholson & Sahay, 2001; Krishna *et al.*, 2004; Rao, 2004; Kshetri, 2007). Furthermore, as Sahay *et al.* (2003) and Oshri *et al.* (2007) claim, informal culture, such as how to socialise, can also impede the relationship between onshore and offshore IT/IS professionals. For instance, outsourcing providers usually send a certain amount of coordinators to their client's onshore branches, so that those coordinators can harmonise project progress between onshore and offshore project teams. However, as most of them do not know how to socialise their clients, sociological and cultural obstacles can still exist, which could jeopardise mutual understanding between the two sides (Sabherwal 2003).

Communication issues are mainly caused by culture differences and language barriers (Oshri *et al.* 2007). Because offshore outsourcing projects contain intensive oral and written communication, language barriers can create misunderstanding and misinterpretation in the collaboration. Some typical language issues are lack of fluency in the client's home language (mostly English), poor written work (e.g. requirements or specifications), terminologies, onshore/offshore idiomatic expressions, and sometimes even accent or local dialect (Krishna *et al.* 2004; Rao 2004). In an industrial survey conducted by Deloitte (2008), over a hundred companies were required to describe communicative issues in their IT/IS offshore outsourcing projects. The results of this survey are summarised in Figure

2.14. The figure shows that 29% of the companies found that inconsistent communication was a major issue, followed closely by 24% questioned that the reporting channel should be expedited, 23% claimed that both clients and providers lacked of a communication plan, 20% reported that their communication and relationship management lacked of transparency, and 17% of them blamed poor quality account management for causing communicative issues.

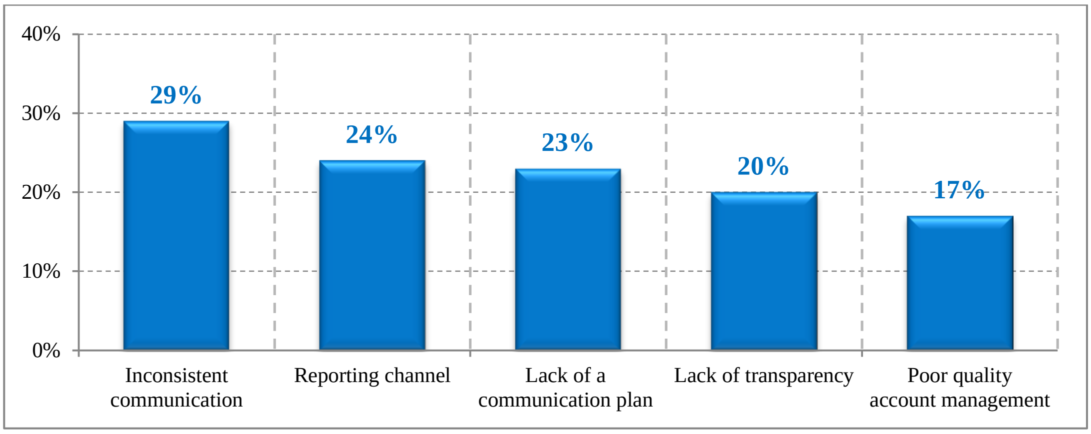


Figure 2.14: Communication and Relationship Problems
[Derived from: (Deloitte Consulting 2008)**]**

2.7 Conclusion

This chapter has reviewed many key academic and industrial publications in the subject of IT/IS outsourcing. In order to establish a sound foundation of the research domain, the author examined literature on topics such as globalisation, theoretical foundations of outsourcing, the subject of IT/IS outsourcing, the field of GSO, and key issues in the research domain. When reviewing the literature in the subject of IT/IS outsourcing, the author has employed the prominent IT/IS outsourcing stage model to categorise outsourcing studies into five stages: 1) why to outsource, 2) what to outsource, 3) which process to outsource, 4) how to outsource, and 5) outsourcing outcomes.

Based on the discussion on the subject of IT/IS outsourcing, the author particularly investigates the field of GSO to understand how to implement IT/IS outsourcing projects, such as how to arrange the IT/IS outsourcing projects and how to control the development process. In the end of the chapter, key issues in IT/IS outsourcing are reviewed and discussed. Table 2.2 below provides an outline of the literature review, which illustrates the reviewed areas of IT/IS outsourcing, levels of analysis, and outsourcing stages. In brief, the literature review underpins the author's understanding of the research domain and verifies the finding in the primary study – GSO project level studies require further exploration. Based on that, the author's research aim and objectives are naturally consolidated – to explore project level issues and development areas for improvement in GSO projects.

Table 2.2: Overview of the literature survey

Reviewed Areas	Levels of Analysis	Stages in the Outsourcing Model	Sections in Chapter Two
Globalisation and outsourcing	Country/Society	N/A	Sections 2.2.1 & 2.2.2
The evolution of IT/IS outsourcing	Country/Society	N/A	Section 2.2.3
Theoretical foundations of IT/IS outsourcing	N/A	N/A	Section 2.3
IT/IS outsourcing stage model	Industry/Organisation	N/A	Section 2.4.1
Why to outsource	Industry/Organisation	Stage One	Section 2.4.2
What to outsource	Industry/Organisation	Stage Two	Section 2.4.3
Which process to outsource	Systems/Functions	Stage Three	Section 2.4.4
How to outsource	Systems/Functions & Project/Individual	Stage Four	Section 2.4.5
Outsourcing outcomes	Systems/Functions & Project/Individual	Stage Five	Section 2.4.6
How to implement IT/IS outsourcing	Project/Individual	Stage Four & Five	Section 2.5
Issues at country and industry level	Industry/Organisation	N/A	Section 2.6.1
Issues at organisation and systems level	Systems/Functions	N/A	Section 2.6.2
Issues at project implementation level	Project/Individual	N/A	Section 2.6.3

Chapter 3 Research Approach

The previous two chapters discuss the background of GSO, this PhD project, the subject of IT/IS outsourcing, and some major research findings in the research domain. In this chapter, the methodology used in this research is explained, together with a systematic study of theoretical and methodological factors. There are five sections covered in the chapter: 1) the philosophical basis of IS research; 2) the main reasons for choosing a mixed methods research approach, i.e. a combined quantitative and qualitative research approach; 3) a research framework and its detailed sub-processes; 4) the research methods selected in the study; and, 5) details of the PhD project such as project participants, data analysis, and expected results from each stage.

3.1 Philosophical basis of this research

The early chapters examine the field of GSO and research findings of IT/IS outsourcing which highlight that IT/IS outsourcing research needs to pay more attention on areas, such as how to implement outsource practices, and practical project level matters. This chapter builds on these findings by investigating ways of constructing a suitable research methodology to explore GSO projects in the UK, project level issues, and areas for improvement.

Traditionally, representative IS researchers (Walsham 1995; Gregor 2006) suggest that it is critical to consider the philosophical basis of IS research before designing the research methodology. Following this line of argument, the author firstly explores ideas which can form the philosophical basis of this PhD project. According to Godfrey-Smith (2003), the philosophy of science can be divided into three groups: 1) the logical structure of science, 2) epistemological and methodological issues, and 3) scientific thinking (also known as the social organisation of science). Based on that, many IS theories have been introduced in order to provide a rich variety of views of the world, for example, Gregor (2006) summarises five types of IS theories: theory for *analysis*, theory for *explanation*, theory for *prediction*, theory for *explanation and prediction*, and theory for *design and action*. Figure 3.1 shows the interrelationships between these theories, which indicates that the most basic type of IS theory is analytic theory – an essential foundation for other IS theories.

Due to the overall aim of this PhD research – to explore project level issues and areas for improvement in GSO projects, therefore, theory for analysing ("what is the phenomenon"), theory for explaining ("how and why the phenomenon occurred"), and theory for predicting ("what will be the future or what can be improved") are all suitable for research tasks in an industrial exploration. Taking this into consideration, the philosophical basis of this type of study can normally be either *ontology* (with respect to an *interpretive* research approach) or *epistemology* (with respect to a *positivistic* research approach), or sometimes both of them (with respect of a mixed methods research approach) (Myers *et al.* 2004). The reasons are explained in the following sections.

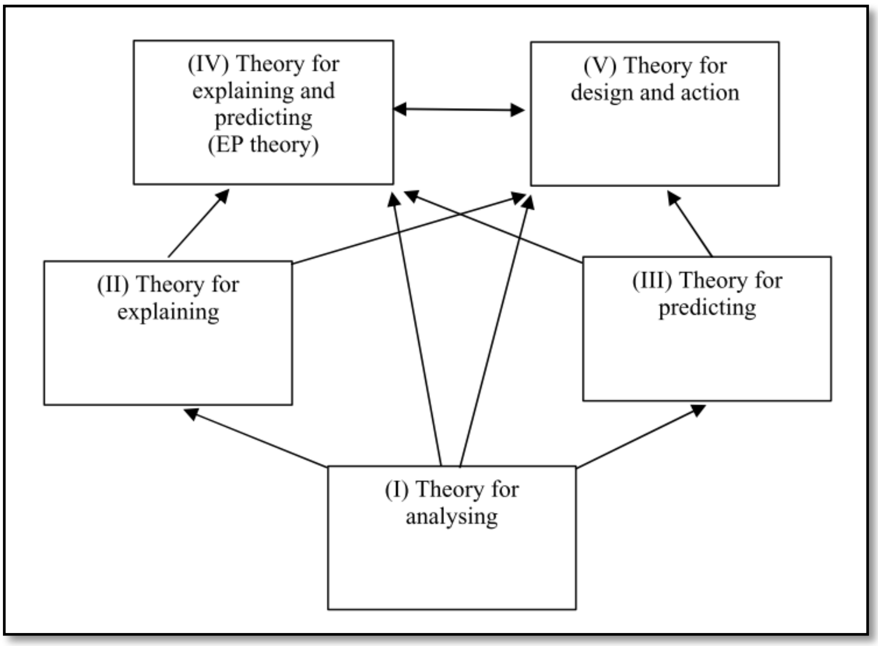


Figure 3.1: Interrelationships among IS theories [Source: (Gregor 2006)**]**

3.1.1 Interpretive and positivistic research approaches

Walsham (1995) differentiates interpretive and positivistic approaches by considering their epistemological and ontological perspectives. Epistemology asserts that all truly obtainable knowledge is based on the observation or experience of real phenomena in an objective and real world. Thus, the positivistic research approach is to propose a particular manner to obtain facts of the world (Avison & Pries-Heje 2005). As positivism treats facts and values unconnectedly, therefore scientific knowledge usually only consists of facts (Walsham 1995). In the 20th century, positivism has been strongly criticised as it assumes that sciences methods are the only correct approaches in all matters of investigation (Holmes 1997).

In contrast, ontology concerns the nature of reality. According to Archer (1988), ontology can be divided into *external realism*, *internal realism*, and *subjective idealism*. External realism considers that reality exists independently; whilst internal realism views reality as “an inter-subjective construction of the shared human cognitive apparatus”; whereas subjective idealism asserts that people can construct their own reality. Thus, an interpretive research approach often involves human interpretations and perception (Mingers 2001).

3.1.2 Discussions of interpretive and positivistic research approaches

Since the origins of the discipline of IS, the discussion on whether to choose a positivistic or interpretive research approach has already existed (Galliers 1992). An interpretive approach clearly distinct from the positivist tradition, as it largely relies on *qualitative* research methods such as case study, review of records, interviews and observations, which involves human factors such as interpretation and understanding (Burrell & Morgan 1992). However, researchers with strong scientific and engineering backgrounds challenge the interpretive approach, as the discipline of IS also contains many well-formed quantitative branches (Avison & Pries-Heje 2005). Hence, IS positivists claim that IS research should be mostly founded on statistical results through a mathematical approach, by using *quantitative* research methods (Myers *et al.* 2004; Avison & Pries-Heje 2005).

In the early 1980s, along with the increasing industrial application of computer based systems and the development of the discipline of IS, more and more researchers began to realise that information systems could not function properly unless they are situated in an appropriate social system. Based on that, the renowned statement "*Information Systems are social systems*" has been popularised by the IS research community in the second half of the 20th century (Land & Hirschheim 1983). Since then, IS researchers have started to pay great attention to sociological facts as well as scientific facts in their studies. This change leads to the discussion about how to utilise a *mixed methods research* approach to acquire valid knowledge (Avison & Fitzgerald 2003; Orlikowski & Baroudi 1991; Galliers 1992; Walsham 1995; Rocco *et al.* 2003; Dibbern *et al.* 2004; Avison & Pries-Heje 2005; Onwuegbuzie & Leech 2006; Johnson *et al.* 2007).

3.2 The mixed methods research approach

The previous section examines the philosophical basis of this research and discusses two different research approaches, i.e. interpretive (qualitative) research approach and positivistic (quantitative) research approach. In this section, both research approaches are explained, together with justification for using a mixed methods research approach in this PhD project.

3.2.1 Quantitative research approaches

Quantitative research often refers to the systematic, empirical investigation of quantitative phenomena and their relationships (such as 'what', 'where', and 'when'), which are suitable for establishing quantitative measurement (Myers *et al.* 2004). The process of quantitative measurement (e.g., meta-analysis and observational studies) is central to quantitative research as it provides a vital connection between empirical observations and mathematical expressions in studies (Stoop & Berg 2003). According to Howe and Eisenhart (1990) and Irania and Lovec (2006), quantitative research approach is normally used in scientific studies and often includes generating models, testing theories, formulating hypotheses, collecting empirical data, modelling data, and evaluating research results.

As a quantitative research approach is concerned with measurable quantities (e.g. numbers), its main objective is always employing mathematical and logical models to develop theories, or potentially, hypotheses relating to the theories (Irania & Lovec 2006). Hence, its research results are normally supported by statistical data analysis and strong scientific evidence such as tables, charts, or statistical graphs of numerical results (Avison & Pries-Heje 2005). Due to the feature of this type of research, much IS research has employed quantitative research approaches to evaluate computer based information systems when statistical quantities are involved (Irania & Lovec 2006). Sandelowski (2000) and Stoop and Berg (2003) discuss a typical quantitative approach: 1) collecting data based on hypotheses or theories; 2) based on sample data, verifying and validating the collected data by using specific statistical methods; and, 3) after validating the data, examining the research phenomenon and relationships by manipulating statistical quantities so various recorded factors can be tested.

Furthermore, particularly in the discipline of IS, with aims of assisting IS researchers into quantitative studies, Irania and Lovec (2006) and Myers *et al.* (2004) summarise some key guidelines for the quantitative research approach. These guidelines are:

1) **Preliminary studies** – Based on the literature review and addressed research problems, researchers shall understand the *importance of the study*, *methodological issues*, relevant *findings*, and *possible gaps* of the study. At this stage, both *research questions* and, if relevant, *hypotheses* shall be clearly explained.

2) **Methodology** – The method used needs to be clarified in detail, so it could be replicated by other researchers. Several main issues should be considered when designing the methodology:

    - *Research participants* – To explain the characteristics of the population as well as the sampling procedure; to describe the characteristics and the size of the sample; more importantly, to discuss "arguments for *representativeness* shall be strengthened by comparing characteristics of the sample" (Punch 2005).

    - *Measures* – If possible, to summarise instruments and their descriptions and measurement properties (e.g., *reliability* and *validity*); and to provide estimates of the reliability of the scores in the sample (Srnka & Koeszegi 2007).

- *Procedure* – To describe the conditions under which the research is *administered*, which shall include describing the *design* of the study, *variables* used in the study, the *sample size*, and the *process* for deciding to use that size.

3) **Results** – In the result stage, researchers shall explain the *data collected procedure*, *statistical analysis*, and *relevant results* in relation to the research questions; moreover, if applicable, *issues* occurred in the research and how to handle the *missing data* need to be explained. To present statistical results, researchers shall consider including values such as confidence intervals, sample sizes, the value of the test statistic, the degrees of freedom, and the significance level.

4) **Discussion** – Whilst discussing the results, it is necessary to state findings for each research question as well as the limitations of the study. Additionally, theoretical and practical implications of the study shall be identified and compared to those reported in the literature. Improvements to the study and recommendations for future research shall be discussed in the final stage.

The above guidelines suggest that quantitative research contains various strengths and weaknesses. For example, according to *Myers et al.* (2004) and Avison and Pries-Heje (2005), some limitations for quantitative research are: 1) normally requires *large samples*; 2) might be *costly* due to large samples; 3) *inflexible* due to improper design, which could lead to potential statistical errors; and, 4) the *misuse* of sampling and weighting can weaken the accuracy, validity, and reliability of the research (Table 3.6 details strengths and weaknesses of quantitative research techniques). Table 3.1 summarises some representative advantages and disadvantages for this type of research.

Table 3.1: Strengths and weaknesses of quantitative research
[Derived from: (Avison & Pries-Heje 2005; Johnson *et al.* 2007)**]**

Strengths
Testing hypotheses
Generalisation of research findings based on sufficient data
Providing precise, quantitative/numerical data analysis
Conclusion of research results that are relatively independent of the researcher(s)
Very useful for a large number of quantitative data
Weaknesses
Focusing on generalising theory/hypothesis
Reflecting research context and sociological issues
Producing specific and material knowledge
Obtaining crucial factors of a research phenomenon due to human related factors
Interpreting people’s understanding of some research phenomena

3.2.2 Qualitative research approaches

Qualitative research is traditionally developed in the domain of social sciences where the research aims are to gain an understanding of human behaviours and the reasons behind these behaviours (Howe & Eisenhart 1990). Rather than numbers or statistical quantities, qualitative researchers investigate 'why' and 'how', by using relatively smaller but specific samples.

According to Howe and Eisenhart (1990) and Becker (1996), qualitative research approaches can gather nonnumeric data from interview transcripts, field notes, case studies, documents and other media such as graphs, video and audio. In the process of qualitative data analysis (QDA), this type of research particularly promotes the study of specific issues in great detail, so that researchers can achieve good understanding of a small group of people or cases. Compared with quantitative research, qualitative research is capable of producing a wealth of detailed information which is naturally strong with interpretive value, but it is less certain to pursue a value-free, time (e.g., when) and place (e.g., where) independent facts (Orlikowski & Baroudi 1991; Seidel 1998). Notably, there are several advantages and disadvantages associated with qualitative research approaches (Silverman 2005; Onwuegbuzie & Johnson 2006). Some typical ones are summarised in Table 3.2.

Table 3.2: Strengths and weaknesses of qualitative research

[Derived from: (Silverman 2005; Onwuegbuzie & Johnson 2006)**]**

Strengths
Understanding and describing complicated phenomena
Providing a limited number of cases in depth
Conducting cross-case comparison and analysis
Describing in rich details of the observed phenomena and their contexts
Studying dynamic processes, patterns and changes
Exploring how and why the observed phenomena occurred and the process of interpretation
Weaknesses
Producing unique findings which cannot generalise to other people or context
Testing hypotheses and theories with a large participant pool
Having low credibility with people not fully understanding qualitative research
Consuming longer time to collect/produce results comparing with quantitative research process
Easily being influenced by researcher's personal preference and characters

According to many researchers (Miles & Huberman 1994; Seidel 1998; Silverman 2005; Srnka & Koeszegi 2007; Yin 2008), in order to undertake qualitative research, researchers need to follow a range of processes to collect research data, which will be transferred into some forms of explanation and understanding through the researchers' interpretation. The general process of qualitative research is: 1) understanding general characteristics of the research; 2) designing research based on identified research questions; 3) conducting the research; 4) collecting data from various sources; 5) analysing and recording important findings; 6) interpreting categorised findings; and, 7) organising and refining results through either manual or computer based methods.

Particularly when analysing qualitative data – detailed guidelines for systematically converting collected qualitative data into quantities that can be used for further analysis, Srnka and Koeszegi (2007) present a five-stage framework to analyse qualitative data, which has been followed by the author whilst analysing qualitative data collected in the interview survey (see section 5.3):

1) *Material sourcing* – collecting research data from various sources;
2) *Transcription* – creating the basis for data analysis by transferring collected data into written form;
3) *Unitisation* – choosing the unit of analysis (e.g., units of meaning) and dividing the material into coding units;
4) *Categorisation* – developing a category scheme to undertake coding relevant to the research questions; and
5) *Coding* – assigning category codes to units to finish up the final coding process.

3.2.3 A mixed methods research approach

The above discussion suggests that quantitative and qualitative research approaches are incompatible. However, they can be combined as a mixed methods research approach to complement each other (Greene & Caracelli 1997). According to Johnson *et al.* (2007), based on multiple *operationalism* and *triangulation* (Kaplan & Duchon 1988), mixed methods research has become increasingly popular in the so-called *third methodological movement* (an intellectual and practical synthesis) since the 1990s. Furthermore, Johnson *et al.* consider five aspects of mixed methods research: 1) *what* is mixed; 2) *when* or *where* to carry out mixing; 3) the *degree* of mixed research; 4) *why* to conduct mixed research; and, 5) the *orientation* of the mixed methods research.

Table 3.3: Strengths of mixed methods research

[Derived from: (Greene & Caracelli 1997; Rocco *et al.* 2003; Johnson & Onwuegbuzie 2004)**]**

Strengths
Providing better understanding;
Producing a rich picture and quality insights;
Improving theories or description of research objects;
Constructing comprehensive and internally consistent findings;
Cross-validating and explaining findings from different approaches;
Providing confident conclusions and meaningful answers.

With aims of providing breadth and validations in research (Onwuegbuzie & Leech 2006), a number of methodological studies (Caracelli & Greene 1993; Greene & Caracelli 1997; Sandelowski 2000; Rocco *et al.* 2003; Johnson & Onwuegbuzie 2004; Onwuegbuzie & Johnson 2006) state that adopting a mixed methods research process can achieve several significant benefits. Table 3.3 lists some main advantages of mixed methods research. However, in practice, some issues are emerging in mixed methods studies, which attract research consideration in methodological studies. Some researchers (Mingers 2001; Brannen 2005; Onwuegbuzie & Leech 2006; Onwuegbuzie & Johnson 2006; Johnson *et al.* 2007) summarise some representative issues:

1) The difficulty faced by a single researcher to carry out both qualitative and quantitative research, especially when two approaches are adopted concurrently;
2) Researchers need to learn multiple methods to understand how to combine them;
3) Mixed research can be costly and time consuming;
4) Some theoretical issues still need exploration – at the stage to merge (paradigm mixing), which research strategy can be applied and what the philosophical and methodological positions are when mixing research (Johnson *et al.* 2007);
5) How to qualitatively analyse quantitative data, and how to interpret contradictory results from different research approaches.

Due to above typical issues of mixed methods research, In order to employ this type of research approach, researchers need to consider the research continuum – *mono-method research*, *partially mixed* research, or *fully mixed* research (Johnson & Onwuegbuzie 2004), and types of mixed research methods – within-stage or across-stage research (Rocco *et al.* 2003; Johnson & Onwuegbuzie 2004).

After having considered different aspects of strengths and weaknesses of the mixed methods research, Onwuegbuzie and Leech (2006) designed a 13-step research process for researchers to follow in order to adopt mixed methods studies. Figure 3.2 details this research procedure. According to the diagram below, it is observable that this procedure follows Johnson *et al.*'s thoughts of how to undertake mixed methods research (e.g., *what* to mix, *when* or *where* to mix, the *degree* of mixed research, *why* to mix, and the *orientation* of the research). Unlike a single method research approach, a mixed research approach requires additional attention when designing the research approach. For example, when researchers formulate research objectives (step two in the procedure), they also needs to determine the mixing rationale (step three) and purpose(s) to mix (step four); after determining research questions, research design needs to select appropriate mixed methods to implement the exploration (step seven) as well as to reflect the determined questions (step five).

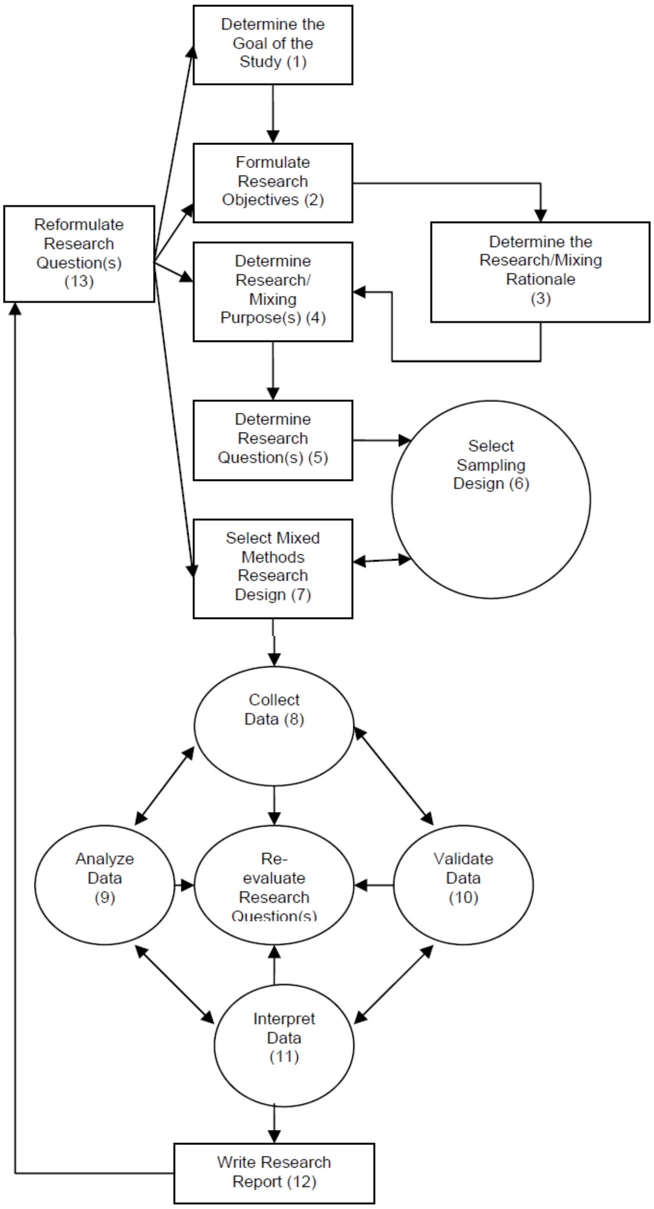


Figure 3.2: Mixed methods research process

[Source: (Mingers 2001; Onwuegbuzie & Leech 2006)**]**

3.2.4 Why a mixed methods research approach in this research

According to Baskerville (1999), to explore computer based information systems and their related technical/sociological issues needs to include five areas of studies: 1) *diagnosing* actual problems; 2) *action planning* based on the identified issues; 3) *taking action*s through proper research approaches based on structured enquiries and an appropriate research strategy; 4) *evaluating* and *analysing* collected data; 5) *specifying findings* based on research results, so that these findings can lead to an obvious conclusion for other researchers to comprehend and verify.

Although the above research procedure provides clear steps to follow, in practice, such a process is only suitable within a perfect and simple research environment, e.g. *theoretical IS research*. As Cornford and Smithson (2006) state, for *theoretical IS studies*, researchers usually deal with abstract phenomena and issues, which suggests that the planned actions or processes can be closely adhered to throughout the exploration; however, in order to seek explanation and feasible resolutions, *empirical IS research* is normally employed to examine more dynamic and complicated real world problems, because it is extremely difficult for researchers to clearly identify what the specific issues are or how to conduct the exploration at the initial stage (Orlikowski & Baroudi 1991).

To take the discussion one step further, a single research approach with a relatively simply research strategy often leads to further adjustments in empirical research, which suggests that multiple research approaches are more suitable to achieve clear and presentable results in a complicated empirical research environment (Smithson 1991; Avison & Pries-Heje 2005; Sjoberg *et al.* 2007). Therefore, in order to minimise impacts in a complex industrial exploration (e.g., this research), researchers usually combine varied approaches to complement and validate findings.

Archer (1988) suggests three ways to undertake IS research for a complicated empirical case, which all comprise of both qualitative and quantitative research approaches:

1) Using qualitative research to *complement* quantitative research so that researchers can access specific research questions;
2) Employing a qualitative research approach as a *forerunner* to provide an entry point into some new fields of study; also, using a qualitative approach for investigation before and during the main research effort; and,
3) *Relying* on a qualitative research approach as the only true approach, with significant improvements on topics that can be studied by a quantitative approach.

It is evident that much IS methodological research (Gable 1994; Mingers 2001; Rocco *et al.* 2003; Myers *et al.* 2004; Cornford & Smithson 2006; Irania & Lovec 2006) proves that both qualitative and quantitative research approaches can be applied to many IS research domains. For example, qualitative research usually relates to interpretative studies and is strong in improving the meaning and relationships of the observed IS phenomena. Quantitative approaches, on the other hand, relates to positivistic approaches, which is suitable for achieving general knowledge and dealing with facts based on quantities. However, for dynamic and complicated research phenomena such as industrial investigations, employing a mixed research approach can often make use of strengths of both approaches and soften the impact of their weaknesses.

To sum up, IS research can expect great benefits by employing a mixed methods research approach when investigating practical phenomena with wealthy technical and sociological backgrounds; in doing so, IS researchers can overcome the limits of a single research approach and provide meaningful explanations from diverse research perspectives. According to the nature of this PhD research (i.e. an industrial exploration) and its strong sociological background, a mixed method research approach shall be an appropriate choice for this study.

3.3 IS research methods

The above discussion reviews the philosophical basis of IS research, typical IS research approaches, and reaches the reasons for choosing a mixed methods research approach in this PhD project. In this section, a variety of IS research methods are introduced and evaluated, in order to identify which methods are best suited to the aim of this PhD project.

3.3.1 Taxonomy of IS pragmatic methods

One initial attempt to produce an IS research taxonomy was made by Vogel and Wetherbe (1984). They classify IS research into six taxonomic groups and develop a single effective taxonomy that contains the majority of research efforts in IS discipline. These are:

1) **Theorem proof** – capturing applicable fields;
2) **Engineering** – the application of science and mathematics;
3) **Empirical** – research mainly relying on observation, which includes:
    - *case study* – examination of one organisation without an experimental design or controls;
    - *survey* – examination of several or more organisations with an experimental design but no controls;
    - *Field test* – examination of one or more organizations with an experimental design and controls;
4) **Experiment** – laboratory study of organisational problems with an experimental design and high degree of control; and,
5) **Subjective/argumentative** – creative research based on opinions and speculation.

Galliers (1992) extends the discussion to pragmatic IS methods. He categorises IS methods into two main groups, scientific methods and interpretive methods: 1) the scientific methods are mainly based on the broader foundation of the *positivistic research approach*, which is suitable for research objectives that can be explained and observed in an objective and well-organised manner; 2) interpretive methods are based on *an interpretive research approach*, which are appropriate for objectives that have strong connections to human factors and sociological issues. Table 3.4 presents Galliers's taxonomy of some typical IS methods.

Table 3.4: The taxonomy of IS pragmatic methods [Source: (Galliers 1992)**]**

Scientific descriptive methods	Interpretive methods
Laboratory experiments	Subjective/argumentative
Field experiments	Reviews
Surveys	Action research
Case studies	Descriptive/interpretive
Theorem proof	Futures research
Forecasting	Role/game playing
Simulation	

As described by many IS pragmatic and methodological studies during the last two decades (Orlikowski & Baroudi 1991; Chen & Hirschheim 2004; Gregor 2006), surveys, case studies, laboratory experiments, field experiments, and action research are five widely recognised pragmatic IS methods in the IS research community. Other IS methods such as theorem proof, forecasting, futures research, simulation, and role/game playing have not attracted much attention. According to Chen and Hirschheim (2004), after having examined 1,893 articles published in eight major IS journals between 1991 and 2001, the majority of IS research chose five research methods: surveys (41%) as a key research method, followed by case studies (36%) and laboratory experiments (18%); very limited studies used action research (3%) and field experiments (2%) – see Figure 3.3. The diagram below illustrates that IS research methods such as survey, case study, and laboratory experiment are more popular than other methods in the discipline of IS.

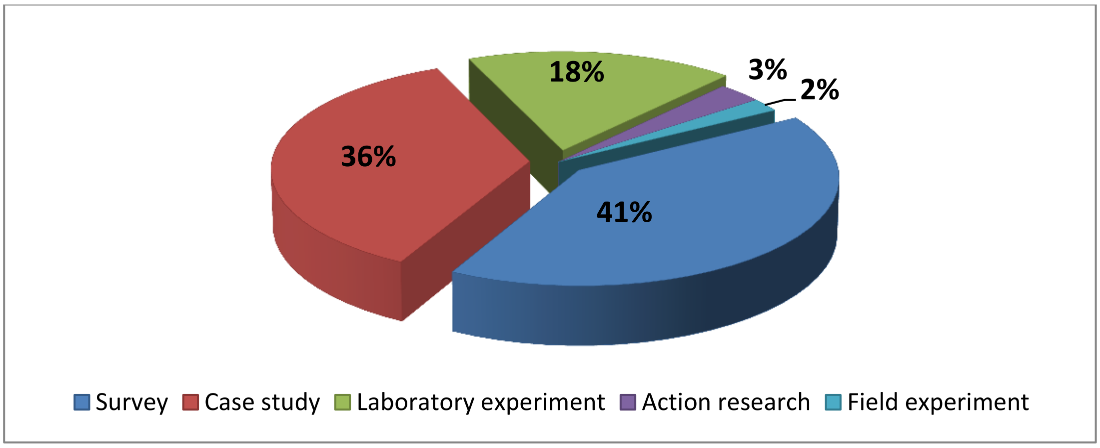


Figure 3.3: Five main methods adopted in IS research

[Derived from: (Chen & Hirschheim 2004)**]**

3.3.2 Main IS research methods and their related techniques

The following sections explore the above methods, i.e. surveys, case studies, laboratory experiments, and action research. Based on a thorough understanding of these methods, a sound basis is established to decide on which methods and techniques are going to be used in the study.

3.3.2.1 The survey method

The survey approach refers to a group of methods emphasising quantitative analysis, where research data are collected from several organisations through methods such as telephone interviews, mail questionnaires, or published statistics; the collected data are usually analysed by statistical techniques (Gable 1994). The survey method can provide a reasonably accurate description of real world situations from a variety of viewpoints. Hence it is appropriate when the research objectives involve highlighting the situation or discovering general relationships across the research entities (Galliers 1992; Yin 2008). However, the survey approach only provides snapshots of the situation at a certain period of time – although a large amount of data can be generated in a short time with a relatively cheap cost, the collected data can contain various independent and interrelated variables which either may not be measurable or are hard to interpret, due to their dynamic real causes and complicated effects in the natural setting of the research (Gable 1994; Sjoberg *et al.* 2007).

3.3.2.2 Case studies

According to Yin (2008), a case study is an empirical inquiry that investigates an existing phenomenon within its real life context, which usually helps observers to understand and explain the nature and complexity of the research topic when the boundary between the topic and its context is not obvious. Case studies can investigate either a single case or multiple cases. Yin (2008) indicates that a single case study is often used to confirm or challenge a theory or sometimes to represent a unique or extreme case. Therefore, designing a single case study should require careful examination in order to avoid misrepresentation when accessing the evidence. Whereas a multiple-case study (also called multiple-case studies) follows replication logic, hence to design multiple-case studies requires the researcher to select cases that consist of a complete story – the investigation can gather facts from various sources and draw conclusions on those facts. When designing the case study, researchers shall *not* follow sampling logic adopted in a single case study (Rocco *et al.* 2003); in fact, the researcher should follow a replicated design procedure to strengthen the results by replicating the similar research process so that the research findings can increase the confidence of the investigation (Orlikowski & Baroudi 1991; Yin 2008).

Case studies are one of the most common qualitative research methods used on real-world matters to gain knowledge about reasons and relationships between various facts (Orlikowski & Baroudi 1991; Yin 2008). According to Avison and Pries-Heje (2005) and Sjoberg *et al.* (2007), questionnaire, interviews, documents and observations are key research techniques in case studies. Although case studies are capable of capturing detailed information with many variables, it is evident that its application is often restricted to a single phenomenon or one particular organisation (Galliers 1992). Additionally, case studies are difficult to acquire same type of data for statistics; hence, this method is not suitable to make general conclusions based on one or several individual cases (Galliers 1992; Yin 2008). Following that, Walsham (1995) identifies three main disadvantages for using case studies in IS research, they are: 1) unable to manipulate individual *variables*; 2) risks of inappropriate *interpretation*; and, 3) lack of power to *randomise*. However, Yin (2008) claims that a cautiously designed protocol, containing proper survey instrument, detailed procedures, and detailed guidelines to follow, can minimise limitations of case studies; moreover, due to case studies' unique multiple analytical perspectives, researchers can cross-verify the rightness and the degree of accuracy of their conclusions along with the development of the investigation.

3.3.2.3 Laboratory experiments

Laboratory experiments are a type of pragmatic research approach performed in a controlled environment, in which complete control over variables relating to the research phenomenon is possible (Jarvenpaa 1988; Galliers 1992). Laboratory experiments usually allow researchers to manipulate independent or dependent variables in a precisely measured process, within a designated environment (e.g., a laboratory). However, its artificial nature is one of its greatest weaknesses (Denscombe 2007). The process followed in a laboratory setting might not be necessarily duplicated in a real world setting. It is also extremely difficult to experiment within an organisation whilst keeping tight control over key variables (e.g., staff, delivery timescale, process and budget).

3.3.2.4 Action research

Action research focuses on combining theory and practice. Baskerville (1999) suggests that action research contains two general stages: 1) the *diagnostic* stage, which involves combined analyses of the research subject and its social situation; 2) the *therapeutic* stage, which includes collaborative experiments on changes and effects of the subject. Action research attempts to obtain practical value while simultaneously acquiring new theoretical knowledge; it can be characterised as an iterative process involving researchers and practitioners to act together on a particular cycle of activities, which includes problem diagnosis, action intervention, reflective learning, and hypothesis formulation (Galliers 1992; Baskerville 1999). According to some methodological research (Galliers 1992;

Baskerville 1999; Sjoberg *et al*. 2007), the strengths of action research often include practical benefits for the research participants and clear foundations during the progress of the exploration. Weaknesses of action research are similar to those in the case study, i.e. risks of inappropriate interpretation, manipulation difficulties, and hard to choose random sample(s).

3.3.2.5 Other research techniques

As mentioned in the above discussion, there are a number of research techniques for research methods to employ when conducting IS research. According to Sandelowski (2000), Beynon-Davies (2002), and Avison & Pries-Heje (2005), five typical research techniques are usually associated with these methods, they are: experiments, documentary analysis, questionnaires, interviews and observation. Table 3.5 explains key features of these techniques and their connections.

Table 3.5: Key IS research techniques: features

[Derived from: (Sandelowski 2000; Beynon-Davies 2002)**]**

Research Techniques	Key features	Applied Research Methods
Documentary analysis	• Mainly relying on the collection and analysis of <u>written documents</u> and other forms of <u>artefact</u> produced by organisations and groups.	Case studies Action research
Experiments	• Normally designing for <u>hypothesising relationships</u> between independent and dependent variables. • In order to study these relationships, all variations in the <u>experimental environment</u> need to be tightly controlled.	Laboratory Field experiments
Interviews	• This form of research is frequently used to gain data from <u>surveys</u> and <u>in-depth case studies</u> of certain phenomena. • The technique essentially involves structured or unstructured <u>discussion</u> between <u>interviewer and interviewees</u> on a certain topic.	Surveys Case studies Action research
Observation	• Mainly being used to obtain detailed data on <u>what has been done</u>. • The observer needs to <u>participate</u> or be <u>independent</u> of the observed group in the research activities. • The <u>style of the observation</u> may be either explicit or covert.	Case studies Action research
Questionnaire	• This form of technique is based on a set of <u>well-formulated questions</u> on one or several topics. • The answers to the questions in a questionnaire can be either <u>predetermined or open</u>. • This research technique is often used in <u>association with interviews</u> which provides a foundation for the questionnaire. • Questionnaires are usually sent to a group of <u>relevant respondents</u> and to be completed independently.	Surveys Field experiments Action research

In addition to the key IS research techniques listed in Table 3.5, some researchers (Land & Hirschheim, 1983; Galliers, 1992; Avison & Fitzgerald, 2003; Avison & Pries-Heje, 2005) have also reviewed the strengths and weaknesses of these techniques. Table 3.6 summarises main advantages and disadvantages of the five widely adopted techniques.

Table 3.6: Key IS research techniques: strengths and weakness

[Source: (Land & Hirschheim, 1983; Galliers, 1992; Avison & Fitzgerald, 2003; Avison & Pries-Heje, 2005)**]**

Source of Evidence	Strengths	Weaknesses
Documentation	1) Stable – can be reviewed repeatedly 2) Broad coverage – long span of time, many events and many settings 3) Exact – contains exact name, references and details of an event 4) Unnoticeable – not created as a result of the case study	1) Retrievability – can be low as reviewed documents may not be retrievable 2) Biased selectivity – happens when document collection is incomplete 3) Access – may be deliberately blocked 4) Reporting bias – reflects unknown bias of the research
Archival Records	1) *Same as for documentation* 2) Precise and quantitative	1) *Same as for documentation* 2) Accessibility can be poor due to privacy reasons
Interviews	1) Targeted – focuses directly on the research topic 2) Insightful – provides perceived casual conclusion	1) Bias due to poorly constructed questions 2) Response bias due to interviewees' personal opinions 3) Inaccuracies due to poor recall 4) Reflexivity – interviewees might give what interviewer wants to hear
Direct & Participant Observation	1) Reality – covers events in real time 2) Contextual – covers contexts of the observed events 3) Insightful into interpersonal behaviour and motives	1) Always time-consuming 2) Selectivity – unless broad coverage, observed events can be not representative 3) Reflexivity – events may proceed differently because of the observation 4) Cost – payment is required by human observers 5) Bias due to observer's interpretation
Questionnaire	1) Cost – relatively cheaper than other types of surveys 2) Effortless – does not require much effort after distributing the questionnaires 3) Statistical – standardised answers make data analysis simpler 4) General - engaging a large amount of participants on one topic	1) Time-consuming – may spend a long time to construct the questionnaire as well as to collect the response 2) Response bias – respondents must understand the questions 3) Bias due to poorly constructed questions and standard answers (see section 3.5.5) 4) Limits – questionnaire may not be practical for some groups

3.4 A high-level research framework

Based on the above discussion regarding research approaches and research methods, a mixed methods research approach is selected due to the technical and sociological features of this PhD research – an industrial exploration which examines a dynamic industrial phenomenon such as GSO projects in the UK's financial services sector within a multi-impact context. Hence, after careful consideration, the author designs a high-level research framework, which can be seen in Figure 3.4 (a more detailed PhD research plan can be found in section 3.6).

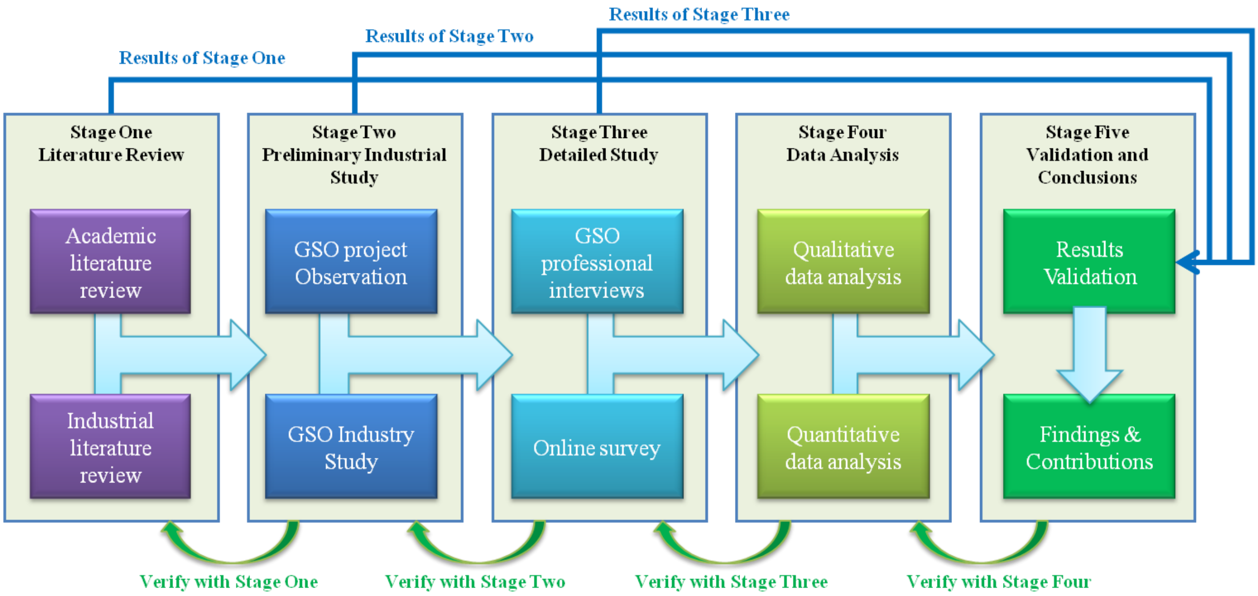


Figure 3.4: A high-level research framework for this PhD project

According to the above high-level research framework, generally speaking, this industrial exploration contains five stages:

1) **Stage One** (*literature review*) – This stage achieves a sound understanding of the subject of IT/IS outsourcing, the field of GSO, and their development in the UK. The outcome of this stage provides the foundation for the preliminary industrial study.

2) **Stage Two** (*preliminary industrial study*) – Stage two carries out an initial industrial exploration through a multiple-case study on three GSO projects. The outcome improves the understanding of GSO practices and issues to focus on in the detailed industrial study.

3) **Stage Three** (*detailed industrial study*) – At this stage, semi-structured interviews and an online questionnaire survey are employed to collect qualitative and quantitative data from IT/IS

professionals who were working on GSO related projects. Research data collected from both research approaches are analysed in the next stage – data analysis.

4) **Stage Four** (*data analysis*) – This stage involves processing, analysing and structuring collected qualitative and quantitative research data according to qualitative/quantitative data analysis processes described in section 3.2. Various analysis techniques (e.g. QDA, content analysis, coding methods, statistical analysis) and qualitative/quantitative analysis tools (e.g., NVivo, JavaDB, and SPSS) are used at this stage.

5) **Stage Five** (*validation and conclusions*) – During the exploration, research findings from different stages are cross-verified iteratively (see the curved up arrows in Figure 3.4). In the final stage, research findings from different stages are fed into the stage of validation and conclusion, which concludes research findings and contributions of the entire research project.

3.5 Selected methods and techniques

Before introducing a more detailed research plan of this exploration, the author evaluates the employed research methods and techniques such as literature review, a multiple-case study, interview survey, and questionnaires survey, in this section.

3.5.1 Literature review

In order to gain knowledge of the research area as well as develop a comprehensive research approach to explore the research domain, a literature review is usually conducted as the research foundation of an exploration. According to Walsham (1995), with aims of making a complicated topic more explicable, a descriptive and interpretive study is necessary for researchers to follow, because researchers can improve their understanding of the field through collecting, summarising, and analysing representative published information in academia and industry; and what is more, carrying out a literature review can help researchers to appreciate how to conduct their research.

The literature review of this PhD project has been completed and presented in Chapter One (the primary research) and Chapter Two (IT/IS outsourcing). It helps the author to establish a sound foundation of the research domain and facilitate an appropriate research approach to be employed in this exploration. When conducting the literature review, the author firstly paid much attention to academic publications in prestigious IT/IS journals in order to gain general knowledge of the research domain; after that, his focus shifted to papers published by several renowned international conferences and market reports issued by world leading chartered institutes of ICTs (e.g., BCS and NASSCOM), software companies (e.g., Microsoft and IBM), and professional consultancy services firms (e.g., Deloitte and PWC). In doing this, the author accesses up-to-date research findings and more focused industrial reports on GSO practices. Additionally, in order to comprehend the multi-disciplinary understanding of GSO projects in the UK, publications such as globalisation, IS research methods and techniques, project and people management, cross-cultural impacts, cross-company collaboration, and the history of global IT/IS outsourcing have also been reviewed.

3.5.2 A multiple-case study

According to the overall aim of this project – to explore project level issues and development areas for improvement in GSO projects, this exploration is clearly not to confirm or challenge a theory, or to represent a unique or extreme industry case. Bearing this in mind, it is evident that many similar types of industrial explorations (Lacity & Willcocks 1998; Verville 2003; Herbsleb *et al.* 2005; Alibabar *et al.* 2007; Smithson *et al.* 2007) have employed a multiple-case study to disclose impacts and issues through multiple sources. Thus, based on the nature of this project, a multiple-case study is used as the first stage of the industrial exploration. Main reasons for this decision can be seen as follows:

1) Different GSO project arrangements can lead to diverse practical issues (Cullen *et al.* 2005; Herbsleb *et al.* 2005; Smithson *et al.* 2007), which cannot be fully observed and identified in a single case study.

2) Achieving understanding of issues requires multiple data sources and sometimes multi-dimensional analysis, hence it is dangerous to use a single case study or some isolated research methods to undertake the investigation.

3) The author's direct participation in varied GSO projects (e.g. his industrial role in Company Alpha) can ensure that the author has direct access to multiple data sources; what is more, a multiple-case study is suitable for a thorough industrial exploration, when a researcher has directly access to the research phenomenon (Gable 1994), and

4) Various qualitative and quantitative evidences derived from multiple data sources can be tested across multiple cases through a replicated approach.

In order to design a multiple-case study, Yin's case study protocol (Yin 2008) is followed to ensure the reliability of this multiple-case study. These are (also see section 4.3): 1) an overview of the project – objectives, issues, topics to be investigated; 2) sources of information – documentation and access to the phenomenon; 3) case study questions – what to follow during data collection; and, 5) a detailed guide for reporting the case study – outline, format, and templates. When choosing multiple cases, the author follows the process of information oriented *case selecting*. According to Gregor (2006), although a randomly selected case may be typical, it usually does not contain necessary information; therefore, it is important to “select some cases chosen for their validity” to disclose more information. Additionally, case selecting shall reveal information which can stimulate extra interactions between case players (Yin 2008). Hence, when adopting the multiple-case study in the preliminary industry study, the author followed the case study protocol, the case study design process, and the information oriented case selecting, during the investigation.

3.5.3 Surveys

Surveys play an important role in modern IS research. Survey methods involve the observation of a phenomenon with aims to understanding the situation and obtaining a rich picture. In order to review or test possible mistakes in the research, certain review processes are required to assure the quality of the outcome (Gable 1994; Mingers 2001). The author’s industrial background and project roles in several GSO projects (also see section 1.7) facilitate the detailed industrial study at stage three of this research. Although surveys can be planned carefully by researchers, they are often combined with strong sensation of the researchers’ personal interpretation, which suggests that the outcome of surveys might be varied according to the researcher’s background and diverse influences (Gable 1994). Bearing this in mind, in order to ensure the quality of the research, the author applies review processes to evaluate results from different research stages.

3.5.3.1 Interviews

During the detailed industry study, the interview technique is used to capture practical information about issues in GSO projects and to gain insights into GSO practices. The reason to choose the interview technique is to obtain information from selected participants (i.e. interviewees) based on designed interview questions (Myers 1997). According to Beynon-Davies (2002), using interviews can establish a dynamic interaction between an interviewer and an interviewee, which can promote detailed information during the interview discussion.

Interview results can often improve a researcher’s understanding of the research area as well as the research orientation (Mingers 2001). Notably, although interviews can provide valuable information from a real population, they are not statistically representative; thus, a data transform procedure is required to transfer the qualitative data into meaningful quantitative results (Srnka & Koeszegi 2007). Lastly, as the interview is not suitable to explore general factors or common relationships (Beynon-

Davies 2002), the author uses an online questionnaire survey in the detailed industrial study to investigate general views of practical issues in GSO projects (see discussion in section 5.3).

3.5.3.2 Questionnaires

According to the outcome achieved in stage two, a further investigation is required to examine factors that can affect the performance of GSO projects. Some representative factors are: professionals, related companies, project arrangements, development methods, cross-cultural impacts, and project management. Because these data are multi-disciplinary and contain a large quantity of information, they cannot be collected by other research methods. Thus, a questionnaire survey has been chosen to collect multi-disciplinary research data.

Additionally, as discussed in section 3.3.2, questionnaires have some unique advantages over other research methods – they are cheap to distribute and no extra effort is required when collecting data; more importantly, standardised answers can ease the process of data summarisation and translation (Beynon-Davies, 2002). In order to fully understand an industrial phenomenon, a researcher might need to ask many questions to cover a wide range of areas. Therefore, a questionnaire is an appropriate research technique to employ when requesting many research participants to answer a certain quantity of questions (Mingers 2001; Silverman 2005). Questionnaires also have several disadvantages (Punch 2005), for example, an inconvenient layout, misinterpretation of questions, less flexibility due to standardised answers, and unexpected results because of respondents' diverse backgrounds. To avoid these problems, three approaches are usually taken in the questionnaire survey: 1) carefully designed *survey questions*; 2) a well-formed *pilot study* or pre-testing; and, 3) suitable *research participants* (see detailed description in section 6.2 and 6.3).

3.5.4 Data analysis

In this research, both the preliminary industrial study (Chapter Four) and the detailed industrial study (Chapter Five and Chapter Six) produce a large amount of qualitative and quantitative data. To organise and process collected qualitative research data, qualitative data analysis processes are used; to analyse collected quantitative data, statistical data analysis processes are followed. Due to the unique features of data collected from different research stages, detailed discussions on data collection and data analysis are presented at each research stage in the following chapters – see section 4.3 in Chapter Four, section 5.4 in Chapter Five, and section 6.4 in Chapter Six.

3.6 A detailed plan of this PhD research

As introduced in section 3.4, this research can be categorised into five main phases. Together with the selected research methods/techniques introduced in section 3.5, Figure 3.5 is designated to illustrate a more detailed work flow of this PhD research. In the diagram below, rounded rectangles coloured with light blue indicate industrial/academic literature review processes; shapes coloured with light orange represent review/verification of research findings and results from different stages; rounded rectangles coloured with light navy blue show the author's industrial exploration (e.g., the multiple-case study, GSO interviews, and the GSO online questionnaire survey); rounded rectangles coloured in light purple represent data analysis processes; rounded rectangle coloured light green corresponds to the final stage – conclusion and findings.

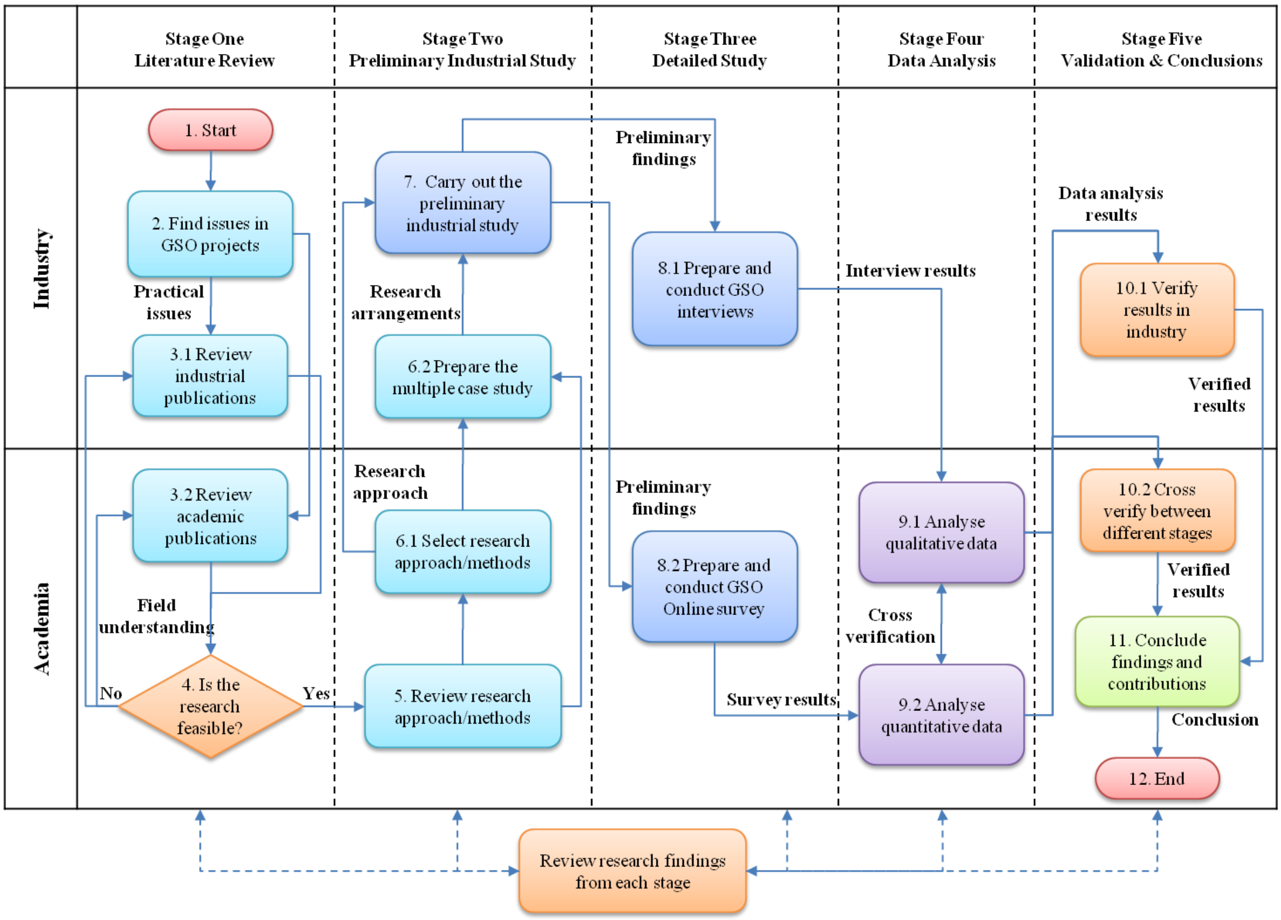


Figure 3.5: A detailed PhD project procedure

In the following sections, each stage is described together with main research methods and related information flows (see major information flows in Figure 3.5). The introduction of the timescale of this PhD project is attached in Appendix A.

3.6.1 Literature review

This PhD research is initiated in an industrial context. Therefore, at the beginning of this research, the author has studied GSO projects in the UK in Chapter One and surveyed much representative industrial and academic literature in Chapter Two to gain a detailed understanding of the research domain. With aims of verifying the feasibility of this PhD research project, a meeting had been performed between the author, the PhD supervisory team, and Company Alpha's management. By receiving approvals from different research parties, research objectives had been refined together with establishing a research plan and some key project milestones of this PhD research.

3.6.2 Preliminary industrial study

This phase is mainly carried out within Company Alpha. Based on the research foundation formulated through the primary research (Chapter One), the literature review (Chapter Two), and research methodology evaluation (Chapter Three), the author has studied three types of GSO projects (refer to Chapter Four) by adopting research methods/techniques such as direct participation (i.e. personal experience), documentary analysis (e.g., the company's internal reports, project records, minutes from project meetings, and various development documents), and observations. The results of the preliminary industrial study enable the researcher to comprehend areas to concentrate and questions to enquire in the stage three of this exploration – the detailed industrial study.

3.6.3 Detailed industrial study

At this stage, the author conducts a semi-structured interview survey (Chapter Five) and an online questionnaire survey (Chapter Six) in order to capture first-hand information from professionals working on GSO projects. This phase is based on results obtained in the preliminary industrial study, for example, research questions utilised in the GSO interviews and the questionnaire were designed according to what have been found in the literature review and the preliminary study. Pilot studies have been conducted. The professionals selected to participate in the study are mainly from the UK and India – some large-scale financial services companies and their software services providers.

3.6.4 Data analysis

Because of different types of data collected from various research phases, qualitative and quantitative data analysis methods were employed when analysing the research data. For example, in order to process the qualitative data, qualitative data analysis techniques were applied to transfer the data into presentable results; for the quantitative data, standard statistical analysis methods were applied.

3.6.5 Validation and conclusions

In the exploration, not only did the author cross-verify results from different research stages, he also validated collected research data in order to satisfy the research objectives and defined research criteria. Furthermore, validation and review processes were also undertaken at the end of this PhD project through verification against findings from some representative publications. Additionally, with aims of ensuring the quality of this PhD research, results of each research stage have been validated by the PhD supervisory team (through annual PhD progress meetings) and some senior IT consultants in industry (see Chapter Seven).

3.7 Conclusion

This chapter has reviewed a number of IS research methods and research methodology that Underpins this PhD study. Many IS research methods/techniques have been verified and some of them have been selected to complete this research. To be specific, with aims of establishing an appropriate research methodology for this PhD research, the author reviews the philosophical basis of IS research, quantitative and qualitative research, a mixed methods research approach, and various research methods and techniques popularly employed in the IS related research. Based on the nature of this PhD research, a decision of choosing a mixed methods research approach is made, which leads to a methodological choice of several research methods/techniques for the exploration. For example, selected research methods and techniques are: literature review, a multiple-case study, semi-structured interviews, and questionnaires. In the second half of the chapter, a high-level research framework for this PhD research are explained (refer to section 3.4 and 3.6). Based on that, a detailed research plan is presented, which illustrates steps to complete in the following industrial exploration.

Chapter 4 A Preliminary Industrial Study

Earlier chapters have explained the background of GSO, GSO practices, the field of IT/IS outsourcing, and the research methodology adopted in this PhD project. In this chapter, the author describes a preliminary industrial study of three GSO projects in a leading financial services company in the UK. The chapter includes six sections: 1) why to research the financial services company; 2) introduction to the studied company; 3) a multiple-case study design; 4) three examined GSO projects; 5) the description of findings during the preliminary industrial study; and, 6) according to the results identified in the preliminary industrial study, suggestions for the detailed industrial study.

4.1 Why to perform the study in the financial services sector

In most western developed countries, the maturity of a country's financial services industry often represents the development level of the nation's economy and prosperity. In today's business world, financial services companies are playing a vital role in the global economy. For example, it facilitates most of the trade across the world, from company shares and commodities to complicated financial instruments and monetary business. Based on FSA (2010), most of the major industries in the FTSE 100 index (the leading share index of the 100 most highly capitalised UK companies) are supported by the financial services sector, which represents over 23% of the market capitalisation in 2009. Figure 4.1 presents the weight of this sector's capitalisation amongst FTSE 100 companies.

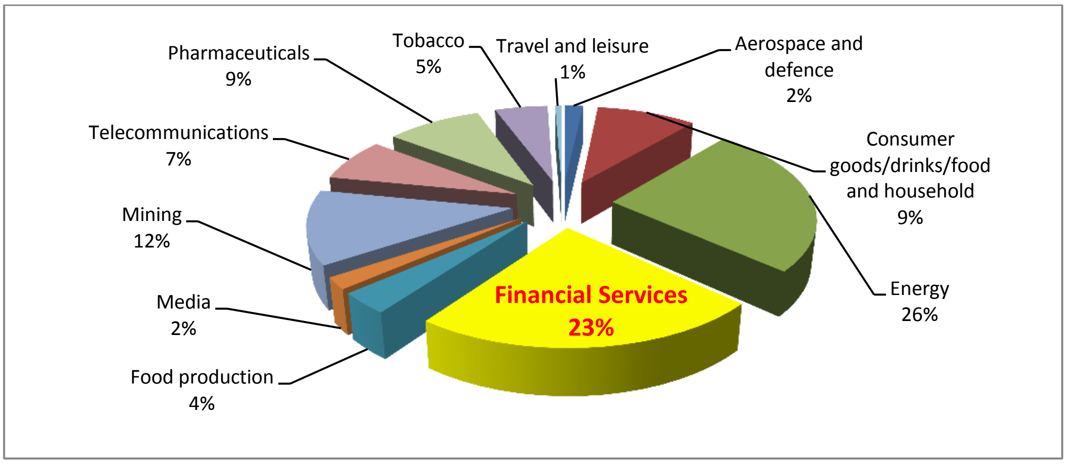


Figure 4.1: The weight of financial services sector in FTSE 100 [Source: (FSA 2010)**]**

Historically, the UK is particularly renowned for its strong and energetic financial services industry. The sector encompasses a broad range of firms such as banks, credit card companies, insurance companies, share brokerages and investment funds. In the 1960s and the 1970s, the sector pioneered large computer based information systems for processing business payments and commercial data management. In comparison to other major industries in the UK, the financial industry is also famous for its utilisation of new technologies and global cooperation models (BCS 2006). According to NASSCOM (2009), the financial services industry is widely regarded as one of the most important sectors – financial services companies in the UK rely heavily on a range of GSO services, such as offshore back-office IT support, commercial data processing centres, e-commercial systems, back-end systems maintenance and support, and software services upgrading.

In 2009, the sector led other industries in GSO employment and accounts for over 40% of the UK's software offshore outsourcing market (NASSCOM 2009). By employing GSO services, the financial services companies in the UK claim that they are saving over £1.5 billion a year, which largely explains the reason why more than 75% of UK's major financial services companies employed the GSO model in the last decade, in comparison to less than 10% in 2001 (BBC 2007). In conclusion, because the financial services sector is leading other industries in GSO employment in the UK, it is comprehensible that to explore GSO practices in this sector can provide representative industrial data; what is more, by conducting an exploration in this sector, it is possible to seek imperative industrial lessons for other sectors to learn as more and more companies are planning employ or expand GSO related services in the near future (also see section 1.2.2 and 1.4).

4.2 The studied company

Due to confidentiality reasons, the studied company is anonymised as *Company Alpha* or *the client company* in this chapter. Company Alpha belongs to a global financial services group with London based headquarters. Since the 21st century, the group has become one of the biggest financial services providers in the world (listed in the FTSE 100 Index since the 1990s). In the early 2000s, the group announced its interest in GSO and commenced its GSO employment after the announcement.

According to an internal report accomplished by a world leading market research firm for Company Alpha in 2007, during the 1990s, the company sub-contracted part of its internal IT/IS development work to services companies in the Republic of Ireland and several leading IT software services suppliers in the UK. Meanwhile, in order to access cheaper labour resource outside the UK, it also established software R&D centres in some European countries (e.g., Poland). In the early 2000s, following its umbrella group's GSO decision, Company Alpha signed software offshore outsourcing contracts with two major IT software services providers in India (named as *Provider Beta* and *Provider Gamma* in the following sections). Since then, in order to increase the company's flexibility of resources management and the capability to deliver IT/IS projects, the company has gradually developed a long-term strategic partnership with the two Indian GSO services providers.

Based on an internal GSO report from Company Alpha (jointly produced by Company Alpha and Provider Beta in 2009), in 2003, Company Alpha established onshore business operation centres and several offshore R&D centres, also known as *offshore captive centres* (Sako 2005), in both India and Sri Lanka, which recruited over 7,000 people to deal with the company's internal IT/IS functions. By 2006, due to the increasing popularity of GSO services and further cost reduction requirement from the umbrella corporation, the offshore captive centres had been expanded to over 5,000 offshore staff at the peak time; however, the size of the onshore in-house development centres were reduced.

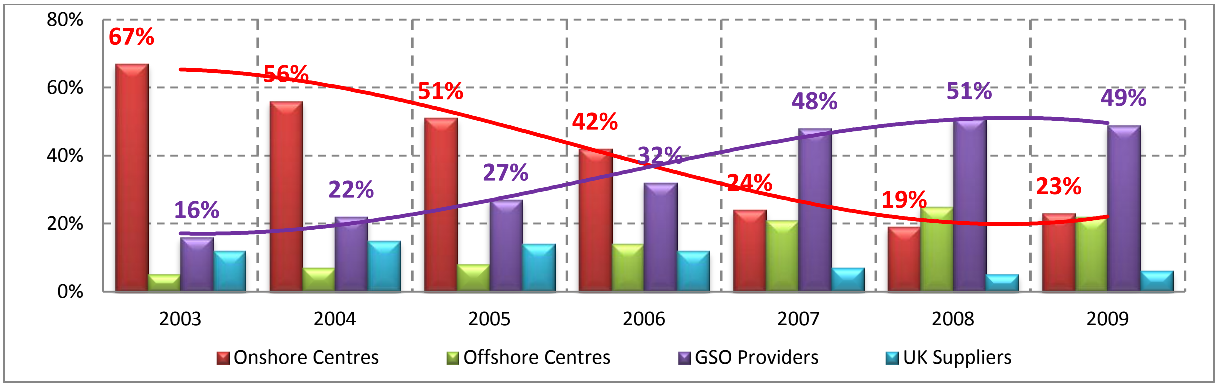


Figure 4.2: The proportional change of Company Alpha's IT/IS workforce

[Source: An internal GSO report produced by Company Alpha and Provider Beta in 2009**]**

Figure 4.2 presents the proportional change of development workforce in the company's IT software projects between 2003 and 2009. According to the diagram above, from 2003 to 2009, there are four development parties working for Company Alpha: 1) the in-house IT solutions department in the UK; 2) the R&D centres in India and Sri Lanka; 3) the Indian GSO services providers; and, 4) the UK's domestic software services suppliers. The diagram above suggests that the percentage of in-house development workforces decreased sharply from 2003 to 2007 (from 67% to 24%), but it began to stabilise since 2008 (around 20%); whereas the weight of offshore GSO providers steadily increased between 2003 and 2007 (from 16% to 48%) and also stabilised since 2008 (around 50%). Although not a major development force (mainly working on testing and daily business support), the company's offshore R&D centres has been growing gradually during the period of time (from 5% in 2003 to around 22% since 2007), in comparison to the share of the company's domestic service suppliers has been continuously decreasing since 2007 (from 12% in 2007 to only around 5% in 2009).

The above diagram evidently reveals that IT/IS services in Company Alpha experienced radical change between 2003 and 2007 – the main development party was rapidly changed from onshore in-house centres to offshore R&D centres and GSO providers. Between 2007 and 2009, the change was stabilised – offshore GSO providers accounted for nearly half of the development force, followed by the company's onshore/offshore R&D sites (20% and 22% respectively) and the domestic services suppliers (approximately 5%). According to the internal GSO report jointly produced by Company Alpha and Provider Beta in 2009, the industrial change caused by the GSO employment in the UK reached a plateau in 2007, which indicates that the context of the *majority* of this PhD exploration (from the end of 2006 to the end of 2008) is relatively stable.

4.3 The design of the multiple-case study

Chapter Three has explained the reason to use a multiple-case study (sections 3.2.4 and 3.5.2), the research framework, and a detailed plan for this exploration (sections 3.4 and 3.6). When designing the preliminary industrial study, the author strictly followed the cases selection criteria (Yin 2008) by choosing three GSO projects in the multiple-case study. To be specific, three criteria have been followed: 1) facts gathered from various sources shall cover a complete case; 2) a clear conclusion can be drawn based on the facts; and, 3) No more cases shall be included as the additional cases will not reveal significant new findings.

4.3.1 The process of selecting projects

In June 2006, the author was involved in four GSO projects in Company Alpha and selected *Project A* to study, because Project A was a typical GSO project which was conducted by one client and one GSO services provider (see section 4.4.2 for detailed introduction). In February 2007, the author was assigned to two large-scale IT/IS development projects and decided to choose *Project B* – the reasons were: 1) he had direct involvement in the project as a main systems analyst; 2) the project was carried out by one client company and multiple services providers (i.e. a UK's domestic supplier and an India's GSO services provider) (see section 4.4.3); in September 2007, as a lead systems analyst in *Project C*, the author selected the project due to its complicated project arrangements – not only was it carried out by one client and multiple services providers, it also had engage the GSO providers in early development stages (e.g. analysis and design) for the first time (see section 4.4.4).

According to some case study research (Benbasat *et al.* 1987; Malterud 2001; Yin 2008), it is always hard for researchers to ensure their objectivity in a case study if they are directly involved in the case. Therefore, in order to maintain the author's objectivity, the majority of his analysis and findings are based on collected data (e.g., the first-hand industrial experiences, Company Alpha's project documents, and GSO providers' project reports). Furthermore, it is noticeable that the author's inputs of three selected projects could *not* change the project progress and final results. Therefore, although the author had directly involved in these cases, three case studies should be considered equally valid.

4.3.2 Data collection

The data collection in the case study has followed standardised procedures defined in some case study research literature (Elo & Kyngas 2008; Yin 2008). Research techniques such as documentary analysis, personal experiences, and direct observation have been adopted when collecting the data from three GSO projects. As main information sources of the study, there are three key types of project documents used in this study:

1) Company Alpha's Strategy & Governance's (S&G) monthly reports;
2) Minutes from weekly project meetings of these GSO projects; and,
3) A range of project records, such as different levels of analysis/design document specifications, and project records (e.g., project plans, tracking records, and resource supply records).

During data collection, the author tried to gather as much data as possible to gain a comprehensive view of these projects. For instance, as a main systems analyst of Company, the author attended many project workshops that were discussing issues in connection with GSO project arrangements, resources supply, project deployment, analysis and design, project tracking, and problems diagnosis. Additionally, as the author was responsible for producing a range of design specifications and coordinating onshore/offshore project progress, he could closely monitor these projects and collected first-hand information. Due to the time-consuming nature of a multiple-case study, the author spent nearly two years (from June 2006 to March 2008) observing and collecting data. Noticeably, Figure 4.2 shows that, during the preliminary study, the research contexts for Project A and B were relatively stable (see explanation in sections 4.4.2 and 4.4.3). However, when carrying out the case study of Project C, a major staff reduction programme was conducted in Company Alpha, which had direct impacts on the results of this project (see section 4.4.4 for details).

4.3.3 Data analysis

According to a confidentiality agreement signed between the author and Company Alpha, the author was not allowed to take any paperwork outside the company. Thus, when analysing the collected research data (e.g., various documentation and the author's project notes), a standardised content analysis process (Elo & Kyngas 2008) was adopted and followed:

1) **Preparation** – selecting information sources;
2) **Organisation** – identifying topics to analyse, so that the researcher can make sense of the collected data as well as understand the whole picture;
3) **Inductive content analysis** – following steps to group information into identified topics through content coding and finding categorisation; and,

4) **Reporting** – describing the analysis results.

Section 4.4 provides a detailed description of selected GSO projects, which includes overviews of these projects, progresses, project arrangements, development parties, project timescales, identified issues during the development, and some key information regarding the GSO collaboration.

4.4 Three studied GSO projects

In this section, the author presents a multiple-case study of three GSO projects in Company Alpha. Amongst these projects, two projects had been delivered and one was eventually cancelled. In order to achieve rich information from different types of GSO projects, these selected outsourcing projects were carried out with dissimilar project arrangements (see the following sections for details). Three main development parties had been involved in the development, these are: 1) Company Alpha's in-house IT staff, which includes both onshore and offshore R&D IT workers; 2) Indian IT professionals from two leading GSO services provider companies; and, 3) two domestic software services suppliers in the UK. According to the findings in the primary study (Chapter One) and the literature survey (Chapter Two), the author designated main objectives of this multiple-case study as follows:

1) To **understand** how GSO projects are arranged;
2) To **discover** project issues in the development;
3) To **conclude** lessons (success or failure) learned from these projects;
4) To **identify** areas/themes that require a further detailed industrial study; and,
5) To **establish** connections with professionals from various GSO related companies, so that they can be engaged in the detailed industrial study.

4.4.1 An overview of three GSO projects

Table 4.1 (below) provides an overview of these selected projects, which summarises project related information such as project description, onshore/offshore software services providers, outsourced areas, budgets, duration, adopted development methods, and outcomes of these three projects.

Due to the confidentiality issues, the following sections intentionally avoid using real project names, project reference codes, and the identity of professionals and workforces who had been involved in three projects. Furthermore, sensitive project factors such as itemised project spending, detailed service agreements, resource supply chain management are kept as brief as possible. Within the limitation of the confidentiality agreement, the fullest project information and clearest explanation are given in the following sections. Noticeably, the description of three selected GSO projects is chiefly based on project level documentation and the author's personal project experience.

Table 4.1: Three studied GSO projects in Company Alpha

Project ID	Project description	Services providers	Main outsourced areas	Spending (duration)	Development methods	Outcome
Project A	Online e-broking software system	1. One GSO provider 2. In-house IT/IS staff	1. Implementation and testing 2. Integration	£1.5 million (9 months)	Mainly the client's own methods	Delivered
Project B	Back-end operating systems	1. In-house IT/IS staff 2. One Indian GSO provider 3. One domestic service supplier	1. Analysis and design 2. Implementation and testing 3. Integration 4. deployment	£1.7 million (15 months)	Onshore – the client's methods; Offshore – the GSO provider's methods	Delivered
Project C	Online financial application	1. In-house IT/IS staff 2. Two Indian GSO providers 3. One domestic service supplier	1. Planning and requirements 2. Analysis and design 3. Implementation and testing 4. Verification	£1.2 million (8 months)	Onshore – the client's methods; Offshore – the GSO provider's methods	Cancelled

4.4.2 Project A

The studied project is part of a large, multi-year IT programme carried out by Company Alpha in 2006. The entire IT programme was initialised in late 2003, in order to establish a comprehensive online service portal to support different types of online financial brokerage products, which can accept and process business cases submitted by the company's strategic partners in the UK. At peak periods, the programme was supported by over six global IT software development sites, together with an annual budget of more than £5 million.

Project A was a co-development effort undertaken by three onshore and offshore sites, one in Norwich, UK and the other two in Bangalore, India. It involves the client company's onshore/offshore IT software R&D centres and an Indian GSO provider – a top GSO services company in India, *Provider Gamma*. The project's main intention is to add another online brokerage product to the services portal. In order to validate and process varied online financial requests, three main project targets have been established. These are: 1) to design and build a secure/efficient online brokerage product; 2) to integrate the product into the company's service portal; and, 3) to maintain the online broking system so that it can be functionally upgraded if the market changes.

The project was approved by Company Alpha in the second quarter of 2006 – with a total project budget of around £2 million (actually spending was 1.5 million, after verification). It took over eight months (from May 2006 to Jan 2007) for the engaged onshore and offshore sites to deliver (excluding the maintenance stage, which was covered by the client company's strategic GSO services agreement). Figure 4.3 shows the high-level project schedule and connections between development phases. In the

GSO collaboration, the client company had complete control throughout the development. For instance, major functions of the online product were entirely determined in a process of negotiation between the client's business sector and its own IT department; what is more, Provider Gamma's onshore project team (the team sent to the client company's onshore R&D site) was required to follow the client company's own development processes. However, notably, the GSO provider's offshore development team was solely managed itself and therefore adopted Provider Gamma's development framework and working style.

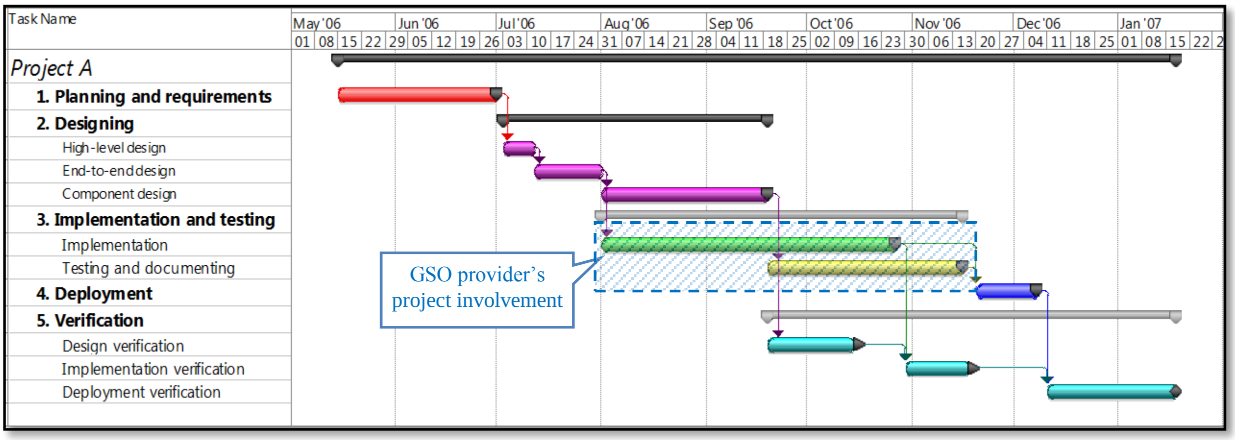


Figure 4.3: Project schedule of Project A

After having finalised the business requirements (task 1 in Figure 4.3), Company Alpha's project team was responsible for producing specifications such as a requirements analysis document (e.g., business requirements, BRD), high level design (HLD), and end-to-end design (E2E). Only when the main design documents, such as BRD and HLD were signed off by the client company's project sponsor (i.e. the business sector), the Indian Provider Gamma was introduced to the project (in August 2006 – see task 3 in Figure 4.3). At the beginning of the provider's project involvement, the provider's onshore professionals (e.g., managers and project coordinators) chiefly relied on project workshops and approved project documents to understand requirements, different levels of designs, and the time frame of the project. After that, the provider's onshore team began to pass the requirements back to the offshore project team, where the code of the online brokerage product was developed and tested. At the same time, the client's onshore site concentrated on refining designs and managing the project, whereas its offshore site was working closely with the provider on testing and verifying the code.

During the implementation and testing phase (from August 2006 to November 2006, see task 3 in Figure 4.3), the client staff peaked at about 30 people, and the provider site peaked at over 50 IT workers. After having verified the beta version of the online broking system in early November 2006, most of Provider Gamma's offshore developers were released from the project, which only left 10 in-house staff and no more than 15 managerial and co-ordinating staff from Provider Gamma still working on installation and integration of the online product (task 4 in Figure 4.3). At the end of Project A, the client's onshore quality assurance (QA) team solely control the verification phase and documented the project outcome based on the delivery.

4.4.3 Project B

Project B aims to add several new components/functions to Company Alpha's back-end business operation systems. Due to increasing challenges in the UK's financial market, the client company decided to upgrade its back-end systems to accept some special business cases (some conditions could be overridden by certain contracted UK financial services brokers), so the back-end systems would analyse risks and calculate results based on the incoming overridden cases. Thus, Company Alpha established Project B to carry out the systems upgrade at the end of 2006.

The main targets of the project were: 1) to create business logic for the overridden business cases; and, 2) to modify the client company's back-end systems to accept and rate the incoming overridden requests. However, because the client company did not have a full software licence and development capability of the back-end system, a group of IT software consultants from a domestic software services company was introduced to the project (in order to distinguish this domestic service supplier with those Indian GSO services providers, this domestic supplier is named as *the UK supplier* or *Supplier Delta* in the following paragraphs). There are three different parties involved in project B, they are: the client Company Alpha, the UK Provider Delta, and one Indian GSO services provider company – Company Alpha's strategic partner, *Provider Beta*.

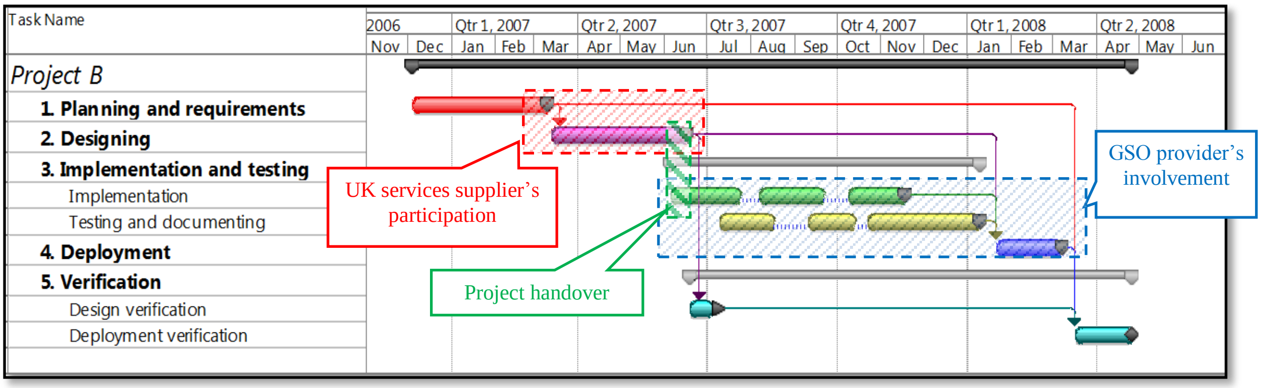


Figure 4.4: Project schedule of Project B

During the development, Project B was carried out by three different development sites, one in Norwich, UK (the client company's in-house IT/IS sector), one in Worthing, UK (Supplier Delta's onshore site), and one in Bangalore, India (the Provider Beta's headquarters). Figure 4.4 illustrates the general project progress and development stages. In the development, due to the problem caused by lack of a full software licence, Company Alpha did not have complete control over the whole development lifecycle. The client company's workers were involved in activities such as project planning, requirements capture, software architecture, part of the HLD, part of the E2E, and project/people management. The major design force was from Supplier Delta based in Worthing, who started to work on planning and requirements capture phases in the beginning of March 2007 (see task 1 and 2 in the figure). Due to the domestic supplier's strong systems knowledge and design expertise, it took over the main responsibility to deliver IT/IS solutions and their related design specifications.

After around three months' work, most of the designs were completed and ready for implementation. However, due to the high price of the UK supplier (averagely between £400 and £700 per person per day), the client company only planned one and a half weeks for Supplier Delta to hand over the project to Provider Beta (the handover period is coloured in green in Figure 4.4). During the project handover, the client company organised a number of project workshops and one-to-one meetings between the three development parties, so that the GSO provider staff could shorten the learn cycle and quickly reach the required level for implementation and testing work.

Throughout the implementation and testing stages, because of the confidentiality issues of Company Alpha's back-end systems, the client company required Provider Beta to maintain most of its development work onshore. According to GSO project arrangements, Provider Beta's onshore developers should develop the key code and send separate programming and testing packages to the provider's offshore site to develop. However, in mid-July 2007 (just one month after the Provider Beta took over the development) the provider's onshore project team encountered a range of development issues caused by lack of systems understanding and software license restrictions on the back-end systems. According to the project records, Provider Beta's project manager categorised some technical issues as "*Insoluble*" and reported them in a monthly project meeting. Unfortunately, due to communicative issues (e.g., reporting channel and dissimilar working style), the client company only reacted to the problem at the end of July, which caused a delay for almost one month.

As Provider Beta was struggling and Supplier Delta's staff had been released from the project, the client's management had to extend the timescale of Project B and divide the implementation and testing period into three sub-phases. Thus the GSO provider could have time to arrange training with Supplier Delta (see task 3 in Figure 4.4). In the meantime, this decision to extend the timescale has sharply increased the difficulty for the client to remain within the planned budget – although according to the strategic partnership agreement, both Company Alpha and Provider Beta were responsible for sharing the excessive costs caused by the delay – it was still reasonably expensive to retain Indian professionals onshore, which could normally cost up to £250-350 per person per day.

According to Project B's progress reports, in Project B, the client staff peaked at about 15 people, the UK Supplier's staff peaked at about eight people, and the Indian provider's onshore staff peaked at 15 people together with over 30 offshore developers. Due to the project delay and the GSO provider's other project arrangement in the UK, most of the provider's developers were immediately assigned away from the project after the final system testing (see task 3 in Figure 4.4), which left only three professionals from the provider side still committing to the project. After the implementation and testing period, the client's onshore QA together with several consultants from Supplier Delta jointly verified the delivery from Provider Beta in early 2008.

4.4.4 Project C

Project C is a project to build an online financial application that provides a graphical user interface (GUI) to process commercial quotations. Company Alpha's business sector was responsible for producing the requirements. Besides the company's in-house developers, a large percentage of systems analysis/design, detailed component design, GUI design, and coding/testing were outsourced to Supplier Delta and two India providers, i.e. Provider Gamma and Beta. Due to issues encountered in previous GSO projects, the client's management believed that strategic GSO providers should be involved with the project as early as possible. Therefore, both Indian providers have been engaged in the project since the phase of systems analysis and design.

Project C's main targets were: 1) to design an online product to process financial quotations from the Internet; 2) to produce an e-commerce server to support the product; and, 3) to modify the client company's back-end systems to accept online businesses. According to the initial project plan, the project was designated to be completed within 10 months – with a budget of around £2 million (actual spending was £1.2 million, before the project has been terminated). Five development sites were involved in the project, three in the UK (Norwich, Worthing, and Perth), and two in Bangalore, India. Because there were five sites working on the project, project teams from different sites were allowed to follow their own development methods; however, main development milestones were established and coordinated by Company Alpha's project management team.

Figure 4.5 presents the project timetable and development phases of Project C. In the project, Provider Beta was working closely with Supplier Delta on back-end systems and software architecture; the in-house IT/IS professionals and Provider Gamma focused on various designs. In order to constantly verify the quality of the delivery from different stages, the client's project managers organised a number of review meetings and workshops in early development stages.

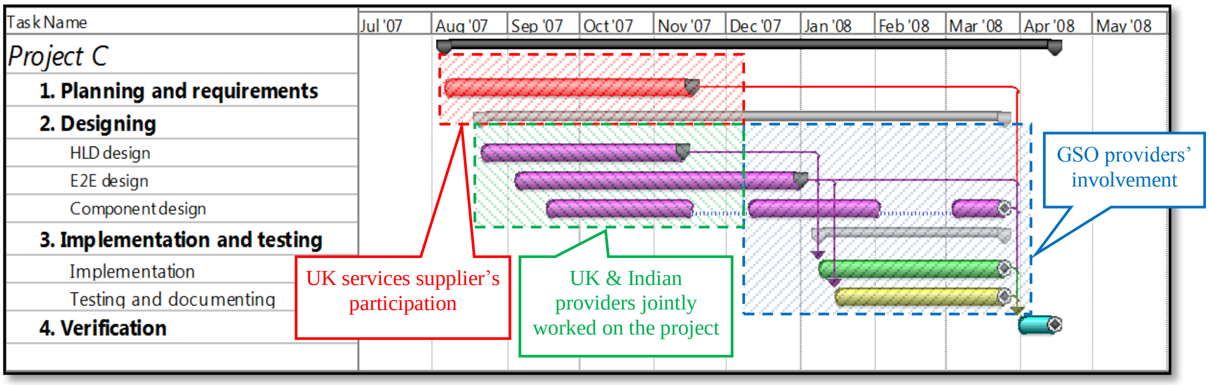


Figure 4.5: Project schedule of Project C

Although the UK supplier and Indian GSO providers completed their parts of work on time, the project was significantly delayed by the client's in-house IT/IS workers. Due to the financial crisis in the third quarter of 2007, the umbrella corporation announced over 5,000 IT/IS related jobs redundancies in September 2007, as part of an efficiency drive. Although the senior management of the client company wanted to preserve Project C, the project was nearly halted due to the increasing panic spreading through the in-house IT/IS developers. Career uncertainty and low in-house morale led to predictable longer delays in production. According to Project C's progress reports, some in-house work was completed with low standards. Notably, based on the author's personal experience, many in-house professionals became cautious when cooperating with GSO providers, as some of them thought that sharing knowledge could make them more vulnerable to potential replacement and redundancy (see section 5.5 for similar findings highlighted in the GSO interviews).

Along with the continuing economic downturn, the UK financial market also changed dramatically during the development lifecycle of Project C. Thus, after having repeatedly reviewed the necessity of the project and its potential market performance, Company Alpha began to consider cancelling this project. The anxiety over Project C gradually accumulated until end of 2007 and grew considerably after the UK Supplier Delta left the project in December 2007. Because the project management believed that Project C would not be delivered within the required timescale, in March 2008, the client company terminated this project and released all the project participants.

4.5 Findings of the multiple-case study

While it is difficult to condense rich and diverse experiences of three types of GSO projects into a few research findings, the author pays extra attention to those that are more general and compelling for the detailed study. Thus, he discusses results of the multiple-case study in three areas: 1) GSO project arrangements, 2) relationships in the collaboration, and 3) issues in the development.

4.5.1 GSO project arrangements

According to Damian & Moitra (2006) and Smite *et al.* (2009), due to the nature of GSO services (e.g., multiple development sites, various participants, and distributed geographical development) in the last decade, client companies need to be more cautious when arranging their IT/IS offshore outsourcing. In fact, when studying three GSO projects in Company Alpha, it is perceptible that the company's GSO project arrangements had deeply affected the performance of these studied projects as well as the relationship between various development parties. The following sections discuss a list of GSO project arrangements issues that the author had encountered in the multiple-case study.

4.5.1.1 Levels of GSO services

As introduced in section 2.5.4, a four-level GSO services model is used to present the service level of a GSO project. In the case study, the author adopted this model to study GSO service levels. Figure 4.6 illustrates three studied projects' service levels – both Project A and B belong to *level two*; whereas Project C is categorised into *level three*. The reason of the categorisation and issues found with respect to service levels are discussed in the following sections.

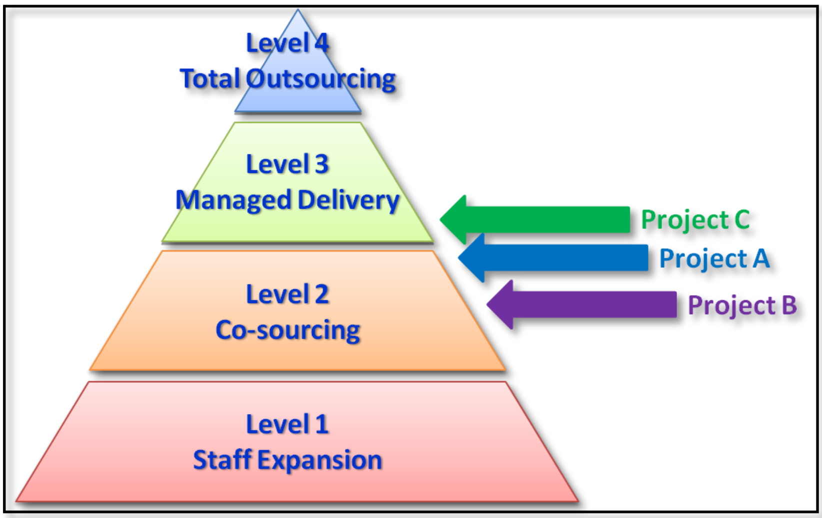


Figure 4.6: GSO service levels of three studied projects

4.5.1.1.1 Three studied GSO projects

Project A's service level is between *level two* (co-sourcing) and *level three* (managed delivery); however it is closer to the boundary between level two and three. Although most of the implementation stage (e.g., coding and testing) was finished in the services provider's offshore sites, a certain amount of the development work was still completed by the client's in-house staff, for example, project planning, project management, requirement capture, and systems design. In contrast to a typical level three GSO arrangement, Company Alpha had full control of the development progress, which means that the project was delivered in a collaborative fashion. Furthermore, the client established the project plan and key milestones for onshore and offshore development teams to follow, which suggests that the whole project was mainly managed and monitored by the client company's project managerial team and some people managers.

Project B is a typical service *level two* arrangement. Multiple onshore/offshore outsourcing providers had been involved in the project. The development was chiefly managed and organised by the client company. When delivering the project, software services providers worked cooperatively with the client's in-house project team. Essential business knowledge and some specific IT/IS skills had been transferred between different development parties. Every workforce was responsible for certain tasks, which suggests that most of the delivery was completed by co-sourcing activities – collaboration between two GSO providers and the client's in-house IT/IS professionals.

Project C's arrangement has combined features of both service *level two* and *level three*; however, the project has many exclusive features of service level three (managed delivery), for example, most of the development work was managed and delivered by the domestic supplier as well as two offshore services providers. Noticeably, the client's development teams were also crucial to the project, as they were responsible for many important tasks such as part of software architecture and high level systems design. The management style in the project was complicated. While the client company was managing most of the onshore delivery as described in the co-sourcing service level, the client did not have control over GSO providers' offshore development processes – which is a typical level three arrangement. In terms of development methods, project/people management, and resources management, much dissimilarity could be found between the onshore and offshore development processes. Therefore, based on the above discussion, the author positions this project in service level three – close to the boundary between level three and level two.

4.5.1.1.2 Discussion of GSO service levels

In the literature survey, some researchers (Handley & Benton 2009) indicate that the selection of the outsourcing service level can lead to a client company's organisational decisions on staff reduction and structure change. For instance, a move towards higher levels of GSO services can decrease the need of a client company's internal IT/IS sectors. To be specific, service *level three* (managed delivery) requires a client company to establish a long-term partnership with its GSO services provider(s), which means that it no longer needs to maintain a large group of in-house IT/IS workers. Furthermore, *level four* (total outsourcing) clearly specifies that a client company shall only be responsible for requirements definition and outcome verification in the outsourcing collaboration, which means that the client could even contract out managerial and senior IT/IS positions, such as project management, costs control, process control, high-level systems analysis/design, and some quality assurance duties (also see discussion in section 2.5.3).

Although the above hypotheses seem theoretically logical, findings in the preliminary industrial study powerfully challenge the feasibility of these propositions. For example, when studying Project C, it is evident that the client company's in-house workers very concerned about which service level their company would plan to settle on. According to the strategy and governance (S&G) annual report of Company Alpha, just before the announcement of the staff reduction programme in September 2007, the company's management had negotiated with its GSO services providers with aims of pushing Project C's GSO service level from *level two* to *level three or four*.

Following this decision, the client company pioneered the arrangement that involved the external services providers in many early development tasks, such as requirement capture, systems analysis and design. However, according to the discussion in section 4.4.4, the project delay, disappointing project progress and the low-quality delivery evidently proves that Company Alpha's incautious decision of choosing a higher GSO service level had negative impacts on the performance of its GSO project. Furthermore, the influences can also be found on in-house staff's morale as well as their efficiency – especially for those whose jobs were unprotected during the staff reduction, the low morale of these people caused a considerable delay and poor performance in many development tasks. At the period of time, even the middle management and some project level managers were worried about their job security and career development (also see section 5.5 for discussions in the GSO interviews). Hence, based on the above findings, it is imperative that a client company shall be extremely cautious when choosing the service level of its GSO projects, because its decisions could have significant operational impacts on the outcome of GSO projects.

4.5.1.2 A GSO development framework

In order to allow fast and low-cost software development, Company Alpha, together with its strategic GSO services providers, redesigned the company's development framework that comprises tailor-made processes to facilitate globalised software solutions. As Provider Beta and Provider Gamma have been *appraised* of CMMI level 5 for development (CMMI-DEV) and services (CMMI-SVC), therefore, the framework contains many features from CMMI-DEV and CMMI-SVC. Figure 4.7 shows this development framework, which includes key development processes for Company Alpha's GSO projects. According to the S&G department's annual QMS (quality management system) report, this framework largely derives from a traditional *structured development approach* (combining features of a Waterfall model) and an *iterative development process* (e.g., a rational unified process, RUP) (Kruchten 2003). Due to the flexible structure of the framework, theoretically, the company could contract out every process within the framework to external GSO providers.

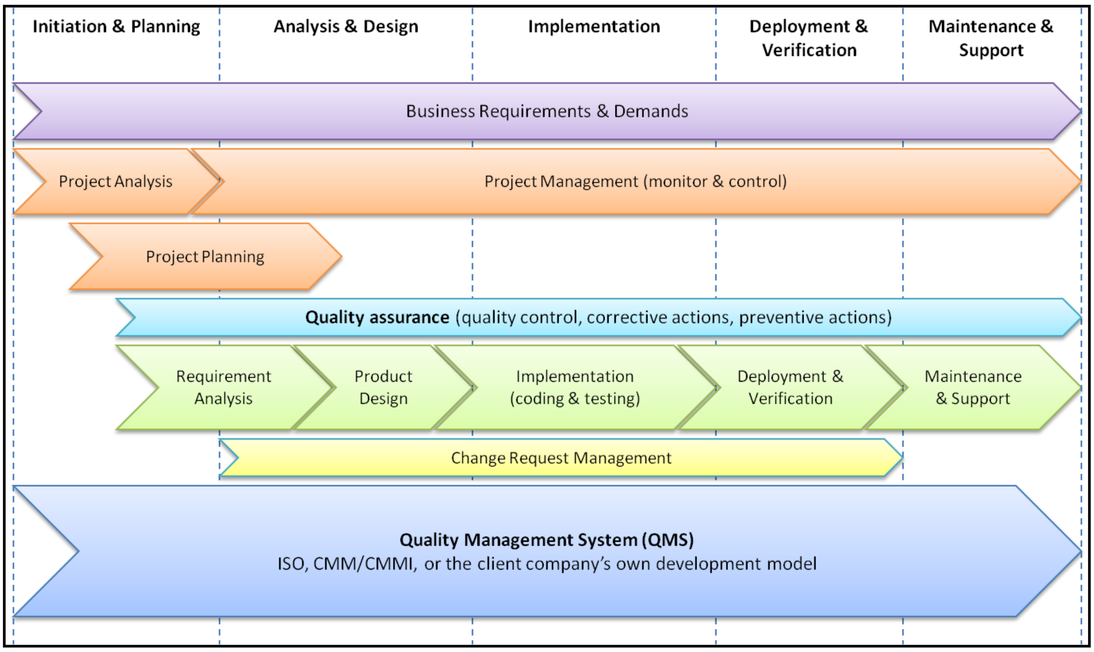


Figure 4.7: A GSO framework for software development in Company Alpha

[Source: Company Alpha's 2008 QMS report**]**

To be specific, according to a GSO project's service level, both onshore/offshore services providers and Company Alpha's in-house IT/IS development could be assigned to certain processes within the framework. Different development parties can be involved in any stage of the software development lifecycle (sub-processes coloured with light green in the above diagram), from initiation and planning to maintenance and support. In theory, the framework could facilitate the company's organisational decisions on arranging the GSO collaboration (e.g., *which process to outsource*) as well as selecting GSO providers for outsourced tasks (e.g., *capabilities to undertake the outsourced process*).

4.5.1.2.1 Three studied GSO projects

Because the studied projects had development budgets of over £1 million, all of them were considered as large-scale projects from Company Alpha's standards. Therefore, three studied GSO projects had followed the above software development framework in the development. For example, in project A, the client company took control of most of the development processes and only contracted out the implementation process and part of the deployment process; in project B, the client company shared part of the project planning and the entire process of analysis/design with Supplier Delta, and outsourced the process of implementation and deployment to Provider Gamma; whereas in project C, the client company shared project analysis process and project planning process with Supplier Delta, and contracted out most the requirement analysis process, product design process, the entire implementation process, and deployment process to onshore software services supplier (Supplier Delta) and offshore GSO services providers (Provider Gamma and Provider Beta).

4.5.1.2.2 Issues discovered in the study

In the multiple-case study, although the onshore/offshore services providers were allowed to utilise their own development processes to conduct their development tasks, *development milestones* and *project documents* (e.g., design templates) were still pre-defined by the client company based on the client's development framework. A variety of issues were identified when dissimilar development processes/documents had been used towards unified project milestones:

Incompatible processes – According to Herbsleb *et al.* (2005), different processes can lead to incomparable sub-processes, project milestones, terminologies, and task responsibilities. During the case study, it is observable that mismatched processes caused diverse difficulties in areas such as project tracking and communication. For example, in Project C, Provider Gamma and Provider Beta followed development processes suggested by CMMI, whereas Supplier Delta used Rapid development methods and the client adopted its own structured development methods. In practice, the client's project managers found that both the domestic and offshore services providers had spent a significant amount of time producing and transforming development documentation (e.g., design specifications and project tracking reports) into the client's standard templates; furthermore, the providers deliberately adjusted the project progress in order to synchronise with the client's, so that they could work towards the same milestones set by the client company. However, based on the monthly project tracking reports of three studied projects, the time and effort spent on the document change and progress adjustment had actually delayed the development progress.

Process maturity – Most of the GSO providers claim that they maintain a highly matured software development process in the GSO collaboration; hence, many services providers often suggest clients to adopt their well-developed processes (NASSCOM 2007). However, according to the case study, in practice, process maturity may not be fully reflected in the development. For example, in Project B, when Provider Beta was unfamiliar with some technologies or sophisticated back-end systems, its staff followed extremely immature process in the implementation. After the project was handed over to the Indian services provider, its developers were struggling with certain technical issues on the client's back-end information systems. In order to resolve these problems, some inexperienced developers in Provider Beta put one system at risk by manipulating customer data in the live environment, which caused a deletion of nearly 25% of Company Alpha's UK customer data from its data warehouse. Although the customer data were eventually recovered, the client's in-house IT/IS professionals were extremely astonished and deeply disappointed by the immaturity of the provider's process control during the development.

Business/systems understanding – Although many outsourcing studies (see section 2.4.3) have investigated topics such as "what to outsource" and "which process to outsource", due to the GSO services provider's insufficient business and systems understanding, it is still challenging for a client company to decide which process is suitable for outsourcing and which should be retained in-house. For instance, in Project A, the client's project manager discovered that, due to lack of financial services backgrounds, Provider Gamma's IT workers did not fully understand the business requirements and systems designs when conducting business logic testing. In order to deal with this issue, Provider Gamma's delivery managers requested the client's systems analysts and designers to carry out reworking of systems designs and testing cases, which included full explanations of topics such as business terms, business logic, systems functions, and components of the back-end systems. Additionally, because most of the system testing had been outsourced to the provider, therefore, in order to remove ambiguity during the testing, the provider expanded its onshore testing team so that its staff could work directly with the client. However, this decision led to much extra work and reworking on document support. It went against the client company's initial GSO arrangements – to cut costs by contracting out internal functions to GSO provider's *offshore* site.

4.5.1.2.3 Discussion of software development processes

Development related issues discussed above caused project delay and extra work/reworking, which correspondingly led to increased project spending (Project A and B) and rescheduling project plans (Project B and C). Although many GSO client companies have designed decision-making procedures to simplify their GSO projects (Cohen & El-Sawad 2007), based on the multiple-case study, it seems that most of the decisions on project arrangements were still largely based on *personal*, *financial* or *political* factors. In fact, as discussed in this section, the success of GSO arrangements is often closely related to factors such as development framework, development processes, process control, and business/systems understanding, most of which are at the implementation level.

4.5.1.3 Software licensing issues

In the financial services sector, it is common that companies will purchase software licences for its back-end business operational systems from software service suppliers. Normally, after purchasing a software license, a services supplier will be responsible for customising, installing, and maintaining the software systems according to its client's requests (Baumer *et al.* 2007). During the 1990s, a large number of financial services companies in the UK were granted software licences by many software services companies such as IBM, CSC, and SAP (RAE 2004; Baumer *et al.* 2007). Many software licences were only granted to these financial services companies' back-end systems (the bases for today's front-end applications such as e-commerce platforms and online financial services). Hence, software licensing issues could be a source of problems in the GSO collaboration.

Whilst studying on Project B and Project C, due to software licensing issues of the client company's back-end systems, Supplier Delta strictly followed confidentiality clauses in its services agreement, i.e. only operational level knowledge could be transferred to a third-party company. Although both Provider Beta and Supplier Delta were supposed to be cooperative parties in the project, Supplier Delta had to be extremely cautious when handing Project B over to Provider Beta as well as collaborating with the Indian GSO services provider in Project C. In doing so, certain systems level knowledge could be protected by Supplier Delta's professionals. Especially in project B, without Supplier Delta's guidance and systems understanding, developers from Provider Beta were unable to perform their project tasks efficiently and therefore had to *learn* the systems during the development.

The situation had not been changed until Provider Beta signed an additional technology transfer agreement with Supplier Delta, who then began to pass certain part of systems level knowledge (e.g., systems understanding, technical details, and expertise for customisation and maintenance) to Provider Beta's developers. However, due to this software licensing issue, the project had already suffered considerable postponement and additional costs. According to the project records of Project B, Company Alpha's management were aware of this licence problem when arranging the project. However, in order to control the budget and the timescale, the management simplified the process of project initiation and planning –cross-company training and project learning. The client company's project managers were even expecting that the issue could be resolved by organising Provider Beta and Supplier Delta to work together – the assumption was Provider Beta could either learn the systems during the development, or purchase the knowledge/software licences on its own costs. However, in essence, as the licence issue was still untouched, the client's ignorant GSO project arrangements had deeply impacted the delivery schedule and development costs.

4.5.2 Relationships in the projects

Associations between different development parties in a GSO project can originate potential cooperative problems. Based on the studied projects, it seems that the client company should be more careful when dealing with the relationship between different development forces.

4.5.2.1 Relationships between multiple GSO providers

In Project B and C, Supplier Delta and two Indian GSO services providers worked jointly during the development period. Although they were collaborating parties, outside the project, they were competitors in the software services market. For example, Supplier Delta is a global IT software services company with first-class expertise in financial services industry, thus it provides software solutions to many financial companies in the UK as well as some European countries. Provider Gamma and Provider Beta are leading GSO services provider companies, who supply comprehensive business and technology solutions across the world. In the UK, these companies have been competing against each other for software services contracts since 2003. Thus, from the business perspective, these development workforces are indeed market competitors in many areas.

Throughout the case study, professionals from the UK supplier often kept distance from their counterparts in GSO provider companies in the workplace. Furthermore, these domestic services suppliers had even requested the client company to assign them to independent development tasks, so that their experience and expertise would not be learned by their competitors. For example, in both Project B and Project C, the client company arranged project handover and knowledge transfer between Supplier Delta and Provider Beta; however, according to the approved service agreement, Supplier Delta refused to share systems level knowledge with Provider Beta (also see section 4.5.1.3). Hence, it seems that a multiple-provider software outsourcing services model might complicate GSO projects, as the collaboration between multiple providers could encounter sensitive areas such as systems knowledge transfer, core technology protection, and boundaries of agreed services.

In fact, according to the multiple-case study, it is observable that engaging more than one provider in GSO practices did not necessarily increase development efficiency and resource flexibility; on the contrary, it could make difficulties when establishing the relationship between different development parties. Lacity and Rottman (2008) also discover that a GSO project could be slowed due to ambiguity in services responsibility and confidentiality issues between multiple GSO services providers. Following that, in order to arrange a GSO project with multiple development forces, project managers should plan the project in great detail and also take the potential relationship issues into consideration beforehand, so that multiple providers can collaborate with each other in their best interests.

4.5.2.2 Relationship between in-house staff and providers

When studying Project C, noticeable tension was growing between the Indian providers and in-house IT/IS staff. As most of the in-house developers were not familiar with Indian GSO providers' working style and culture, therefore, communication and GSO cooperation were not conducted as planned. According to Ranganathan and Balaji (2007), mutual trust and understanding in the workplace require a long period of time to establish.

During the case study, it was evident that relationship issues could be found between offshore providers and in-house staff. For example, in Project C, the relationship between the offshore providers and the client's professionals became troublesome when the staff reduction programme was announced by Company Alpha – over 5,000 IT positions were made redundant. After the announcement of the programme, some in-house staff imputed the job losses to Indian GSO providers; what is more, according to the project monthly reports, increasing number of in-house staff was afraid that passing knowledge and experience to GSO providers as it might make their positions much easier to be replaced. Although the client's senior management were responsible for making organisation level decisions, it is perceptible that decisions on service level and its related consequences could influence the relationship between in-house workers and GSO providers' staff.

4.5.3 Other project level issues

Besides GSO project arrangements and relationship issues discussed above, the author identified some practical problems during the study. Generally speaking, project level problems can be characterised into three areas: development style, project management, and communications.

4.5.3.1 Development style

A large number of overseas GSO services providers have accumulated adequate development experiences when supplying software services to different types of companies across the world. Compared with IT/IS projects that GSO services providers have experienced and delivered, a GSO client company's in-house professionals often follow a relatively simpler development approach to deliver their IT/IS tasks (Lacity & Rottman 2008).

According to Beynon-Davies and Williams (2003), in-house developers tend to concentrate on analysis and design work in the beginning and only begin to implement (i.e. coding and testing) when the requirements are clear and designs are acceptable for implementation. On the contrary, most of the software services providers mainly use Agile development methods (e.g., dynamic systems development method (DSDM), or extreme programming (XP)) (Layman *et al.* 2006), which means coding and testing shall be started much sooner than those in structured development methods.

While studying three GSO projects, it is noticeable that Company Alpha's developers used to follow a structured development framework (see Figure 4.7) and therefore commenced the implementation phase until clear analysis/design specifications were delivered; whereas GSO providers' developers began coding with a relatively ambiguous requirement – when new requirements or better IT/IS solutions evolved through the development, they would iteratively undertake the refinement. Notably, dissimilar development styles have caused concerns in the collaboration: the providers' developers worried that the implementation had been delayed too long as essential designs were already to build; while the client's professionals concerned that it was unwise for the provider staff to hurry into implementation, which could cause more time to refine/rework on what had been produced.

4.5.3.2 Project managerial issues

Although this thesis is not concerned with the topic of business management, it is still evident that project management (including project planning and project tracking) requires extra attention in GSO practices. Some key managerial issues are described as follows:

Inexperienced management – One finding is that Company Alpha's project managers were not experienced in offshore outsourcing. Especially when arranging complicate GSO projects (e.g. Project C) which involved multiple providers, the client company's project managers were unable to draw a clear job boundary between development workforces, so that they could follow the same development direction, which caused some ambiguities as different workforces' responsibilities were not detailed.

Project planning – Another finding is that the client's managers had difficulties to make a precise project plan due to the complexity of GSO project arrangements. For example, in Project A, there was some reworking required when the implementation phase had been completed; however, the client company's project managers found that due to lack of a detailed project plan, Provider Gamma had already assigned its development resources to other software services projects in other companies. As a result, Company Alpha had to go through a formal resource request to re-order Provider Gamma's developers to work on the project again, which is not only inflexible but also costly.

Project tracking – According to some researchers (Herbsleb *et al.* 2005; Ranganathan & Balaji 2007), precise tracking information is vital as it gains insights of the actual project status for project managers. In Project A and C, after development work was sent to the provider's offshore R&D site, the client's project managers soon lost track of the detailed progress of these works. This situation was mainly caused by two reasons: 1) the client's project managers relied mostly upon their in-house staff to track GSO projects and the GSO provider's onshore coordinators had not been fully used; 2) GSO providers rather treated its offshore R&D site as a "black box" – the client did not need to know how the outsourced work was implemented; only the outcome and its quality shall be verified by the client. However, the unclear situation on the offshore site had prevented explicit communications. Some client project managers reported that they could not plan any contingencies if the offshore delivery was delayed or required reworking.

The Control over GSO providers – During the case study, it was apparent that the control over the provider's developers was particularly weak. The client's project managers claimed that they had very little control over the provider's onshore/offshore staff (also see (Raiborn *et al.* 2009)). In Project C, even if an onshore developer sent by Provider Gamma was found not having the required skill set, the client's project managers were not able to remove this worker from the project. The main reason for that is: according to many GSO services contracts, offshore resource supply management is mainly controlled by GSO services providers; it suggests that only GSO providers are responsible for replacing the supplied resources in GSO projects (Herbsleb *et al.* 2005; Raiborn *et al.* 2009). However, according to the multiple-case study, it is evident that the project arrangements could lead to client companies' project management issues during the development.

4.5.3.3 Communicative issues

In GSO practices, there are three types of communications – onsite, off-site, and cross-site (Sparrow 2005; Aspray *et al.* 2006). As described in section 2.5.3, at the implementation level, communication problems are usually caused by issues such as language, cultural background, business backgrounds, and systems understanding. In the case study, limited project records could be found regarding communications. Still, according to the author's project experiences, it seems that cultural differences (including *corporate culture* and *technical culture*) were one noticeable problem during the development. For example, in Project A and B, after the GSO providers had been assigned to the projects, many design documents such as HLD, E2E and detailed component design were required to partially rewrite to include detailed instructions and additional explanations. In doing so, GSO providers' onshore and offshore developers could entirely understand the designs and requirements.

Additionally, in Project A and C, the difference of technical culture also had impacts on communications in the collaboration. Because many in-house analysts and designers from the client company lacked of knowledge of some latest online information technologies (e.g., Microsoft .Net, IBM Websphere, enterprise level servlets), therefore, in the workshops, the client's staff could not fully appreciate the technical details/terms when discussing with the providers' professionals. Hence, some designs produced by the client could not reflect the agreed technical solutions, which had led to extra reworking and design refinement.

4.6 Discussion and Conclusion

Chapter Four introduces the preliminary industrial study of this PhD research. In the research, the author conducted a multiple-case study on three GSO projects between the middle of 2006 and early

2008 and identified *five* GSO project problem domains and *14* project level issues (see the summary in Table 4.2). Results from this stage form the basis for the detailed industrial study.

4.6.1 Lessons learned

Although findings in this chapter mainly focus on issues encountered in the development of three GSO projects, it is encouraging that several valuable research results have already been identified for companies to learn. A number of rich and varied lessons learned at this stage suggest that project arrangements, relationship management, development processes, project and people management, and communications require further exploration.

Table 4.2: A framework of GSO project issues identified in the preliminary industrial study

Problem Domain	Issues Identified	Impacts on the Performance of GSO Projects	Relevant Publications
Project Arrangements	1. Levels of GSO services	• Project delay • Poor performance in the collaboration • Poor job security • Low team morale	(Handley & Benton 2009)
	2. Incompatible processes 3. Poor process maturity 4. Lack of business and systems knowledge	• Project delay • Detailed documentation support • Possible spec reworking • Insufficient project tracking • Increasing development costs	(Kruchten 2003) (Herbsleb *et al.* 2005) (Cohen & El-Sawad 2007)
	5. Software licensing	• Project delay • Increasing development costs • Poor knowledge transfer • Poor performance in the collaboration	(RAE 2004) (Baumer *et al.* 2009)
Relationship Management	6. Relationships between multiple GSO providers 7. Relationships between the client and multiple providers	• Poor reporting channels • Poor knowledge transfer • Poor performance in the collaboration	(Lacity & Rottman 2008) (Ranganathan & Balaji 2007)
Development Process	8. Dissimilar development styles	• Different development processes • Different milestones planned • Concerns and irritation in the collaboration	(Beynon-Davies & Williams 2003) (Lacity & Rottman 2008)
Project/People Management	9. Inexperienced management 10. Poor project planning 11. Insufficient project tracking 12. Lack of control over GSO providers	• Ambiguities in development responsibilities • Loss of flexible in resource management • Increasing development costs • Hard to plan contingencies	(Herbsleb *et al.* 2005) (Ranganathan & Balaji 2007) (Raiborn *et al.* 2009)
Communications	13. Corporate culture issues 14. Technical culture issues	• Language and culture differences • Lack of business and systems understanding • Detailed documentation support • Possible reworking	(Sparrow 2005) (Aspray *et al.* 2006)

Based on the above findings, Table 4.2 summarises these problem domains and their related issues; what is more, it establishes a framework of these identified issues, which includes areas such as problem domains, related issues, impacts on GSO projects, and their relevant literature. This issue framework is continuously rectified throughout the PhD exploration. In brief, five problem domains and their related issues are: 1) project arrangements – service level of GSO projects, development framework, and software licensing issues; 2) relationships in the collaboration – services providers and the client's staff; 3) development process – dissimilar development styles (e.g., structured development process and Agile methods); 4) project management – inexperienced management in GSO practices, poor project planning and development tracking, and insufficient control over GSO providers; and, 5) communicative issues – different corporate cultures, dissimilar technical cultures (e.g., development methods and work styles).

4.6.2 Conclusion

According to the findings in the preliminary industrial study, it is logical that research questions in the following exploration (e.g., the GSO interview survey and the questionnaire survey) shall concentrate on studying detailed issues within the problem domains listed above. Hence, the detailed industrial study can provide an in-depth investigation of issues as well as areas for improvement in GSO projects. Following this line of argument, two varied research approaches are employed in the following industrial studies. They are: a qualitative research approach (i.e. a GSO interview survey) and a quantitative research approach (i.e. an online questionnaire survey).

Chapter 5 GSO Interviews

The previous chapter introduces the preliminary industrial study of three GSO projects conducted in Company Alpha. In the study, some general project issues have been identified. Based on the initial industrial findings, the author designated two research approaches (i.e. *GSO interviews* and *an online questionnaire survey*) in the detailed industrial study in order to explore more detailed problems in GSO practices and to recognise areas for improvement. In this chapter, the author introduces the GSO interview survey, which contains the description of GSO interviews (including research objectives, demographic interview groups, and interview design), the deployment of this survey, data collection and analysis, and discussions of various research findings during GSO interviews.

5.1 The GSO interview survey

Between September 2007 and December 2008, the author interviewed 26 GSO professionals from *seven* companies on the topic of GSO projects. The interview samples were collected from *three* GSO client companies, *two* software service suppliers in the UK, and *two* GSO provider companies in India. Most of the participants (n = 23) were interviewed in-person on different sites in the UK (i.e. Ipswich, Norwich, Perth, York and Worthing); the rest (n = 3) was interviewed through a telephone conference call. Following permission granted by these interviewees, all interviews were *recorded* and *transcribed* (see section 5.2 for details).

5.1.1 The research foundation of the interview survey

As discussed in the previous chapters, the preliminary study has identified *14* project issues within *five* problem domains (see section 4.5), which establishes an issue framework for the following study to explore. To be specific, in order to understand the relationships between five problem domains and these issues, a number of questions are designated in the interview survey. For example, the GSO interviews require interviewees to discuss their experienced GSO projects (Interview Question One), advantages/disadvantages (Interview Question Two), and critical success factors in GSO practices (Interview Question Three and Five). These are used to verify recognised issues in the early study.

With aims of investigating development areas, Interview Question Four is designed to examine the performance of key development phases and critical performance factors throughout the development. However, as some project topics (e.g., implementation issues and detailed development factors) are not suitable for interviews (Myers 1997), therefore, after discussing with the PhD supervisory team, questions such as project deployment, development phases, project contact, and outcome/quality measurements are included in the online questionnaire in Chapter Six.

5.1.2 Research objectives

The interview survey is designed to examine specific issues in GSO practices and to verify findings discovered in previous phases. Bear these targets and the overall research aim in mind, the author establishes five research objectives for the interview survey: 1) to *understand* GSO practitioners' overviews of their experiences in GSO projects; 2) to *investigate* representative advantages and disadvantages in GSO practices; 3) to *explore* CSFs in GSO projects; 4) to *examine* the performance of key development areas in GSO practices; and, 5) to *consider* project areas for improvement.

5.1.3 Participating companies

According to Lacity and Rottman (2008), the GSO project stakeholders (i.e. GSO companies' representation) can be more complicated than just the client and provider groups; however, in order to simplify the interview data analysis, the author categorised the research participants into three groups: GSO clients, GSO services providers, and the UK-based services.

Table 5.1: Stakeholder representation of the participating companies

Company's role in GSO	Company description	Company name	Size of IT (2008)	Annual revenues in 2008 (million US$)*	Number of participants
UK-based GSO clients	Financial services	Company Alpha	3000	5,872	9
	Financial services	Company Epsilon	1200	6,291	2
	Financial services	Company Zeta	1500	2,834	2
UK-based services suppliers	Software services	Supplier Delta	1350	274	3
	Software services	Supplier Eta	750	155	1
Offshore GSO services providers	Indian-owned IT/BPO supplier	Provider Gamma	105,000	5,026	5
	Indian-owned IT/BPO supplier	Provider Beta	95,000	4,458	4

* In 2008, 1USD ($) = 0.641 GBP (£)

Table 5.1 above presents the GSO stakeholder landscape of the participating companies. The table shows that half of the interview participants (n = 13) belong to GSO clients, with financial services organisations as the represented industry. All of the GSO client companies are based in the UK. In 2008, the size of these companies in terms of annual revenues ranged from US$2,834 million to US$6,291 million; the size of the client companies in terms of their IT department ranged from 1,200 people to 3,000 people. GSO providers and domestic suppliers are well presented with 13 interviews (50%). Among these people, *nine* were selected from two Indian-owned GSO provider companies, and *four* people were chosen from two UK-based services suppliers. Amongst GSO providers, *six* of them were interviewed in the UK at their clients' onshore sites (Norwich, Perth, and York), and *three* were interviewed in India at provider sites in Bangalore through a telephone conference call. *Four* people from the UK services suppliers worked in onshore sites in Ipswich, Norwich, and Worthing.

In 2008, the size of the GSO providers in terms of annual revenues ranged from US$155 million to US$5,026 million; the size of the services providers in terms of employees ranged from 750 people to 105,000 people. As two of the Indian GSO providers have global presences in nearly 70 countries, therefore, they have employed significantly more people in India, other parts of Asia, US, and Western Europe. Both of the UK-based software services suppliers have been competing with Indian GSO providers for several services contracts in the UK's financial services sector.

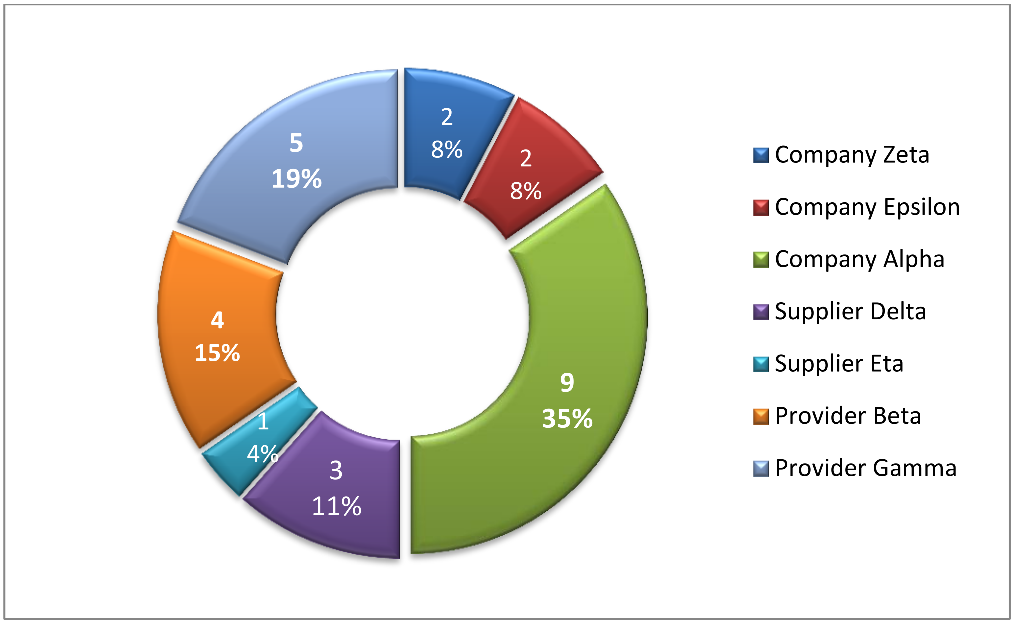


Figure 5.1: The distribution of the interviewees' companies

The participating companies of this GSO interview survey can be seen in Figure 5.1, which specifies that the majority of the interviewees (69%) are from three companies – GSO client Company Alpha (35%), Provider Beta (15%), and Provider Gamma (19%), the rest of the interviewees (31%) are from Company Zeta, Epsilon, Supplier Delta, and Supplier Eta.

5.1.4 Interview participants

In order to meet the established objectives, to choose appropriate research participants is critical to the success of this survey. Hence, after Company Alpha approved the author's proposal to conduct the survey in middle 2007, over 50 GSO practitioners were contacted. Most of them were working for Company Alpha, its strategic partners in the UK, and its GSO services providers. To ensure the outcome of this survey, the author intentionally made contact with people with vital responsibilities in GSO projects – three types of people have been approached during the survey period:

1) **Developers** – people that were responsible for development work, from analysis and design to software architecture, from coding to testing;
2) **Project related managers –** people that had managerial positions such as programme director, head of IT/IS departments, project managers, and delivery managers; and,
3) **Consultants** – people that worked in areas such as IT consultancy, process and quality control, systems integration, and business analysis.

5.1.4.1 The selected interviewees

26 GSO practitioners with various responsibilities have been selected for the interview survey. Amongst them, *ten* people came from development area, *eight* people held managerial roles, and *eight* were responsible for business/IT consultancy. Figure 5.2 shows general information of these participants. The diagram below shows interviewees' business sector, their companies' roles in GSO projects, and their project responsibilities.

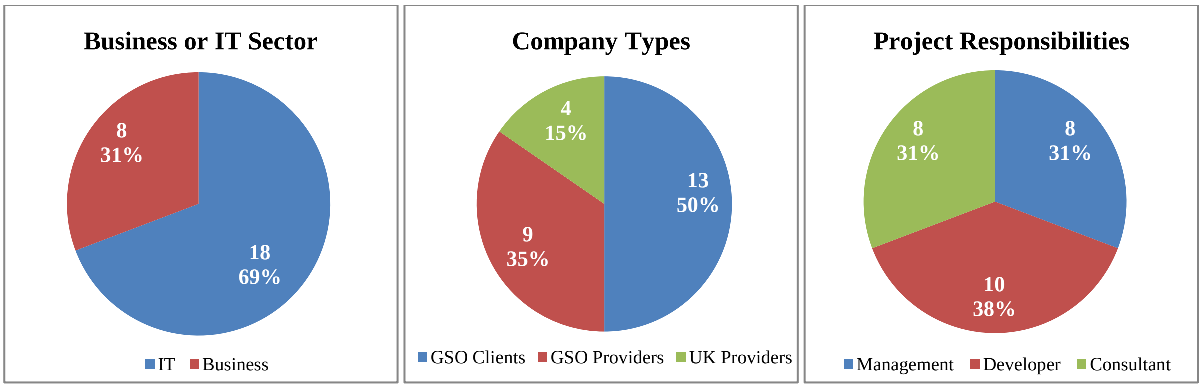


Figure 5.2: The background information of the interviewees

To be specific, among 26 participants, 13 people (50%) were working for GSO client companies, compared with *nine* people (35%) who came from GSO provider companies' onshore or offshore R&D sites and *four* professionals (15%) employed by two software services suppliers in the UK. In order to receive a comprehensive view of GSO projects in the UK, both IT (18 workers, 69%) and business workforces (*eight* people, 31%) were engaged in the survey; what is more, with aims of achieving an insight of GSO project arrangements and project/people management in the GSO collaboration, 16 people (62%) with managerial or consultancy roles were invited, together with 10 IT software developers (38%) that were chosen for attaining views from varied development areas. Table 5.2 shows more detailed information regarding these select interviewees. The table below lists demographics of these interviewees and their companies, which include interviewees' positions, their business sector, their companies' GSO project representations, and their project responsibilities in the development (e.g., development, management, or consultancy).

Table 5.2: Demographics of the interviewees and their companies

Interview ID	Interviewee's position	Business sector (Business or IT)	Company's role in GSO	Project responsibility
1	Business/Requirement Analyst	Business	Client	Development
2	Director of Information Systems	IT	Client	Management
3	IT Capacity Manager	IT	Client	Management
4	Onsite Developer/Coordinator	Business	GSO Provider	Development
5	Project/Delivery Manager	IT	GSO Provider	Management
6	Project/Resource Planner	Business	Client	Development
7	Lead Consultant	IT	UK provider	Consultancy
8	Project Technical Consultant	IT	Client	Consultancy
9	Lead Systems/Requirement Analyst	IT	Client	Development
10	Business Consultant	Business	UK provider	Consultancy
11	Delivery manager	IT	Client	Management
12	Capacity planning/project manager	Business	Client	Management
13	Systems Analyst	IT	GSO Provider	Development
14	Module Leader	IT	GSO Provider	Development
15	Systems/Business Analyst	IT	GSO Provider	Development
16	Testing Analyst	IT	GSO Provider	Development
17	Project/Delivery manager	IT	UK Provider	Management
18	Head of IS Development	IT	Client	Management
19	Project Manager/Consultant	IT	Client	Consultancy
20	Business Consultant	Business	Client	Consultancy
21	Systems Developer	IT	Client	Development
22	Lead Business Analyst	Business	UK provider	Development
23	Project/Delivery Manager	IT	GSO Provider	Management
24	IT/Business Consultant	IT	GSO Provider	Consultancy
25	Process Consultant	IT	GSO Provider	Consultancy
26	Process Quality Consultant	Business	Client	Consultancy

5.1.4.2 Development phases covered in the survey

Besides the interviewees' information, the author also recorded development phases in which these interviewees were involved. Based on their project responsibilities in a standardised software development lifecycle (Beynon-Davies & Williams 2003), Table 5.3 illustrates development phases covered by the interviewees – in the table below, the covered phases are marked with a character 'Y'. According to the distribution of these interviewees (also see Figure 5.3), it is evident that the whole development lifecycle and key phases has been well covered in this interview survey.

Table 5.3: Development phases covered by the interviewees

ID	Position	Development Phase Involved (based on SDL)					
		Initiation & Planning	Analysis & Design	Implementation & Testing	Deployment & Integration	Verification (Quality Assurance)	Support & Maintenance
1	Business/Requirement Analyst	Y				Y	
2	Director of IS	Y					
3	IT Capacity Manager	Y					Y
4	Onsite Developer/Coordinator		Y	Y	Y		
5	Project/Delivery Manager		Y	Y	Y	Y	

Table 5.3 continued…

6	Project/Resource Planner	Y				Y	Y
7	Lead Systems Consultant		Y		Y	Y	
8	Project Technical Consultant			Y	Y		
9	Lead Systems/Requirement Analyst		Y		Y		
10	Business Consultant	Y	Y				
11	Delivery manager		Y		Y		
12	Resource manager	Y				Y	
13	Systems Analyst		Y		Y		Y
14	Module Leader			Y	Y		
15	Systems Analyst		Y	Y	Y		
16	Testing Analyst			Y			
17	Project/Delivery manager	Y				Y	Y
18	Head of IS Development	Y			Y	Y	
19	Project Manager/Consultant	Y	Y			Y	Y
20	Business Consultant	Y				Y	
21	Systems Developer		Y	Y			
22	Lead Business Analyst		Y			Y	
23	Project/Delivery Manager		Y	Y	Y		Y
24	IT/Business Consultant		Y	Y	Y		
25	Process Consultant		Y		Y	Y	
26	Project Quality Consultant	Y				Y	Y

In Table 5.3, 11 interviewees (42%) were responsible for initiation and planning, 14 (54%) worked in analysis and design, *nine* (35%) had responsibilities in implementation and testing, 13 (50%) made efforts to deployment and integration, 12 interview participants (46%) functioned in verification (including quality assurance, QA), and *seven* people (27%) were involved in support/maintenance. Figure 5.3 below visualises these covered development phases, which indicates that the selected interviewees of this survey are able to cover a complete SDL in GSO practices.

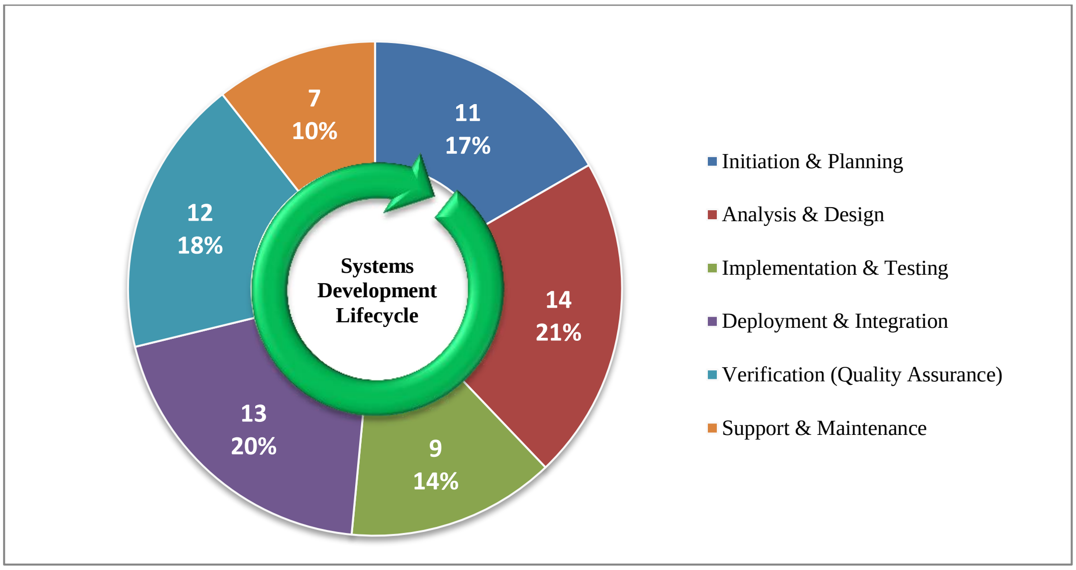


Figure 5.3: The distribution of the interviewees' development phases

5.2 Interview design

Although the preliminary industrial study was not completed until the first quarter of 2008, research findings from Project A (a typical GSO project) and Project B (a GSO project with multiple providers) have established a sound foundation for this GSO interview survey, which suggests that some project areas require further investigation in the detailed study. Therefore, after considering much empirical IS research (Herbsleb *et al.* 2005; Oshri *et al.* 2007; Betz & Makio 2008; Prikladnicki *et al.* 2009), the author decided to choose semi-structured interviews in GSO interviews.

5.2.1 Why semi-structured interviews

According to Lindlof and Taylor (2002), to explore a *specific* topic through interviews, researchers should explicitly understand the research context and research questions before conducting an interview survey. Thus, although unstructured interviews can provide a flexible style and allow new questions to be brought up during the survey, this research method might not be appropriate for studies with a specific topic, i.e. a definite purpose and well-defined guidelines (Brannen 2005).

A clear understanding of which areas to concentrate on and a framework of problem domains to investigate have been obtained in the literature review (see section 2.7) and the preliminary study (see section 4.6); thus, the research objectives for the GSO interviews were largely decided before carrying out this survey (see section 5.1.2). In order to ensure that every interviewee will be asked with same questions in the same order, a semi-structured interview can help the researcher enhance flexibility and capture diverse perspectives in the survey (Kvale 2007). Furthermore, according to Lindlof and Taylor (2002), although open-ended questions are normally used in a semi-structured interview, close-ended questions can also be included in a semi-structured interview “to bring confidence to cross-evaluation between varied samples or subgroups with results achieved from structured questions”. Thus, according to the research objectives of this interview survey, the author decided to select semi-structured interviews and both open-ended and close-ended interview questions.

5.2.2 Interview guidelines

The literature review provides a theoretical foundation of this PhD research, whereas the preliminary study identifies project problem domains for the following detailed study. In order to properly conduct GSO interviews in the detailed study, both interview questions and interview guidelines are essential to the success of the survey. Following that, the author has included four open-ended (i.e. Question 1, 2, 3 and 5) and one close-ended (i.e. Question 4) questions in this interview survey. According to Johnson *et al.* (2007), the use of open-ended questions allows researchers to combine a variety of individual responses with unique *insider views* of a particular situation; also, it avoids the researcher’s own preconceptions and protects the validity of the interview data. Close-ended questions, on the contrary, are more suitable for specific answers such as providing rating (e.g., a Likert scale measurement) or choosing a selection from multiple choices; however, to use close-ended questions researchers need to clearly understand the scope and suitable options (Reja *et al.* 2003). Keeping the above discussion in mind, interview guidelines of this interview survey are described as follows:

1) **Step One** should ask the interview participants' overall GSO project experiences such as the performance of their GSO projects. Besides that, a Likert scale is presented in this question to capture the interviewees' overall rating for GSO projects.*

   * In order to avoid possible distortion that could be caused by Likert scales (Dawes 2008), after discussing with the UEA's ICARUS office (information collection, analysis and reporting user service), half interval between two scales (e.g., 1.5, 2.5…4.5) was used in the rating. This can avoid drawbacks of a 5-point Likert scale (R. Cummins & Gullone 2000). The measurement instrument used in GSO interviews is ranged from 1 (very poor) to 5 (excellent). Interviewees who rate high (e.g., 5, excellent) believe that a measured factor performed excellently in practice, whereas people who rate low (e.g., 1, very poor) consider that the measured factor performed very poorly.

2) **Step Two** should require the interviewees to talk about main project level advantages and disadvantages in GSO projects;
3) **Step Three** should concentrate on project level critical success factors (CSFs) and feasible solutions for issues discussed in Question 1 and 2;
4) **Step Four** should focus on rating the performance of key development phases and important development factors, in order to highlight project areas for development; and,
5) **Step Five** looks into recommendations and suggestions for GSO projects. Areas which have not been covered in earlier discussions can be considered in the end of the interview.

5.2.3 Interview questions and justifications

Based on the above discussion, the interview questions used in the survey are introduced and justified in this section. An interview template is attached in the final part of this thesis (see Appendix B), which shows the detailed questions and the order of these questions.

5.2.3.1 Stage One – Introduction

Much qualitative research identifies the importance of general introductory opening in the beginning of an interview (Gable 1994; Myers 1997; Mingers 2001). Therefore, before formally asking interview questions, the interviewer usually briefly talked about the purpose of the interview, the sponsors (e.g., UEA), data protection, and confidentiality issues. After that, he would ask the interviewees about their positions, responsibilities in GSO practices, and their companies. In the meantime, he could record the demographics of the interviewees and participating companies.

5.2.3.2 Stage Two – Question One

Question One: Based on your own experience, please give a brief overview of global software outsourcing projects that you have been involved in? (Ask for overall rating for GSO projects they've experienced, on a scale of 1 to 5 – *1* is *very poor* and *5* is *excellent*, 0.5 is allowed)

This question helps interviewees to talk about their overviews of GSO projects which they have been involved in. It requires people to talk about their experienced GSO projects, so that the interviewer can observe the interviewees' response and record their thoughts.

5.2.3.3 Stage Three – Question Two

Question Two: What are the main advantages and disadvantages of GSO projects that you have experienced?

This question links to Question One and encourages the interviewees to talk about strengths and weaknesses in their experiences of GSO projects. As the interviewer is interested in project issues, therefore, he can normally guide the discussion to focus on GSO practices and encourage the interviewees to provide detailed examples to support their views.

5.2.3.4 Stage Four – Question Three

Question Three: Suppose that you are a senior manager who is responsible for arranging GSO projects, what kind of project level factors you will consider before the project?

This question generates the basis for identifying CSFs in GSO projects. More importantly, it also seeks possible resolutions to those issues discussed in the previous questions. Answers to this question can be formed into valuable lessons for GSO companies to learn.

5.2.3.5 Stage Five – Question Four

Question Four: From a GSO client's (or a provider's) perspective, how would you rate the following development phases and performance factors in your experiences of GSO projects – please provide rating to both GSO clients as well as GSO providers? (For example, key phases in SDL, the quality of the delivery, project satisfaction, and project management – on a scale of 1 to 5, as 1 is very poor and 5 is excellent, 0.5 is allowed)

Table 5.4: Rating table of development phases/factors in GSO projects

	Client	Provider
Requirements capture		
Analysis & design		
Implementation – development except testing		
Implementation – testing		
The delivery quality		
Project satisfaction		
Project management		

This question is a close-ended question, which requires the interviewees to rate on both client and provider's project performance of some key development phases and performance factors (rating items are derived from findings in section 2.4.6). Table 5.4 lists four key phases and three performance factors, which are used to analyse the actual performance of the development and to prioritise areas for improvement. In addition, answers to this question can help the author refine research questions used for the online questionnaire survey.

5.2.3.6 Stage Six – Question Five

The fifth question: What would you suggest for your company's forthcoming GSO projects? (At the end of the discussion, ask whether or not other important issues or topics need to be mentioned before finishing the interview)

This question asks the interviewees to provide suggestions and recommendations for GSO projects in the near future. Besides strengths and weaknesses, CSFs, and development areas for improvement, other topics/issues shall be reported by interviewees.

5.2.4 A generic interview process

With the exception of the pilot study, interviewees were not given questions in advance in order to avoid the possible pre-judgement on certain interview questions. Confidentiality of the data collection and data analysis results was assured via email before an interview and emphasised again at the introduction stage. As introduced in section 5.1, the author made audio recordings of every interview and transcribed detailed notes. GSO interviewees were normally interviewed in an open 30 to 45 minutes interview. All GSO interviews were completed in English, which were mostly undertaken face-to-face – for three offshore GSO professionals, interviews took place via a telephone conference call. The interviewer conducted interviews based on the interview guidelines described in section 5.2.2

and interview questions in section 5.2.3. Interview questions were justified if interviewees had problems in understanding interview questions or not knowing where to start. During an interview, the interviewer often required the interviewees to describe issues in detail (e.g., examples in practice) together with the related industrial contexts.

A typical interview takes *six* phases to complete. Figure 5.4 shows the process of one interview. In the diagram below, the rounded rectangles coloured light green indicate interview questions, the shapes in light purple represent discussions carried out between the interviewee and the interviewer, the rounded rectangles coloured with light blue illustrate the interviewer's actions in the interview (e.g., audio recording and transcribing). This process is strictly followed to ensure that same questions are presented in the same order. The interactions between the interviewer and the interviewees as well as answers provided by the interviewees are detailed and explained in section 5.4.

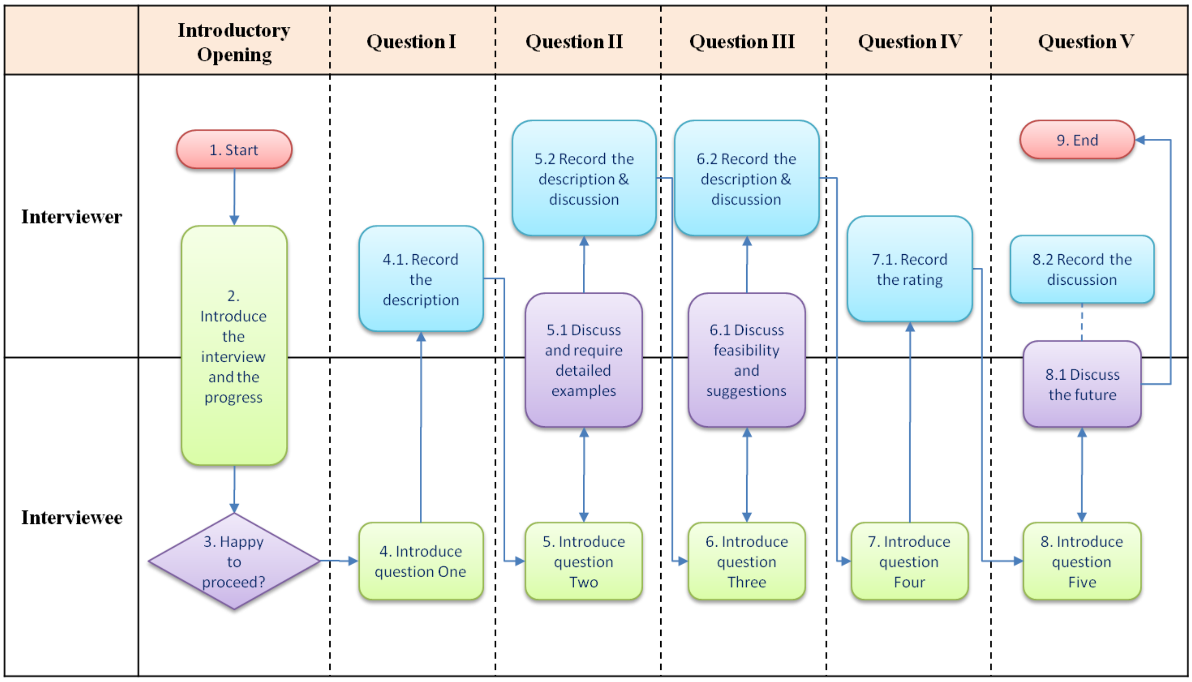


Figure 5.4: The procedure of the interview

5.2.5 The advancement of GSO interviews

Five phases can be found in the GSO interviews (see Figure 5.5). The first three phases took place between September 2007 and January 2008. Due to the author's departure from Company Alpha in the first half of 2008, he had to wait over three months to continue Phase Three – to interview people who held consultancy or managerial positions. The advancement of this survey is as follows:

1) **Pilot study** – From September 2007 to October 2007, the author piloted the draft interview questions with several managers and lead developers in Company Alpha and Provider Gamma. Feedbacks from the pilot study were gathered and used for refining interview questions and the interview process;

2) **Phase One** – From October 2007 to November 2007, five professionals with varied project responsibilities were interviewed;

3) **Phase Two** – From December 2007 to January 2008, 12 GSO interviews were completed with people mainly from development and project management areas;

4) **A period of stagnation** – From June 2008 to September 2008, the survey was stopped due to the author's departure from Company Alpha. However, after having returned to the company in September 2008, he was able to continue this survey;

5) **Phase Three** – From March 2008 to June 2008 (part one was between March 2008 and June 2008; part two was between November 2008 and December 2008), more people from managerial and IT/business consultancy areas were engaged.

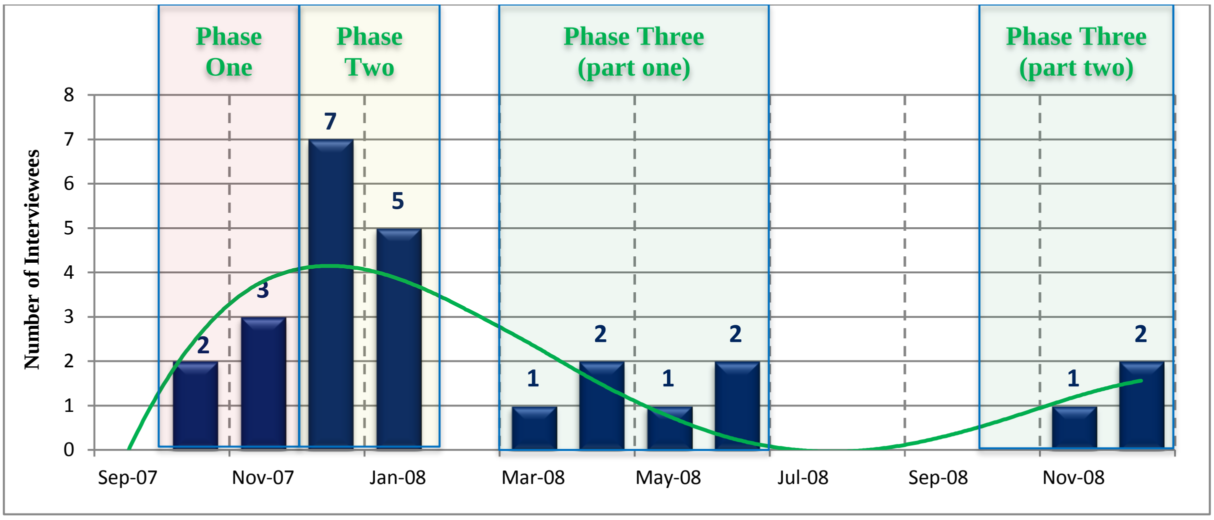


Figure 5.5: The advancement of the interviews

To be specific, the progress of this interview survey is presented in Figure 5.5. *Five* interviewees (19%) were interviewed in the first phase; 12 people (46%) participated in the research in the second phase; and *nine* professionals (35%) were engaged in the third phase. As mentioned above, the gap from July 2008 to October 2008 is mainly caused by the author's departure from Company Alpha.

Table 5.5 below summarises the details of the progress of this GSO interview survey, which include the interviewees' positions, interview dates, and their related interview phases – pilot study has not been included in the table below.

Table 5.5: The advancement of the GSO interview survey

Date	Interviewee's position	Interview phase	Date	Inte0072viewee's position	Interview phase
Oct-07	Business/Requirement Analyst	Phase One	**Jan-08**	Module Leader	Phase Two
Oct-07	Director of Information Systems	Phase One	**Jan-08**	Systems/Business Analyst	Phase Two
Nov-07	IT Capacity Manager	Phase One	**Jan-08**	Testing Analyst	Phase Two
Nov-07	Onsite Developer/Coordinator	Phase One	**Jan-08**	Project/Delivery manager	Phase Two
Nov-07	Project/Delivery Manager	Phase One	**Mar-08**	Head of IS Development	Phase Three
Dec-07	Project/Resource Planner	Phase Two	**Apr-08**	Project Manager/Consultant	Phase Three
Dec-07	Lead Consultant	Phase Two	**Apr-08**	Business Consultant	Phase Three
Dec-07	Project Technical Consultant	Phase Two	**May-08**	Systems Developer	Phase Three
Dec-07	Lead Systems/Requirement Analyst	Phase Two	**Jun-08**	Lead Business Analyst	Phase Three
Dec-07	Business Consultant	Phase Two	**Jun-08**	Project/Delivery Manager	Phase Three
Dec-07	Delivery manager	Phase Two	**Nov-08**	IT/Business Consultant	Phase Three
Dec-07	Capacity planning/project manager	Phase Two	**Dec-08**	Process Consultant	Phase Three
Jan-08	Systems Analyst	Phase Two	**Dec-08**	Process Quality Consultant	Phase Three

5.2.6 The research context of the GSO interview survey

Although the author has taken a relatively long period of time to complete (especially for the third interview phase, which has taken the author more than six months to finish), the survey results are still valid, due to following reasons:

1) **Research context** – According to Figure 4.2 in Chapter Four, the industrial environment was relatively stable for Company Alpha during the period of Phase Three – no major industrial change happened between March 2008 and November 2008.

2) **Operational level interviewees** – the majority of operational level interviewees (e.g., testers, developers, and delivery managers) were interviewed within a short period of time (October 2007 – January 2008), after Company Alpha had announced its staff reduction plan. As people at the operational level are likely to be impacted by a client company's GSO decisions (Lehman 1999), therefore, the author finished interviewing operational level interviewees when the industrial situation was relatively stable.

3) **Interviewees' project responsibilities** – Most of people interviewed in Phase Three are either IT/business consultants or middle and senior level of managers, who had little impact during the GSO employment. Thus, their opinions of GSO projects were unlikely to be changed significantly in the period of Phase Three.

5.3 Interview data analysis

Data collected in the survey were analysed through a standard content analysis process (Elo & Kyngas 2008). More explicitly, the author has adopted inductive content analysis when examining the interview data (Johnson *et al.* 2007; Elo & Kyngas 2008). The analysis process includes four key steps, which are explained as follows:

1) **Open coding** – At the first step, the author wrote down key notes and identified headings (highlighted topics for GSO practices) when reviewing the content of the interview transcripts. At this step, the author recorded as many key notes and headings as possible, so that the interviewees' answers can be thoroughly examined;

2) **Coding sheets** – After the step of open coding, identified headings and key notes were recorded onto coding sheets. Based on the questions and the designed objectives (section 5.1.2), preliminary categorises of project domains (e.g., strengths and weaknesses, performance, development phases, areas for improvement) and key interview notes were recorded at this step;

3) **Grouping/Categorisation** – At the third step, the author grouped and categorised the coding sheets through a comparison process. For example, he considered each interviewee as a single case and followed a multiple-case study strategy (Yin 2008) when comparing these coding sheets – each interview was firstly analysed separately; then findings were cross-checked. Similar groups and headings were combined to reduce the number of categories – freshly emerged categories or headings were verified and established if required. In brief, the author completed three sub-processes to fulfil the grouping and categorisation task:

   - To *cross-check findings* between the interviewees
   - To *collapse preliminary categories/headings* into high level categories
   - To *increase the author's knowledge* of the interview data, so that meaningful descriptions and explanations can be supplied in the following data analysis

4) **Abstraction –** This step generalised and recorded results onto final coding sheets, after grouping and categorising the GSO interview results (see Appendix C for two examples of final coding sheets of Question Three and Five). Descriptions and explanations were summarised based on a sound *content-characteristic* understanding gradually achieved throughout the analysis process.

Content coding is critical to the outcome of an interview survey, as it can develop and relate important concepts from the interview data analysis (Malterud 2001). When the author was analysing the interview transcripts, he also complemented the transcripts with corresponding audio recordings.

The complemented records were coded through the above interview data analysis process. Similarities and differences were examined for establishing categories, such as project strengths and weaknesses, CSFs, resolutions to identified issues, and areas for improvement. Final coding sheets are included in Appendix C (for more detailed data analysis records, refer to the e-copy of this PhD thesis).

5.4 Findings and discussions

Following the interview data analysis process explained in section 5.2.5, the interviewees' responses in the interview survey were carefully examined and cross-checked. This section summarises and explains the findings of the interview records in detail.

5.4.1 The introduction stage

In the beginning of an interview, the interviewer normally recorded the background of the interviewees, their demographics, and their companies' GSO representation. Findings of the introduction stage have been described in earlier sections in this chapter, for example, Figure 5.2 shows interviewees' backgrounds, Table 5.2 introduces demographics of the interviewees and their participating companies, Table 5.3 shows the development phases covered by this survey, Table 5.1 explains GSO stakeholder representation of the participating companies, and Table 5.5 describes the advancement of this GSO interview survey.

5.4.2 Interview Question One

The first question: <u>Based on your own experience, please give a brief overview of global software outsourcing projects that you have been involved in? (Ask for overall project rating for their experiencing GSO projects, on a scale of 1 to 5, 0.5 is allowed)</u>

Interview Question One helps the interviewer understand the interviewees' overviews of their experiencing GSO projects. When analysing the interview records, it is noticeable that interviewees from different demographic groups had dissimilar impressions of this question. Thus, in order to divide findings/results of the first question, the author separates following sections according to the demographic groups of these interviewees.

5.4.2.1 The GSO client group

Many interviewees from GSO client companies have talked about GSO projects and their experiences, from a GSO client's perspective. According to diverse project responsibilities, the interviewees' views were reasonably varied. For example, some senior managers focused on discussing process control and GSO project management in the first interview question. A director of Information Systems department said:

> "The senior management made a quick decision based on other companies' market action. Obviously, outsourcing projects need years to mature…project management, people management, and development framework need to improve…However, the provider side should have more power and flexibility, so they can help us improving our methods and process and cost control".

Similar to the IS director, a senior Head of IS development said:

> "The idea (of outsourcing) has been over-sold…GSO projects need more mature development process to support. For example, majority of providers are at CMMI level five and the clients are at CMMI level one to three. The crash of two different maturity models often reflected in the development and project/mission contracts…therefore, both sides cannot write down common development tasks in contracts…based on different processes".

During the interview, it seems that client companies' middle and project management were aware of problems in project and people management between onshore and offshore sites, in the GSO collaboration. One delivery manager said:

> "The theory is good...however the client might not be mature enough to take advantage of the GSO model…the client does not have the skills to manage the provider properly. Our providers are professional service companies and know what they are doing. However lots of client companies in the UK do not know how to properly manage their providers. One reason is that the client's managers are not generally experienced in outsourcing…they also do not clearly understand the development frameworks on the other side".

Besides the project/people management, some middle level consultants were also worried about the quality of project level contracts in GSO practices. A business analyst told the interviewer:

> "One issue is very poorly managed project contracts…for example, cost saving is supposed to be the major benefit for outsourcing – however, it cannot be practically realised at all. Contracts signed with the GSO provider are not going to benefit the client in the long-term, as it is based on time and material not based on a project's outcome; thus, it largely stands for the provider's interests, as they can extend the project as long as possible".

In addition, project level interviewees expressed their concerns regarding the quality of the GSO provider's staff and levels of GSO services. A resource manager said:

> "In terms of projects, utilisation of GSO projects is beneficial in resource augmentation. However, they had issues when we tried to move from staff augmentation (GSO service level one) into making GSO more accountable (e.g., GSO service level two/three), by expanding their boundary and responsibilities…Project control is not sufficient, cost saving does not materialise, which weakened the benefits of outsourcing".

Another delivery manager was particularly worried about the GSO provider company's staff rotation policy and the quality of the GSO provider staff. He said:

> "The GSO provider often supplies the best group of people in the beginning…some of them are even better than the in-house staff. However, after winning the contract, the provider will send its best people away after around 18 months. Since then, they will gradually send weaker personnel onshore…as they have a limited amount of quality people – they need to send them to somewhere else to gain more business".

At operational level, several in-house developers thought that IT professionals from GSO provider companies lacked business understanding and systems knowledge of the client's information systems. One senior IT technician said:

> "To introduce GSO in the project is supposed to improve the client's project efficiency. However, in reality, projects have been complicated. From a senior IT technician's point of view, GSO projects need highly skilled IT staff on both sides with good business and systems understanding".

Another senior systems developer talked about the GSO provider's work culture and internal IT/IS skill losses in the first question. He said:

> "The GSO provider lacks business understanding and systems understanding. Culture wise they often say 'yes' or 'they understand'. However, in the end, they could not deliver the stuff we required…Also we are losing core IT project skills due to outsourcing".

A project/resource planner described his GSO project experiences and believed that training was essential to maintain the deliver quality in GSO collaboration. He said:

> "The re-work rate in outsourcing is very high…training is essential for the provider staff to catch up to our work standards; however, in my experience, as the delivery was impacted, costs often sharply increased during outsourcing. Communication, cultural difference, and lack of business understanding prevent the provider working properly".

5.4.2.2 The GSO provider group

Unlike impressions discussed by people from the client group, the professionals from the provider group were very cautious when commenting on the performance of their experienced GSO projects. When answering the first question, most of them focused on positive factors. An experienced onshore and offshore coordinator described his experiencing GSO projects. He said:

> "(It is) a mixed feeling – development and maintenance are particularly good, and the client's project satisfaction is great…the requirement (from the client) is never clear, which impacts the quality. Time zone difference is a major advantage. Because the provider has project teams working in different time zones, so we can keep the development 24/7".

A senior project manager talked about the GSO provider's project management and GSO project arrangements. He said:

> "During the implementation, the project could be managed better, on both the client and the provider sides. For example, factors, such as project timeline, responsibility, milestones, and the job boundary, should follow a well-defined process…GSO is impacting the provider as well…we have to understand the client, to adopt the client's work culture, learn their business knowledge, and follow their methods".

A provider systems analyst stated his view of GSO service level and outsourcing project arrangements when talking about the first interview question. He said:

> "Nowadays, outsourcing has been changed to be value and experience driven, instead of cost driven…Indian providers' special value, expertise, and experience can benefit their western customers…Therefore, the service level should be increased – the client needs to rely more on the offshore workforce…We are moving up in the value chain – from the repetitive and low profit margin areas such as testing and data processing, to the highly profitable areas such as systems architecture and requirements capture".

5.4.2.3 The domestic supplier group

Noticeably, interviewees from the domestic supplier group were in opposition to the GSO model. People from this group mainly talked about negative factors in GSO practices, for example, project arrangements and GSO provider's quality. A lead systems consultant, who has been working on software services business for over twenty years, told the interviewer that GSO had changed the traditional way of software R&D in the UK. He said:

> "Before outsourcing, requirements didn't need to be detailed, as we had sufficient understanding and knew how to communicate. However, in GSO projects, if requirements are not clear enough, the quality of the work would suffer, which will lead to significant rework and project delays…the provider workers are good to recognise the job boundary, they do not care too much about the outside world. However, the UK's work culture needs people to look outside the box and help each other".

A systems analyst questioned GSO client companies' decisions to introduce more GSO provider professionals to the software development. He said:

> "Only very few individuals from the GSO provider understood how to work, but the quality of their work is also poor – this includes programming, analysis, and designs. The quality of coding is terrible due to lack of communication. The quality of their Specs is awful – even for a 2-3 pages design. The results of their work are far below the UK services suppliers."

Besides the quality issue, a project manager who has been working on outsourcing projects for nearly five years mentioned management issues in his GSO projects. He said:

> "The performance of the GSO projects depends upon type of the project. The client company does not have sufficient IT resource to handle the cutting edge technology, therefore they have to use external

support, local or international…However, outsourcing projects are mainly managed by the client managers who have no experience and do not have the right skill set...The client should really manage its GSO providers much better."

5.4.2.4 Discussion of the interviewees' GSO project overviews

According to the above discussion of overviews of GSO projects during the interviews, the author summarises different views and project domains reported by the participants. Table 5.6 summarises main perspectives, discussed topics and issues, and their related project domains. It is evident that the GSO client group mainly worried about how to take advantage of the GSO model. Interviewees from this group paid much attention to managerial and development issues in GSO practices, for example, project arrangements, process control, quality control, project/people management (e.g., providers' staff rotation policy), and project level contracts.

Additionally, some interviewees pointed out some personnel problems such as GSO providers' business/systems knowledge, the quality of the GSO providers, IT/IS skill loss, the provider's work culture, and lack of training. It is recognisable that the client group had a mixed reaction to GSO projects – although people in this group became accustomed to the GSO model, they were still concerned about the performance of GSO practices.

Table 5.6: Interviewees' overviews of GSO projects

Interviewee Group	Main Perspective	Project Domain	Discussed Topics and Issues
GSO Clients	To take advantage of the GSO model	GSO project arrangements	1) Stricter project level contracts 2) IT/IS skill loss
		Project/people management	3) Poor providers' staff rotation policy 4) Poor business/systems understanding 5) Reduced quality of GSO providers' staff 6) Dissimilar work culture 7) Lack of GSO related training
		Development Process	8) Process and Quality control
GSO Providers	To increase the GSO service level To explain the positive aspects of GSO practices	GSO project arrangements	9) Increasing GSO service level 10) Better project satisfaction
		Relationship management	11) Unsatisfied onshore and offshore collaboration
		Project/people management	12) Lack of GSO related training 13) Poor client and provider staff supervision
		Development Process	14) Increased development efficiency **15)** Advanced expertise and experiences
UK's Domestic Suppliers	To discuss the negative side of GSO projects	GSO project arrangements	16) Unqualified provider staff
		Relationship management	17) Dissimilar work cultures
		Project/people management	18) Inexperienced GSO project management
		Development Process	19) Poor requirements understanding 20) Reduced delivery quality
		Communications	21) Communication barriers

For interviewees from GSO providers, it is noticeable that most of them were very cautious when commenting on problems of their experienced GSO projects. In fact, people from this group were keen to discuss positive aspects of GSO practices. Although some interviewees did mention development issues, such as onshore and offshore collaboration, and project/people management, people from this group was enthusiastic about discussing project satisfaction and the necessity of increasing GSO service level. The findings are perfectly understandable, as the growing project satisfaction and the enhancement of service level will lead to the expansion of providers' responsibilities in the project – potentially, they can attract more business opportunities.

It is perceptible that interviewees from the domestic supplier group had more negative attitudes compared with those in the previous two groups. People from this group claimed that the GSO model and GSO projects had serious issues in practice, for example, poor requirements understanding, reduced delivery quality, unqualified provider staff (mainly from GSO providers), dissimilar work cultures, communication barriers, and inexperienced project management. Hence, their overviews suggest that this group was against the GSO employment in software services projects.

5.4.2.5 GSO project rating

The second part of the first interview question is to ask the interviewees' to rate their experiencing GSO projects, on a scale of 1 to 5 (1 is *very poor*, 2 is *poor*, 3 is *fair*, 4 is *good*, and 5 is *excellent*), where 0.5 is allowed. Figure 5.6 presents the interviewees' overall rating for GSO projects.

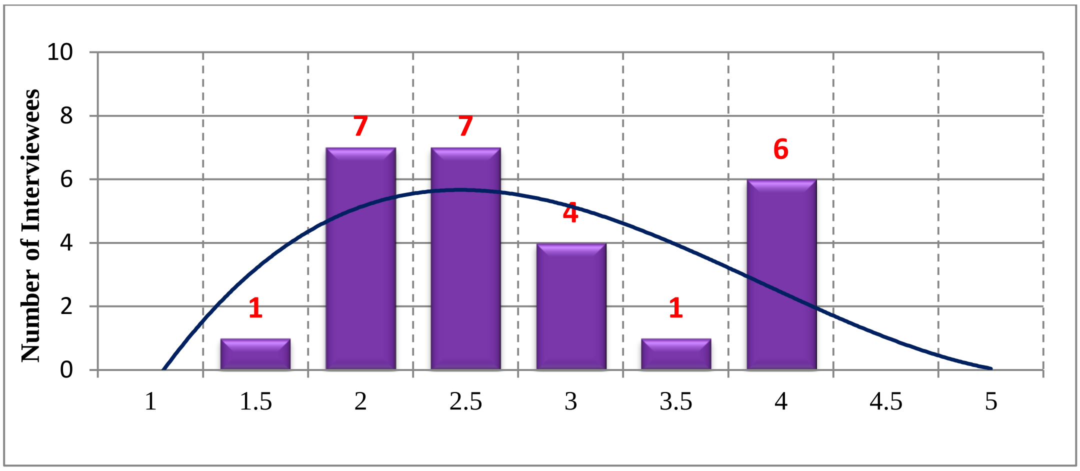


Figure 5.6: The interviewees' overall GSO project rating

The diagram above indicates that the majority of the interviewees' rating (25 out 26, 96%) is ranged between 2 (poor) and 4 (good); and only one person gave 1.5 (below poor). Amongst 25 interviewees, 23% (n = 6) believed that GSO projects was performed well (4 on the scale); 46% (n = 12) reported that GSO projects were executed fairly (from 2.5 to 3.5 on the scale); and 31% (n = 8) claimed that GSO projects were carried out poorly (below 2 on the scale). The mean of the overall GSO project rating is 2.79, which suggests that on average GSO projects were performed below fair.

5.4.2.5.1 Project rating according to three GSO stakeholder groups

Noticeably, when dividing the overall rating according to the interviewees' GSO stakeholder groups, some interesting results are emerged. Figure 5.7 illustrates three groups' project rating.

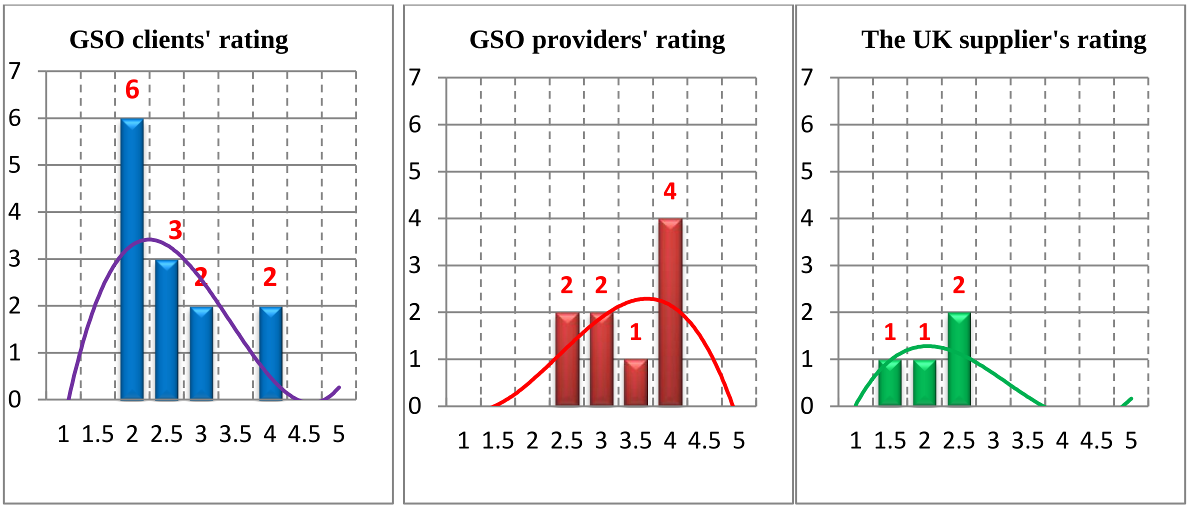


Figure 5.7: The interviewees' GSO project rating according to three demographic groups

The GSO client group's rating is ranged between 2 (poor) and 4 (good); the majority of the interviewees (85%, n = 11) rated their experiencing GSO projects between 2 (poor) and 3 (fair). The mean of the GSO client group's rating is 2.58, which suggests that interviewees from this group believed that GSO projects were performed between poor and fair.

The GSO provider group's rating is ranged between 2.5 (just below fair) and 4 (good); over 56% (n = 5) claimed that GSO projects were carried out relatively well (over 3 on the scale), followed by 44% (n = 4) rated their projects between poor and fair. The mean of the GSO provider group's rating is 3.39, which indicates that this group reported that GSO projects were performed beyond fair.

The domestic supplier group's rating is considerably lower compared with other two interview groups. This group rated GSO projects between 1.5 (below poor) and 2.5 (between poor and fair). The mean of the domestic supplier group's project rating is 2.13, which means that interviewees in this group thought that GSO projects were performed just above poor.

5.4.2.5.2 Project rating according to different project responsibilities

When dividing the overall project rating according to the interviewees' responsibilities in GSO projects, it is evident that interviewees' views on GSO projects are somewhat similar. Figure 5.8 shows three different groups' rating on their experiencing GSO projects.

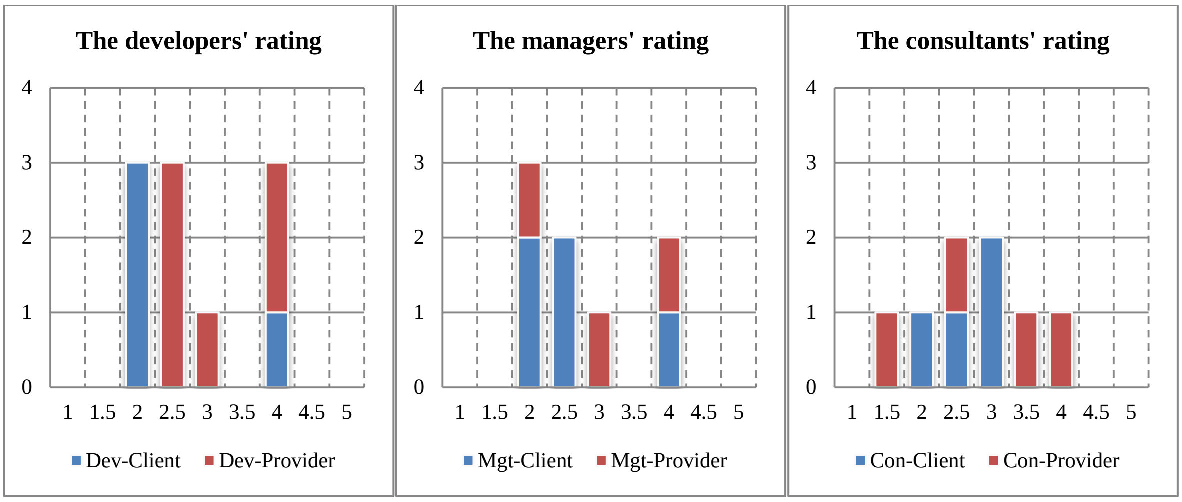


Figure 5.8: The interviewees' GSO project rating according to project responsibilities

According to the diagram above, generally speaking, the development group (on the left of Figure 5.8) and the managerial group (in the middle of the above Figure) had diverse opinions towards GSO projects – some people (around 70%) rated GSO projects between poor and fair, others (close to 30%) gave good rating as their answers. Many people (5 out of 8, 63%) from the consultancy group (on the right of Figure 5.8) reported that projects were carried out relatively fairly (between 2.5 and 3.5).

The development group's rating ranged between 2 (poor) and 4 (good). Most of the developers (70%, n = 7) rated their experiencing GSO projects between 2 (poor) and 3 (fair); however, 30% reported that their GSO projects performed well (4 on the scale). The mean of the development group's rating is 2.85, which suggests that on average this group believed that GSO projects performed just below fair.

The managerial group's rating also ranged between 2 (poor) and 4 (good). 75% (n = 6) of the interviewees in this group claimed that GSO projects performed below fair, amongst which three people believed that their GSO projects were carried out poorly (2 on the scale); however, 25% managers (n = 2) rated as good for their GSO projects. The mean of the managerial group's rating is 2.75, which is almost the same as that of the development group. The managerial group's rating indicates that GSO projects were carried out just below fair.

The consultancy group's rating ranged from 1.5 (between very poor and poor) to 4 (good). Most of the interviewees (n = 5, 63%) reported that their GSO projects performed between 2.5 (below fair) and 3.5 (beyond fair). The mean of the consultancy group's rating is 2.75, which means that interviewees from this group rated the performance of their experienced GSO projects just below fair.

5.4.2.6 Discussion of GSO project rating

Overall, the interviewees' GSO project rating is slightly below fair (mean = 2.79). Amongst three different GSO stakeholder groups, it is obvious that the GSO provider group's project rating (mean = 3.39) is much higher than the other two groups – the GSO client group (mean = 2.58) and the domestic supplier group (mean = 2.13). It coincides with findings of project overviews discussed in section 5.4.2.4 – the domestic supplier group had more negative views on GSO projects than the other two groups, whereas the provider group had positive attitudes towards the GSO model.

Interestingly, when dividing the project rating according to different project responsibilities of these interviewees (see section 5.4.2.5.2), it seems that developers and manages had fairly similar opinions on GSO projects – most of them (over 70%) rated their experienced GSO projects as between poor and fair, the rest (about 30%) rated GSO projects as good. The consultancy group, interviewees (63%) from this group reported that GSO projects were performed fair. However, generally speaking, the performance of GSO projects was not satisfactory in practice (below fair in rating).

5.4.3 Interview Question Two

The second question: <u>What are the main advantages and disadvantages of GSO projects that you have experienced?</u>

Interview Question Two links to the first question and encourages interviewees to talk more about strengths and weaknesses in their experienced GSO projects. This question helps the author look into benefits and issues brought by the GSO model. When conducting interviews, the interviewer often encouraged the interviewees to give detailed explanations to support their views.

5.4.3.1 The GSO project level advantages

Following the interview analysis process (refer to section 5.3), the author carefully analysed the interview records and coded reported project level advantages into a coding sheet (see Table D.1 in Appendix D). Based on the final coding sheet of GSO project level advantages, Figure 5.9 presents project benefits identified during the interview survey.

The diagram clearly shows that most of the interviewees (19 out of 26, 73%) had considered *cost saving* as the most significant advantage in GSO projects, coloured with light green. **Between 31% and 42%** of people reported that *resource flexibility* (n = 11, 42%), *expertise in IT* (n = 10, 39%), *extended working hours* (n = 9, 35%), *hardworking* (n = 9, 35%), and *resource availability* (n = 8, 31%) were important strengths when employing the GSO model, coloured green. **Between 23% and**

27% of the interview participants claimed that *core competence* (n = 7, 27%), *cost effective* (n = 7, 27%), *GSO experience* (n = 7, 27%), *less in-house staff* (n = 7, 27%), *quality of the delivery* (n = 7, 27%), *repetitive work* (n = 7, 27%), *deliver on time* (n = 6, 23%), and *project management* (n = 6, 23%) were critical benefits, coloured light blue. **Below 20%** of the interviewees (n <= 5) reported that *access to new technologies* (n = 5, 19%), *risk migration* (n = 5, 19%), *mature development process* (n = 4, 15%), *business learning* (n = 2, 8%), and *better project control* (n = 1, 4%) were important project level advantages, coloured with blue.

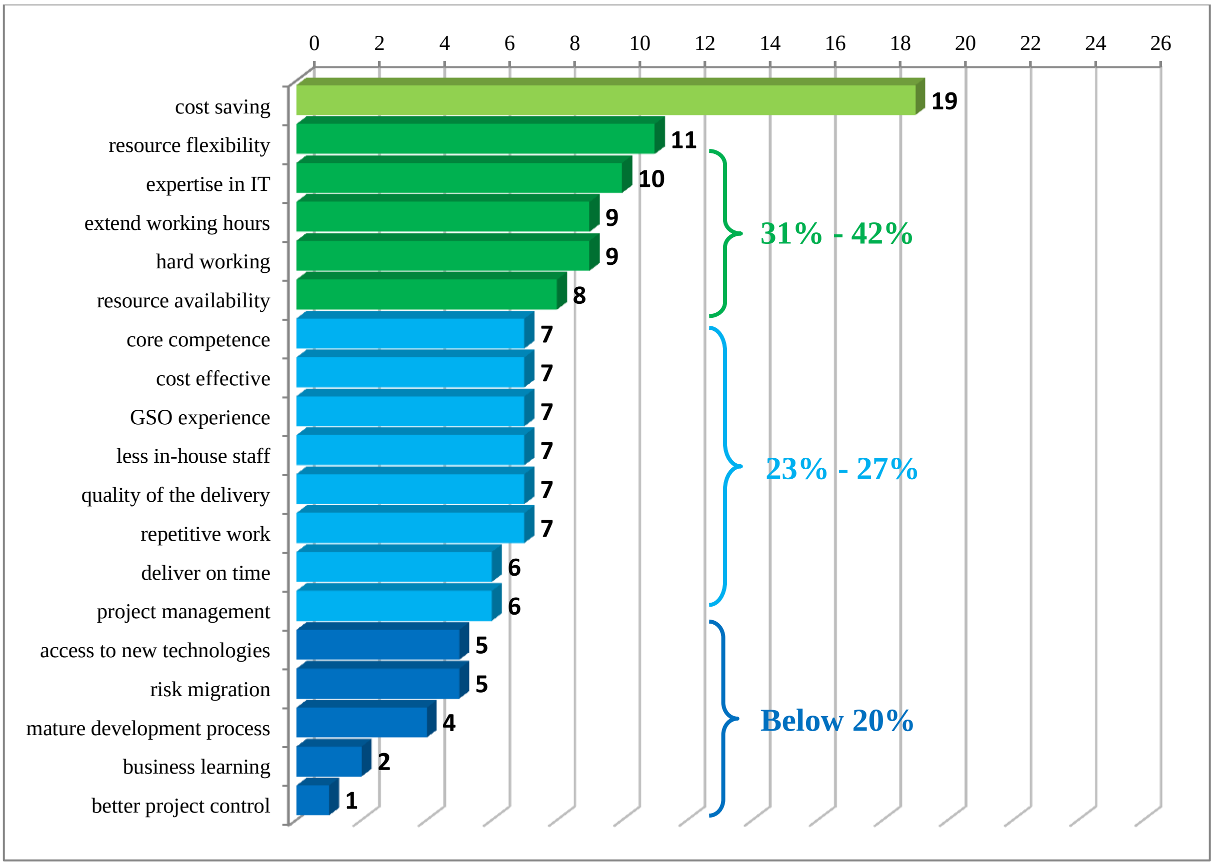


Figure 5.9: Project level advantages reported in GSO interviews

5.4.3.2 Advantages divided by the interviewees' demographic groups

Figure 5.9 combines all project level advantages reported by the interviewees. In order to gain a comprehensive view on GSO project benefits recognised by the interviewees from three different interviewees' demographic groups, Figure 5.10 is produced to show the difference between three interview groups, i.e. the GSO client group, the GSO provider group, and the domestic supplier group.

According to the diagram, three interview groups had diverse opinions on advantages of GSO projects. **The GSO client group** (coloured blue) – over 30% of people talked about six advantages in GSO practices, such as *cost saving* (n = 8, 62%), *resource flexibility* (n = 8, 62%), *expertise in IT* (n =

5, 39%), *repetitive work* (n = 5, 39%), *core competence* (n = 4, 31%), and *less in-house staff* (n = 4, 31%), which are mainly related with resource management, cost control, project management and development capability.

The GSO provider group (coloured dark red) – Over 40% of the interviewees from this group reported six advantages according to their experiencing GSO projects, for example, *cost saving* (n = 7, 78%), *extend working hours* (n = 5, 56%), *hardworking* (n = 5, 56%), *quality of the delivery* (n = 5, 56%), *expertise in IT* (n = 4, 44%), and *deliver on time* (n = 4, 44%) – mostly connect to cost control, development capability, and the delivery quality.

The domestic supplier group (coloured light green) – Over 50% of people in this group discussed four strengths, they are: *cost saving* (n = 4, 100%), *resource flexibility* (n = 2, 50%), *resource availability* (n = 2, 50%), and *less in-house staff* (n = 2, 50%). Interviewees from this group largely concentrated on resource management and cost control.

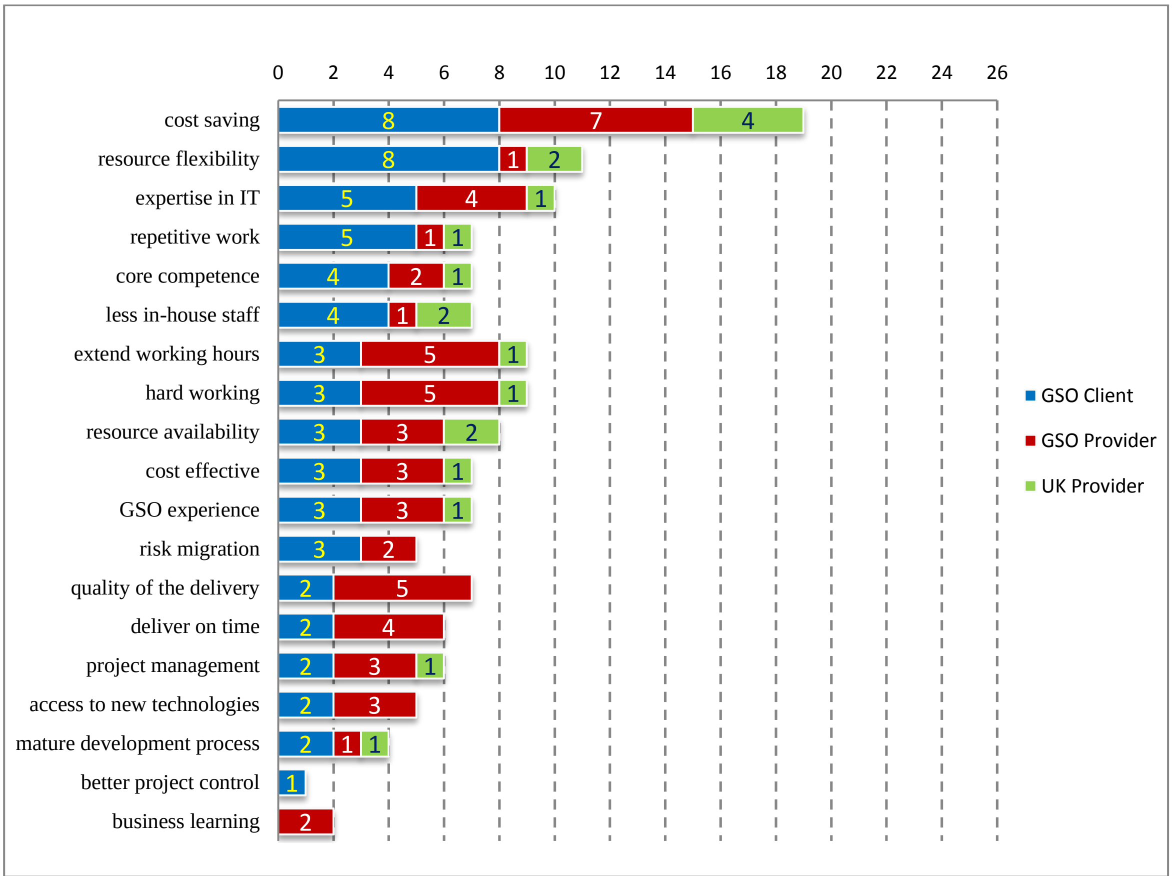


Figure 5.10: GSO project level advantages reported by three demographic groups

Table 5.7 listed *15* advantages reported by 26 interviewees. The table indicates that only cost saving is a commonly accepted advantage. People from the GSO client group and the domestic supplier group mainly treated factors such as cost control, less in-house IT staff, and resource management as advantages for the GSO model; while the GSO provider group believed that the GSO model had benefited the development processes and project/people management (e.g., development capability, the delivery quality, and deliver on time). Additionally, both the GSO clients and the domestic suppliers paid extra attention to *managerial factors*, such as cost control, staff control, and resources management; whereas the GSO providers focused on beneficial factors for *the software development*. Based on the GSO project advantages discussed above, the following sections introduce the discussions during the GSO interviews, which are divided by the interviewees' demographic groups (i.e. GSO clients, GSO providers, and domestic suppliers).

Table 5.7: Advantages for GSO projects reported by interviewees

Interviewee Group	Project Domain	Identified Key Advantages
GSO Clients	1. Project arrangements	1) Cost saving 2) Less in-house staff
	2. Relationship management	N/A
	3. Development Process	3) Expertise and experiences in IT 4) Repetitive work
	4. Project/people management	5) Resource flexibility
	5. Communications	N/A
	6. Others	6) Core competence
GSO Providers	1. Project arrangements	**7)** cost saving
	2. Relationship management	N/A
	3. Development Process	8) Extend working hours 9) Quality of the delivery 10) Expertise and experiences in IT
	4. Project/people management	11) Deliver on time
	5. Communications	N/A
	6. Others	12) Hardworking
UK's Domestic Suppliers	1. Project arrangements	13) Cost saving 14) Less in-house staff
	2. Relationship management	N/A
	3. Development Process	N/A
	4. Project/people management	15) Resource flexibility & availability
	5. Communications	N/A

5.4.3.2.1 The GSO client group

Based on the interview records, many GSO client staff considered that IT/IS projects had benefited from cost saving in GSO practices. A project manager said:

> "On paper, the cost is lower, e.g. the day rate is only around 20% of our internal people. It seems that we can save over 50% in outsourcing. However, onshore providers are more expensive than those on offshore site – their daily rate is ranged from £200 to 350".

A senior Head of information systems development sector particularly discussed resource flexibility with the interviewer. He said:

> "Resource flexibility is vital. We can increase and decline GSO provider workers in our projects according to the actual need – great flexibility… also, it is good for the management, a much better control of costs in the current development compared with our previous ones".

Some developers believed that GSO projects had brought IT expertise and development experiences to IT software projects. A senior systems developer said:

> "Outsourcing has brought in a large amount of project management skills and development knowledge of how to carry out IT projects…our framework has been refined".

Regarding GSO provider's expertise in the development, a quality consultant said:

> "The providers should not compromise their maturity level – if they compromise their mature processes in the outsourcing collaboration, the client can end up with working on old and immature processes when organising the development – you know, rubbish in, rubbish out".

5.4.3.2.2 The GSO provider group

Although the GSO provider group talked more about benefits at the operational level, the majority of the interviewees from this group also discussed cost saving with the interviewer. A senior project/delivery manager said:

> "Rate between the in-house staff and onshore provider staff is nearly the same, based on the rating card. Major cost saving is from offshore workers, who only cost less than 20% of the in-house developers. In order to control costs, we need to control the onshore/offshore ratio, i.e. 10-30% onshore and 90-70% offshore – an ideal cost saving model for our customers".

Some GSO providers' developers particularly talked about their IT software expertise and its relationship with the GSO model. A module leader said:

> "Depends on the outsourcing engagement model, our expertise can handle most of the development work in the lifecycle, maybe except requirements capture…the customer only needs to check the outcome, e.g. prototype".

Some GSO providers' onshore and offshore coordinator mentioned the GSO provider's IT expertise and development ability. A systems analyst said:

> "Because we can ensure (that) we can deliver quality stuff on time, our customers can spend more time to concentrate on their core competences…We have advantages in resource, outsourcing experiences, great project management, and lots of hard working people, who can learn business for the clients and generate more clients for our own company".

5.4.3.2.3 The domestic supplier group

Although the domestic supplier group did not report many benefits for GSO projects, this group talked about cost saving, resource flexibility, resource availability, and less in-house staff as benefits for GSO projects. One experienced domestic supplier consultant said:

> "Thanks to outsourcing, the client company does not need to maintain a large amount of in-house staff any more…it does not make sense to maintain expensive experienced IT software developers if the

client does not have enough work for them to deliver. In this country, to maintain an in-house professional is too expensive – you need to pay things such as salary, pension, national insurance, personal insurance, welfare, travel allowance, etc."

5.4.3.3 The GSO project level disadvantages

The second part of the second interview question requires the interviewees' to discuss various disadvantages that they had encountered in GSO projects. When discussing the interview Question Two, it seems that this topic has attracted much attention by interviewees from the GSO client group and the domestic supplier group. Thus, similar to the data analysis conducted for GSO project advantages, the author has followed the same interview data analysis process and coded GSO project disadvantages into a coding sheet (see Table D.2 in Appendix D). Based on the final coding sheet, Figure 5.11 is produced in order to illustrate weaknesses reported during the GSO interviews.

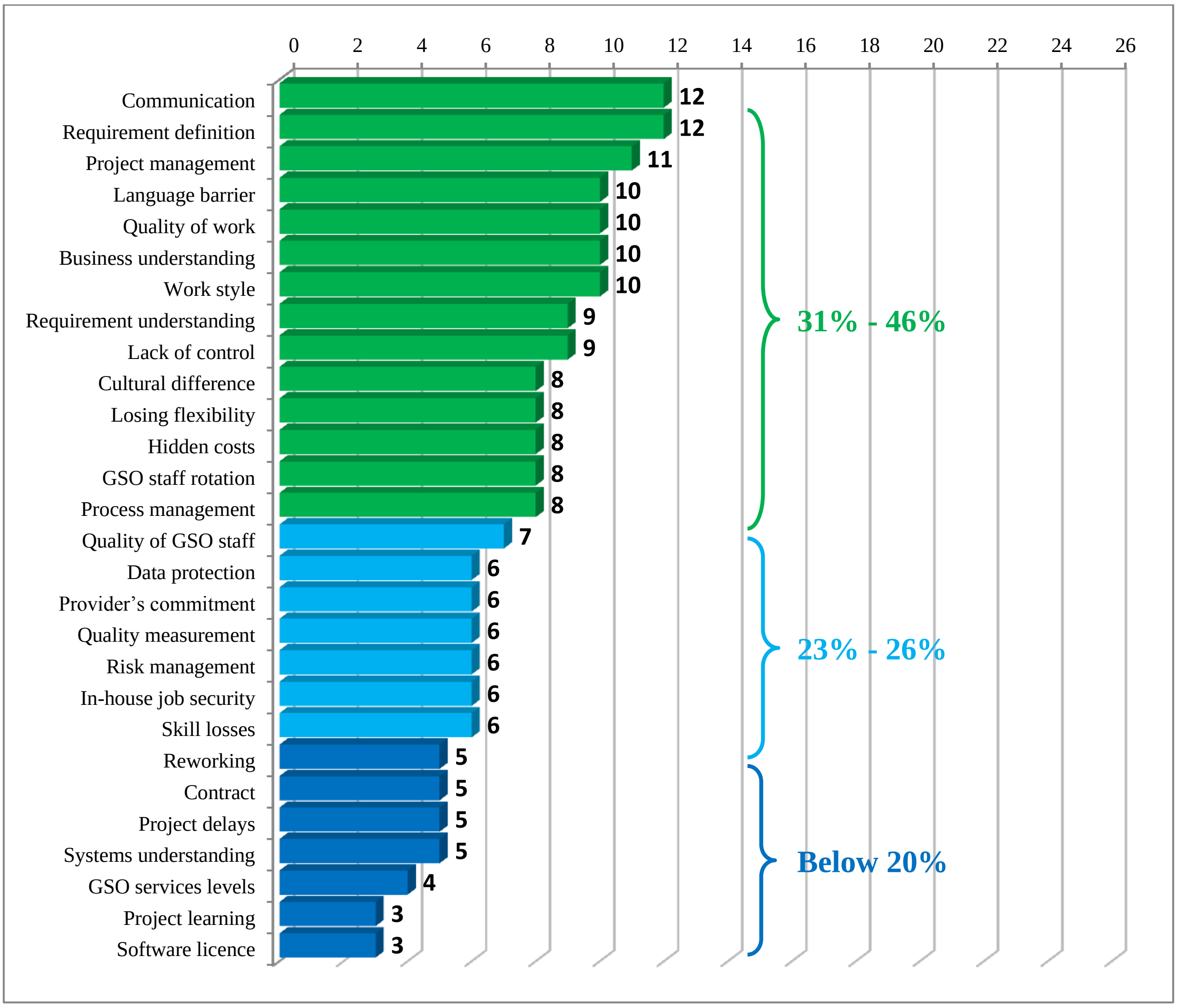


Figure 5.11: Project level disadvantages reported in GSO interviews

The diagram clearly shows that **between 31% and 42%** of the interviewees pointed out that *communications* (n = 12, 46%), *requirement definition* (n = 12, 46%), *project management* (n = 11, 42%), *language barrier* (n = 10, 39%), *quality of work* (n = 10, 39%), *business understanding* (n = 10, 39%), *work style* (n = 10, 39%), *requirement understanding* (n = 9, 35%), *lack of control* (n = 9, 35%), *cultural difference* (n = 8, 31%), *losing flexibility* (n = 8, 31%), *hidden costs* (n = 8, 31%), *GSO staff rotation* (n = 8, 31%), and *process management* (n = 8, 31%) were significant disadvantages.

Between 23% and 27% of people reported that *the quality of GSO staff* (n = 7, 27%), *data protection* (n = 6, 23%), *GSO provider's commitment* (n = 6, 23%), *quality measurement* (n = 6, 23%), *risk management* (n = 6, 23%), *in-house job security* (n = 6, 23%), and *skill losses* (n = 6, 23%) were important disadvantages in GSO practices.

Below 20% of the interview participants claimed that *reworking* (n = 5, 19%), *project contracts* (n = 5, 19%), *project delays* (n = 5, 19%), *systems understanding* (n = 5, 19%), *systems understanding* (n = 5, 19%), *GSO service levels* (n = 4, 15%), *project learning* (n = 3, 12%), and *software licence* (n = 3, 12%) were essential project level weaknesses.

Based on the above description, various project level issues can be identified. Amongst top fourteen disadvantages (coloured green in Figure 5.11), *three* issues relate with project arrangements (e.g., staff rotation, losing flexibility, and hidden costs); *two* are communicative issues (e.g., communication and language barrier); *three* connect to managerial problems (e.g., project management, lack of control, and process management); *two* are problems that happen in the development (e.g., requirement definition and the quality of work); *three* are personnel issues (e.g., business understanding, work style, and requirement understanding), and *one* is a sociological issue (e.g., cultural difference).

These identified issues suggest that problems could be found in nearly every part of a GSO project, from project arrangements to people management. In fact, this research finding indicates that GSO projects are *far from maturity*. Furthermore, it is noticeable that the interviewees' views on disadvantages were varied according to the interviewees' demographic groups. Thus, with aims of achieving a better understanding of different interview groups' opinions on this topic, the next section divides discussions on GSO project disadvantages into three interview groups.

5.4.3.4 Disadvantages divided by the interviewees' demographic groups

Figure 5.12 categorises project disadvantages according to three interviewees' demographic groups, i.e. the GSO client group (coloured light blue), the GSO provider group (coloured dark red), and the domestic supplier group (coloured with light green). In the diagram below, it is evident that three different groups have dissimilar views on issues in GSO projects.

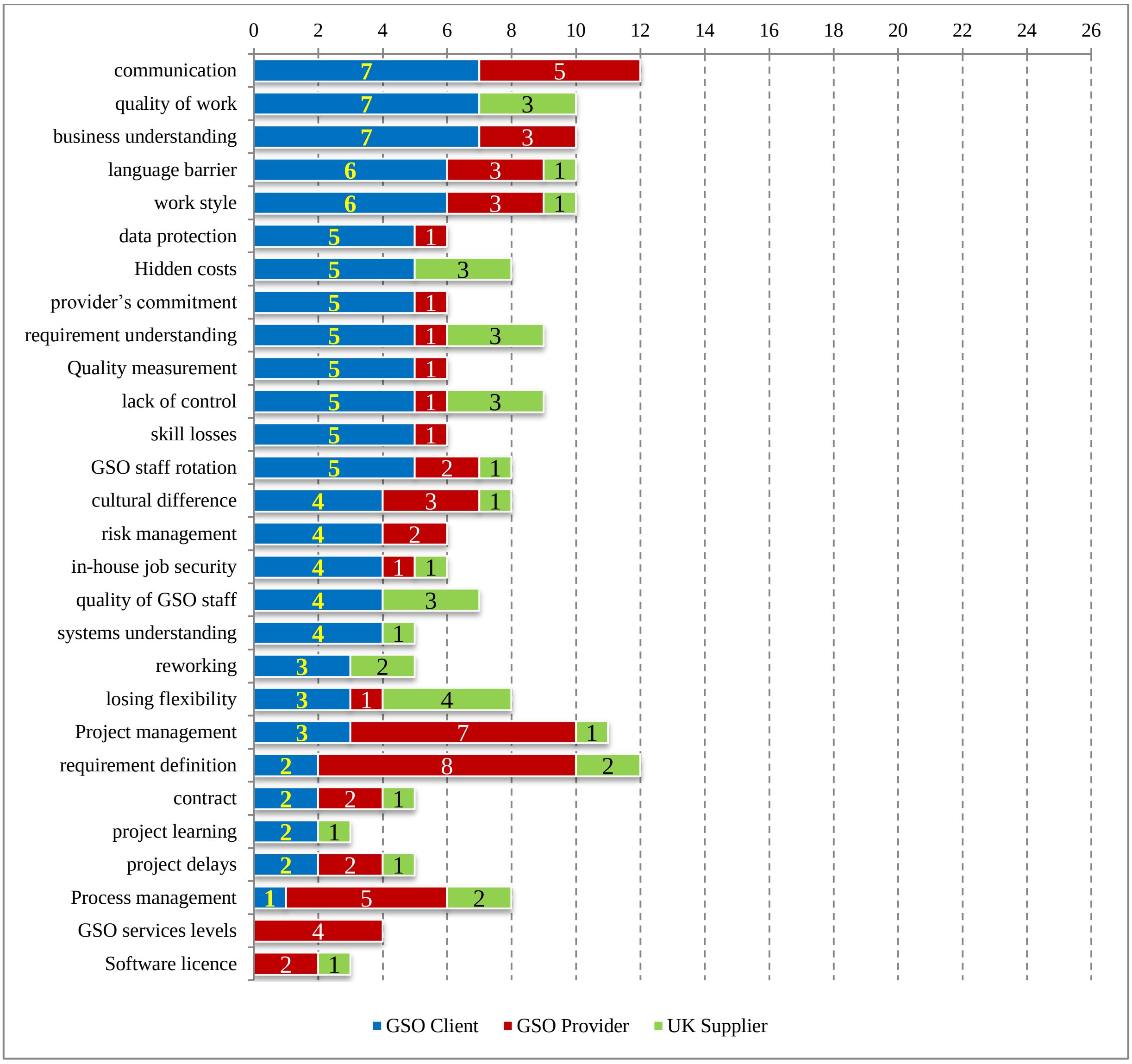


Figure 5.12: GSO project level disadvantages reported by three demographic groups

The GSO client group – Interviewees from this group mainly reported issues such as *communication* (n = 7, 54%), *the quality of work* (n = 7, 54%), *business understanding* (n = 7, 54%), *language barrier* (n = 6, 46%), and *different work styles* (n = 6, 46%).

The GSO provider group – People from this group were mostly concerned with problems relating to *requirement definition* (n = 8, 89%), *project management* (n = 7, 78%), *process management* (n = 5, 56%), *communication* (n = 5, 56%), *GSO service levels* (n = 4, 44%).

The domestic supplier group – This group pointed out project problems, such as *losing flexibility* (n = 4, 100%), *the quality of work* (n = 3, 75%), *hidden costs* (n = 3, 75%), *requirement understanding* (n = 3, 75%), *lack of control* (n = 3, 75%), and *the quality of GSO providers* (n = 3, 75%).

Table 5.8: Disadvantages for GSO projects reported by interviewees

Interviewee Group	Project Domain	Identified Key Disadvantages
GSO Clients	1. Project arrangements	N/A
	2. Relationship management	1) Dissimilar work styles
	3. Development Process	2) Unsatisfied work quality
	4. Project/people management	N/A
	5. Communications	3) Poor client/provider communications 4) Lack of business understanding 5) Language barrier
	6. Others	N/A
GSO Providers	1. Project arrangements	6) Low GSO service levels
	2. Relationship management	N/A
	3. Development Process	7) Insufficient requirement definition 8) Poor process management
	4. Project/people management	9) Inexperienced project management
	5. Communications	10) Communications between different development parties
	6. Others	N/A
UK's Domestic Suppliers	1. Project arrangements	11) Losing flexibility of selecting GSO providers
	2. Relationship management	12) Lack of control over providers
	3. Development Process	13) Poor quality of the delivery 14) Poor requirement understanding
	4. Project/people management	15) Low quality of GSO providers' staff
	5. Communications	N/A
	6. Others	16) Increasing hidden costs

Table 5.8 summarises *16* key disadvantages reported by interviewees in Question Two. According to the findings, **the GSO client group** mostly worried about how to make the GSO model perform effectively, thus, interviewees from this group emphasised on issues which related to communications in GSO projects (e.g., business understanding, language barrier, and client/provider communications) and to control the quality of providers' delivery (e.g., development styles and quality of work). As for interviewees from **the GSO provider group**, most of them gave extra attention to the development processes in GSO practices, for example, people in this group mainly talked about issues such as communications between different development parties, detailed requirement definition, inexperienced project/process management. Lastly, people in **the domestic supplier group** looked into GSO project from a third-party services supplier's perspective, hence they mainly worried about GSO providers' quality (e.g., requirements understanding, the quality of GSO provider staff, and the quality of work), GSO service arrangements (e.g., losing flexibility and lack of control), and hidden costs in the development. The following sections quote discussions in the interviews, which are divided into three categories according to the interviewees' demographic groups.

5.4.3.4.1 The GSO client group

Eight out of 13 (61.5%) GSO client staff considered business understanding as a critical issue, which had many impacts on the performance of GSO projects. A lead systems and requirement analyst said:

> "Previously, business knowledge and systems understanding are within the (client) company; therefore, detailed documentation was not necessary, as knowledge do not need to pass outside. In outsourcing, it needs to be transferred to the GSO provider…thus if the client company does not prepare a detailed spec, the knowledge transfer cannot carry out sufficiently and therefore can cause various issues".

A GSO client's business analyst also talked about problems such as business understanding and requirements capture. He said:

> "It is very common that business requirement and its related definition are not clear at the beginning – it can be either changed quickly or not very specific. Therefore, it is impossible to express detailed requirements to our providers at the early stage...so, to a certain degree, we do need our provider understand the business".

A senior systems developer from a GSO client company described why GSO provider workers could not properly gain business/systems understanding in practice. He said:

> "Systems understanding and a deep level of development expertise are gained through many years of experience. It includes understanding of the back-end systems, how to utilise the systems, how to communicate within the company, the internal network, business understanding, etc... The GSO model is buying people who are learning from the client and not familiar with the network/business; and they only stay on same positions for a short period of time – thus, systems understanding cannot be gained".

Six people reported that different work styles can cause major problems in the GSO collaboration. A delivery manager said:

> "Some providers have wrong attitudes. They do not usually raise issues – they often try to pick up the issues and fix them without the client's notice. If some business requirements are not feasible or not clear enough, client managers need to understand the problem and go back to look into options. It is much better than the provider continuously working on something that is impossible to deliver. As time passes, everyone is waiting for the provider's work...This is a dangerous working style".

A senior technical consultant also described different work styles. He said:

> "The work culture on the provider side is to absolutely follow the customer's requirements. Therefore, our definition has to be clear enough…I guess that is the reason why they like CMMI authentication – we do not like only one way to do the work, so we take shortcuts…and we don't like strict processes".

Over 50% of the interviewees (n = 7) from several GSO client companies claimed that communication was a significant disadvantage in practice. A systems analyst said:

> "We have to specify requirements in great detail now, which is really time consuming. Otherwise the work package might not be precisely understood by the offshore development sites…However, even if everything has been detailed in the work package, understanding issues can still happen due to cultural difference, language barrier, and lack of business background".

Many operation level staff especially worried about issues such as the quality of the GSO provider's work (n = 7, 54%), GSO staff rotation (n = 5, 39%), lack of control over GSO staff (n = 5, 39%) and hidden costs in the development (n = 5, 39%). A middle-level delivery manager complained about the quality of workers from GSO providers. He said:

> "When bidding for the contract of Project B*, the provider claimed that they could handle the mainframe development and maintenance at a low price. However, they do not have the system understanding at all – they actually required a domestic service supplier to train them after they won the contract from the supplier…My project has been hugely delayed".
>
> * Project B quoted in this chapter equals to Project B studied in Chapter Four

The same delivery manager also reported that the client lacked control over onshore and offshore GSO staff. He said:

> "As the client cannot select the provider staff, the quality of GSO staff sent by the provider largely depends on the provider's commitment… Especially on the offshore site, the client does not know who and how many people are actually working for the client".

A capacity manager raised the same concerns regarding lack of control. He said:

> "Based on the outsourcing contract, the client did not have control over the selection of the provider's staff, for example, no rights to interview them before they come to work for us…if a person is not good enough, only the provider can remove them from the project...However, to replace unqualified GSO staff is not easy at all! The provider tends to move this type of worker to somewhere less visible".

A skilled systems developer from a GSO client company questioned the quality of some GSO providers who have been working with him in a recent project. He said:

> "GSO providers are doing project learning on the client site. You know, the collaboration is long-term nowadays and the provider staff can have enough time to learn from the project…It took a while to improve their quality and working style. However, when the onshore provider can handle the work, they will work for other companies as experienced assets".

A GSO client's project consultant particularly told the interviewer regarding the GSO provider's staff rotation policy. He said:

> "In order to engage GSO provider workers in a project, we usually need to wait around 12 weeks to get them onshore, this period of time includes the staff requirement procedure, work visa, provider's internal training, accommodation, etc.; as for offshore sites, we do not know who are working for us at all...however, the staff rotation is too quick, when they start to understand how to work, they could be assigned to different projects or sent back to India in order to rotate some offshore developers".

A client's Head of department (Hof) suggested that hidden costs in GSO projects were unexpectedly high in practice. He said:

> "Their rate is fixed and lower than in-house staff's. GSO projects often start with more IT spending – the cost saving is a long-term thing…In-house development might start with cheaper costs, but can grow dramatically high in the end. But, by saying that, across the industry outsourcing is becoming more expensive, provider companies' rate is low, but their delivery cycle and reworking can cost us much more than we are expecting".

Besides the project level weaknesses, some interviewees from GSO clients specified their concerns over other important issues, such as GSO providers' commitment (n = 5, 39%), quality measurement (n = 5, 39%), and project management (n = 3, 23%). For example, a resource manager talked about the GSO provider's commitment in GSO practices. He said:

> "GSO provider workers are responsible to their own company instead of the project. So, if something happens, their loyalty will force them to protect the provider's image instead of the project. The provider always tries to maximise their profit, not standing on our best interest – after all, they are working for a different company".

Another project manager talked about process management and project management issues that happened in his GSO projects. He said:

> "Spec should be done onshore by the client and will be sent to offshore. The GSP should develop the code and undertake unit testing…when the coding is sent back to the client, the client needs to organise the system testing and review the code… However, at the moment, we are asking the provider to work on systems analysis and design, which they do not have the knowledge to handle…Different companies have different work styles and processes, our providers work at CMMI level 5, they have their rigorous processes to follow. However, in some cases, processes are barriers as they decrease flexibility in the development. Also, we are not working under their framework – we have different processes to follow".

A client's project/resource planner claimed that lack of quality measurement was a major problem in his recent outsourcing project. He said:

> "We really need measurement for the delivery: 1) how many changes have been done before and after the outsourcing; 2) total cost and time should be added into the measurement;3) how much is additional costs of the outsourcing project…We need to measure these factors to ensure the quality of our GSP*".
>
> * GSP stands for global services partner

5.4.3.4.2 The GSO provider group

Figure 5.12 shows that the majority of the interviewees from the GSO provider group considered requirement definition (n = 8, 89%) and project management (n = 7, 78%) as two most critical problems in GSO projects. A project/delivery manager said:

> "The customer's project manager needs to rely more on us. At the moment the delivery is managed by the client, therefore issues are likely to happen due to different development processes and the level of outsourcing services…We have very much different working style: we tend to work very hard and stay late; however, in the client company, people tend to spend more time on enjoying their lives...it is an interesting project management style".

A provider's onshore development coordinator also talked about issues related with project management and IT expertise. He said:

> "We have advanced technological ability, and our client does not understand that. Therefore we need to help the client to understand from the beginning, e.g., how the latest technology can help the business. So, of course, we will use our experienced managers on these tasks".

A provider's onshore systems analyst highlighted requirement definition problems during the interview. He said:

> "It takes time to understand the requirement – their Spec is not clear enough. After reading the design document, we still need them to clarify some requirements…We are implementing the client's requirements on offshore site, if the spec is not changed promptly, the requirement mismatching could happen…In fact, our offshore team spends more time to understand requirements – because the requirement definition is poor and they are not close to the client. Much time has been spent on finding the right person to clarify requirements".

Over half of the provider staff identified communication and GSO service levels as important negative factors in GSO projects. An offshore testing analyst said:

> "I think communication between onshore and offshore is inefficient. We have geographical difference, which can delay the development. For example, the offshore team has to wait for the onshore team to supply requirements, and the onshore team will have to wait for the client's IT department, and the client will wait for the client's business people…Honestly, communication is too complicated".

A GSO provider's process consultant talked about GSO service levels based on his experiencing outsourcing projects. He said:

> "Normally, the provider should not ask the client to follow their development framework; however, if the client's IT department is weak, after handshaking period, we (the provider) need to quickly climb to service level 4 (total outsourcing), so that we can supply better IT services for the client".

5.4.3.4.3 The domestic supplier group

The domestic services suppliers claimed that GSO projects had issues ranged from personnel issues (e.g., requirements understanding and the quality of GSO staff) to managerial issues (e.g., hidden costs and lack of control). In the interview, every domestic service supplier considered losing flexibility (n = 4, 100%) as the most critical project level problem. Most of the interviewees thought that the quality of work, hidden costs, requirement understanding, lack of control, and quality of GSO staff were vital issues in practice. An experienced business consultant in this group said:

> "Many UK companies are signing on-going contracts with the outsourcing providers, which means they would never be sure when they can save money…thinking about rework and delays…the client is losing flexibility, as the providers cannot be removed from the project based on a so-called long-term strategic contract".

He also commented on lack of control and the quality of work provided by the GSO provider based on his outsourcing projects. He said:

> "The client is losing control on quality, time and budget. For example, the GSO provider quoted much cheaper than the domestic suppliers; however, they require much longer time to fulfil the targets in comparison with us...many outsourcing client companies are losing local customers due to their outsourcing decision – why is that? The quality of work is poor".

A senior project/delivery manager working for a domestic services supplier company looked into reworking issues based on one of his GSO projects. He said:

> "Based on my experience, CMM is based on paper, it does not reflect in Indian providers' work. Firstly, they do not have enough skilled people to take over the work they are committed; secondly, they rigidly adopt CMM which doesn't mean they can manage a project better; lastly, if the client doesn't know what they want and ask the right question, reworking can easily cost more than they've planned".

A domestic supplier's lead systems consultant told the interviewer about software licensing issues and different work styles in a recent GSO project. He said:

> "Software license between the client company and us prevents offshore services providers digging into the commercial information systems supplied by us, IBM, or CSC...However, because the providers lack of confrontation – they just take orders without questioning, the client will not know this issue until project really suffers – for example, look what happened in Project B".

5.4.3.5 Discussion of Question Two

In interview Question Two, many project level advantages and disadvantages have been reported and discussed. According to the interview findings, it is clear that only *cost saving* is commonly reported as a major benefit by three interview demographic groups. Interviewees from the GSO client group and the domestic supplier group mainly claimed that cost control and resource management were major benefits; whereas people in the GSO provider group mostly focused on development factors such as the development capability and the delivery quality. Based on section 5.4.3.2, it is noticeable that both the GSO client group and the domestic supplier group thought that managerial factors had improved due to the GSO employment, in comparison to the GSO provider group which considered that detailed development factors were significantly enhanced in the GSO collaboration.

When examining disadvantages in GSO projects, *communication* related problems have been popularly reported by the interviewees from all interview groups. According to section 5.4.3.4, people from the GSO client group were mainly concerned about the performance of the GSO model. This group discussed disadvantages encountered in the GSO cooperation; whereas the GSO provider group paid much attention to problems in the actual development – people from this group talked about issues such as communication in the cooperation, requirement definition, project management, and process management, which suggests that GSO providers were also not fully satisfied with the performance of GSO projects. The domestic supplier group primarily worried about the quality of the delivery. Professionals from this group commonly stated problems related to the quality of work, GSO services arrangements, and hidden cost, according to their experiencing GSO projects.

5.4.4 Interview Question Three

The third question: Suppose that you are a senior manager who is responsible for arranging GSO projects, what kind of project level factors you will consider before the project?

Based on the discussion in the previous two questions, this question identifies CSFs that ensure the performance of GSO projects. According to the interviewees' experiences in GSO practices, answers to this question are formed into resolutions to those issues recognised in the earlier discussion.

5.4.4.1 Overall findings

During the interview survey, although not every interviewee has contributed towards this question, a range of CSFs have been reported by interviewees with advanced experiences (e.g., managers, consultants, and senior technicians) in GSO practices. Figure 5.13 presents *15* identified significant factors (see Table C.1 in Appendix C for the coding sheet of interview Question Three).

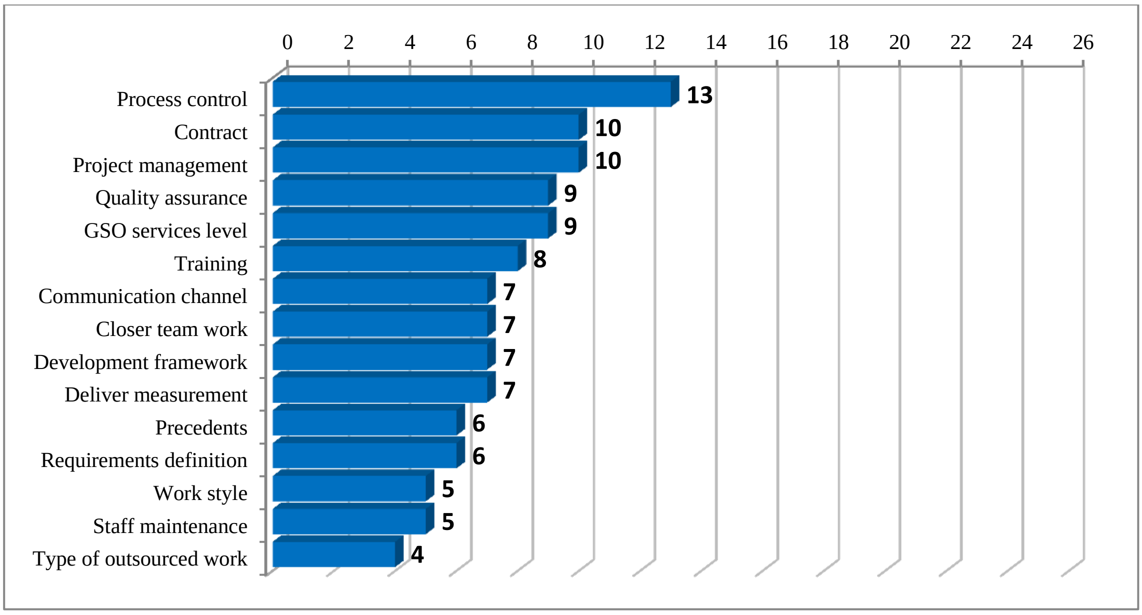


Figure 5.13: The critical success factors reported by the interviewees

According to the diagram above, CSFs can be categorised into the issue framework established in section 4.6.1. Table 5.9 summarises these CSFs and groups them into five project domains, which can be seen as follows:

1) **Project arrangements** – This category contains factors that can improve GSO project arrangements, for example, reported factors are *producing stricter contract* (n = 10, 39%), *choosing appropriate service level* (n = 9, 35%), *refining development framework* (n = 7, 27%), and *reselecting outsourced work* (n = 4, 15%);

2) **Relationships management** – This group includes factors that can refine relationships in the GSO collaboration. They are: *closer team work* (n = 7, 27%), and *coordinating different work styles* in the development (n = 5, 19%);

3) **Development Process** – This category contains factors that can refine the process in the software development, for example, *developing process control* (n = 13, 50%), *quality assurance process* (n = 9, 35%), *producing stricter deliver measurement* (n = 7, 27%), and *reviewing track record* when selecting GSO services providers (n = 6, 23%);

4) **Communicative factors** – This category includes factors that can solve communication issues in the collaboration. Factors reported are *simplifying communication channel*s in GSO practices (n = 7, 27%), and providing *better requirements definition* (n = 6, 23%);

5) **Project/people management** – This group contains factors that can enhance project and people management. CSFs discussed are *tightening project/people management* (n = 10, 39%), *providing training to GSO practitioners* (n = 8, 31%), and improving onshore and offshore staff maintenance, i.e. *reducing staff turnover* (n = 5, 19%).

Table 5.9: Critical successful factors reported in Interview Question Three

Project Domain	Key CSFs
1. Project arrangements	1) Stricter contract 2) Appropriate service level 3) Refine development framework 4) Reconsidering outsourced work
2. Relationship management	5) Closer team work 6) Coordinating different work styles
3. Development Process	7) Developing process control and quality assurance process 8) Stricter deliver measurements 9) Reviewing track record when selecting GSO services providers
5. Communications	10) Simplifying communication channels 11) Providing better requirements definition
4. Project/people management	12) Tightening project/people management on services providers 13) Providing training to GSO practitioners 14) Improving onshore and offshore staff maintenance to reduce the staff turnover

5.4.4.2 Findings according to the interviewees' demographic groups

When analysing the interview data, it is observable that the GSO provider group's answers are extraordinarily similar to those described by the domestic supplier group. Therefore, in order to simplify the discussion, the author combines answers provided by the GSO provider group with those from the domestic supplier group in the following discussion.

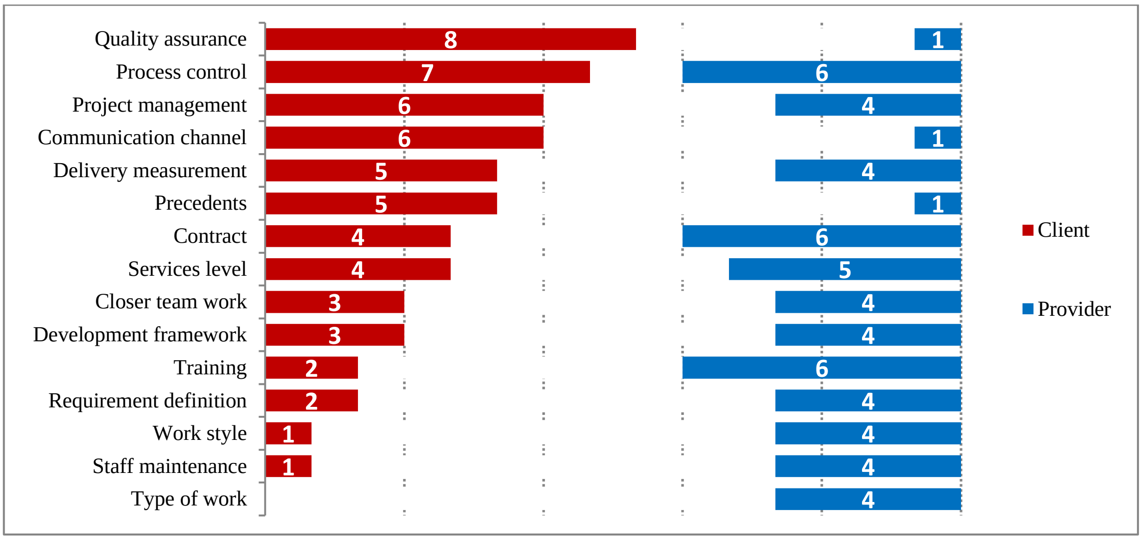


Figure 5.14: CSFs reported by the client group and the provider group

Figure 5.14 presents CSFs reported by the client group and the provider group. According the above diagram, it is recognisable that the client group paid much attention to how to control GSO projects, therefore, around 40% of the interviewees (n = 5) from this group talked about communicative factors (e.g., communication channel), managerial factors (e.g., process control and project management), and measurement factors (e.g., quality assurance, delivery measurement, and precedents tracking). For the provider group, besides managerial factors (e.g., process control, and training), it is observable that interviewees (n = 4, 31%) from this group also considered project arrangements factors (e.g., GSO service level, project level contract, and development framework), relationship factors (e.g., closer team work and work styles), and communicative factors (e.g., requirements definition) as CSFs. The following two sections (sections 5.4.4.2.1 and section 5.4.4.2.2) specify two groups of views (the client group and the provider group) opinions on CSFs.

5.4.4.2.1 The client group

When talking about project level success factors, many interviewees for the client companies considered issues connected with how to improve the performance of their GSO projects. Eight out of 13 client staff (62%) thought that quality assurance was the most critical factor in the development. A senior business consultant said:

> "Quality assurance people need to carefully check the work sent back from offshore. Quality assurance process is crucial. In the financial services sector, it is poor in quality control. In any project, budget control, process control, and quality control are the major success factors".

An IS director talked more about the importance of controlling the quality of workers from the GSO provider. He said:

> "We know that the provider does not put its best people on the project. They would send trainees to work onshore because we (the client) lack of quality control over their developers. However, we are putting the GSO staff selection process into project level contracts – we really need to control that. For example, a single Indian programmer may be cheaper, but 500 programmers sitting offshore can charge us a lot of money every day…Due to the talent shortage in India, more and more Indian companies are recruiting graduates; however, GSPs still ask for the same rate for these people".

Over half of the client professionals (n = 7, 54%) believed that process control was an important factor for a successful GSO project. A process consultant said:

> "It is critical to define processes for in-house staff and the onshore provider to follow. We have different development frameworks and maturity levels, but there is no excuse to manage outsourcing badly…The client needs to pay more attention to the time management, process control, and offshore efficiency control – i.e. our own quality management systems (QMS)".

Six out of 13 people (46%) reported that a better communication channel is critical in improving mutual understanding between onshore/offshore teams. A project consultant told the interviewer:

> "Due to language/culture differences, it is good to train more provider people onshore. More onshore people can improve communication, as discussion can happen face-to-face. For example, although design is produced, the provider may not fully understand it. So, they need to talk with us a.s.a.p.; however, the current communication channel prevents them from talking with us directly – you need to talk with your line manager first, then the project manager, then our PMO, then to a correct person who might just sit next to you…Anyway, everything that encourages communication can be a good idea, e.g. cameras, online chatting, face-to-face talks, etc."

Five out of 13 people (39%) suggested that proper measurement of the provider's project work could be an important factor to maintain the quality in GSO projects. A lead systems analyst said:

> "We need more measurements to assess the provider's work, instead of trusting them blindly. We do not need to supervise their detailed sub-process such as coding or unit testing – we only need to verify whether the code is functionally correct in the system testing…we need to adopt better measurement from the software industry".

Four out of 13 people (31%) suggested that settling on an appropriate service level was vital when conducting GSO projects. A Head of IS development said:

> "I trust more work shall be given to the provider…more work means more responsibilities. If the provider can handle the development, we shall increase their service level to the whole lifecycle, except business requirements, quality control and final system testing".

A systems analyst was concerned about his company's decision on service level. He said:

> "Do not choose total outsourcing. It will remove the flexibility from the client – we will have to train the provider to learn the business, to gain systems understanding, and to increase their capability in development as well. This actually turns the provider into our internal IT sector. If that's the case, what is the point to outsource?"

Four out of 13 people (31%) reported that a good project level contract is essential to gain control in GSO collaboration. A senior business consultant said:

> "We need to detail the contract to clarify the provider's job boundary. The contract has to cover most of the aspects in the development. A long-term CBA (cost benefit analysis) needs to put into the contract to judge the long-term cost and the benefits. The contract should give us the power to interview the provider to make sure only quality workers are selected. Unless it is an emergency, we should not allow them to learn on the job – we should use the contract to stop investing on their technical capability, especially in the lead time".

Some client developers (n = 3, 23%) suggested that closer team work could also improve the GSO collaboration. A senior IT technician said:

> "The client should challenge the provider and supervise their work. To do that, we need to work closely. For example, team members should know each other; experienced people can help the provider to shorten the learning cycle. So they can know the job at the beginning".

5.4.4.2.2 The provider group

Dissimilar to the client group, the provider group talks more about factors for improving GSO project arrangements and various work in the development. Around half of the provider staff (n = 6, 46%) believed that process control, contracts, and training were three CSFs, when supplying services to their clients. A domestic supplier's systems consultant discussed the importance of a GSO contract:

> "Do not make decisions too quickly. Outsourcing should be done gradually – skill set by skill set, system by system. The client should only give a short-term and well defined contract to the GSO provider…Contracts at the project level need to be more specific and pay the provider based on product/delivery – not on time/materials".

A GSO provider's project/delivery manager had different opinions on this topic. He said:

> "Every project needs a certain level of customer involvement, but it should be based on the contract. GSO project contracts shall give more flexibility to the (GSO) provider, for example, as long as high-level requirements are finalised, the contract should let the (GSO) provider be involved in the project as early as possible".

A domestic supplier's business consultant suggested that process control was another vital factor when supplying IT software services to a client company. He said:

> "Programming can be outsourced, but the process control should be done by the client or a third-party company. The standard of work should be carefully examined and sufficiently controlled in the quality assurance process, which requires certain skills to stay in-house".

An offshore GSO provider's testing analyst believed that the training process was critical in GSO project arrangements. He said:

> "The client should provide general training and an induction to the provider. They also need to understand our culture. The client doesn't share information properly – business requirement, the internal network, technology…We shall acquire necessary information through the client's training".

Four out of 13 people (31%) reported that project management, staff maintenance, and requirement definition were CSFs in the GSO model. A GSO provider's process consultant argued that project management could improve the quality of the delivery. He said:

> "Project management needs to be improved to make sure that information can be clarified on time. For example, who holds the responsibility, what the detailed tasks are. Communication made at the management level should be shared with teams at the project level…Offshore project management should be handled by the client solely – the client does not need to know how it works. The client's project management should be based on outcomes".

A GSO provider's onshore systems analyst talked about requirement definition. He said:

> "The client needs to clarify their requirements and define the Spec as clear as possible, for example, what needs to be done onsite, what should be sent to offshore…We expect that the client staff can specify their work to a very detailed degree".

A GSO provider's systems analyst talked about the development framework. He said:

> "As for the development process, it usually depends on the client's development method. If the clients do not have any framework, the provider will recommend theirs, e.g. CMMI/ISO. However, if the GSO engagement is at strategic level, then the provider would design a better process for its clients".

A domestic supplier's lead business analyst particularly pointed out the importance of maintaining in-house staff. He said:

> "For IT services, timescale is always the most important thing to bear in mind. In today's changeable market, doing outsourcing really requires the help of in-house staff. For example, why Project C* is likely to be canned after the client has invested millions of pounds? The business wants the product; however the IT cannot deliver it on time. Why? In-house professionals and domestic suppliers have the knowledge to deliver, however they have been either made redundant or removed from the project…Ironically, the provider without correct expertise has been chosen to complete the project".
>
> * Project C quoted in this chapter equals to Project C studied in Chapter Four

5.4.4.3 Discussion of Question Three

Interview Question Three mainly looks into CSFs which relate to issues identified in the previous two interview questions. According to the findings in section 5.4.4.1 and section 5.4.4.2, interviewees have discussed five types of CSFs, these are: project arrangements, relationships management, development processes, project and people management, and communications. Interestingly, when dividing the findings into two interview groups (e.g., GSO clients and GSO providers), it is evident that:

1) People from **the client group** mainly focused on how to improve *the client's control* as well as *the collaboration* in GSO projects, thus the client group paid extra attention to communicative factors, managerial factors, and measurement factors in the development;

2) Whereas interviewees from **the provider group** mostly considered factors that could enhance *the performance of the development*, hence they focused on discussing factors such as relationship management in the GSO collaboration, communications during the development, and project/people management.

To sum up, based on the above findings, most of the reported CSFs relate to topics such as how to improve the GSO project management and the control over GSO providers, how to establish communications and relationship between different development parties, and how to measure the delivery and its quality in the development. Findings in this question correspond with those from overviews (section 5.4.2) advantages/disadvantages (section 5.4.3) discussed in the previous two interview questions; what is more, CSFs recognised in Question Three suggest that more thorough questions are required in the online questionnaire survey (see Chapter Six) to verify the results.

5.4.5 Interview Question Four

The fourth question: From a GSO client/provider's perspective, how would you rate the following development phases/factors in your experiences of GSO projects – please provide rating to both GSO clients as well as GSO providers? (For example, key phases in SDL, the quality of the delivery, project satisfaction, and project management – on a scale of 1 to 5, as 1 is very poor and 5 is excellent, 0.5 is allowed)

This question is close-ended and asks the interviewees to give ratings towards several key development phases (e.g., requirements capture, analysis and design, implementation, and verification). Statistical analysis of the interview results can identify the performance of key development phases in GSO projects. Results of this question can also enrich the author's knowledge of how to develop survey questions and guidelines that would be utilised in the GSO online questionnaire survey (see Chapter Six).

According to Gregor (2006), systems development lifecycle normally contains *six* development phases – requirements capture, analysis & design, implementation (coding and testing), deployment, verification, and support & maintenance. Amongst these phases, four stages (e.g., requirements capture, analysis & design, implementation – coding and testing, and verification) are critical to the success of the development (Merrick 2005). Furthermore, according to Cullen *et al.* (2005), when verifying the performance of a software outsourcing project, three performance factors (e.g., *the delivery quality*, *project satisfaction*, and *project management*) are frequently used by GSO clients (see similar discussions in section 2.4.6). Hence, with aims of studying the interviewees' opinions on the performance of the development, the author requests the interviewees to rate on four key development phases (including three performance factors in the phase of verification) in interview Question Four. Noticeably, due to some companies' policies and various project duties, several interviewees refused to give their ratings to some development phases or performance factors during the interviews (see explanations from section 5.4.5.1 to section 5.4.5.9).

5.4.5.1 Requirements capture

Just over half of the participants (n = 14, 54%) gave rating to the initial development phase, compared with 12 people (46%) who did not comment on this phase due to reasons such as irrelevant job responsibilities and company policies. Figure 5.15 presents the interviewees' rating on the requirements capture phase.

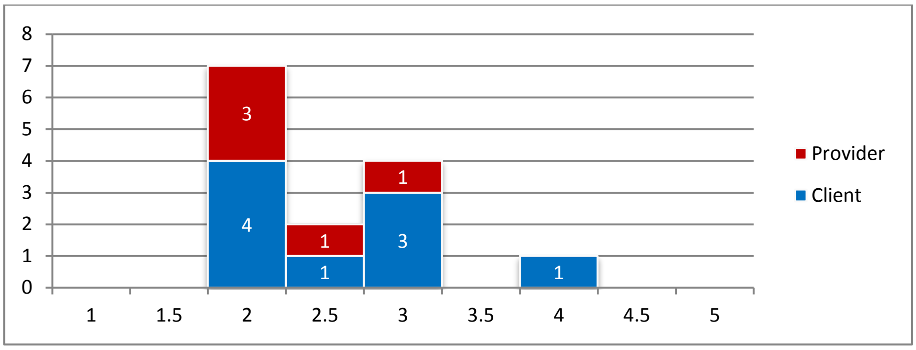


Figure 5.15: The interviewees' rating on requirements capture

According to the diagram above, it is clear that, on a scale of 1 to 5 (1 is very poor and 5 is excellent, a half interval is allowed), the majority (13 out 14, 93%) of the respondents, who had commented on this development phase, rated requirements capture from 2 (poor) to 3 (fair); amongst them, 54% (n = 7) believed that the performance was poor; 31% (n = 4) claimed that the phase in their experiencing GSO projects was fair (3 on the scale). Only one respondent gave good rating to this phase. The mean of the interview respondents' rating for requirements capture is 2.6, which is *just below fair*.

Figure 5.16 presents the ratings provided by interviewees according to their job responsibilities in GSO projects, i.e. the development group, the managerial group, and the consultancy group.

According to the diagram, only *three* developers (21%) commented on this phase, the mean of these three people's rating is 3 (*fair*). *Five* managers (36%) have given their rating (ranged from 2 to 3) and the mean of this group's rating is 2.3 (*just above poor*). *Six* consultants (43%) rated on this phase (ranged from 2 top 3) and the mean of this group's rating is 2.4 (*just above poor*). The ratings indicate that the interview respondents believed that this development phase was performed somewhat satisfactory. However, for people from the managerial group and the consultancy group, their ratings suggested that the performance of requirements capture was *just above poor*.

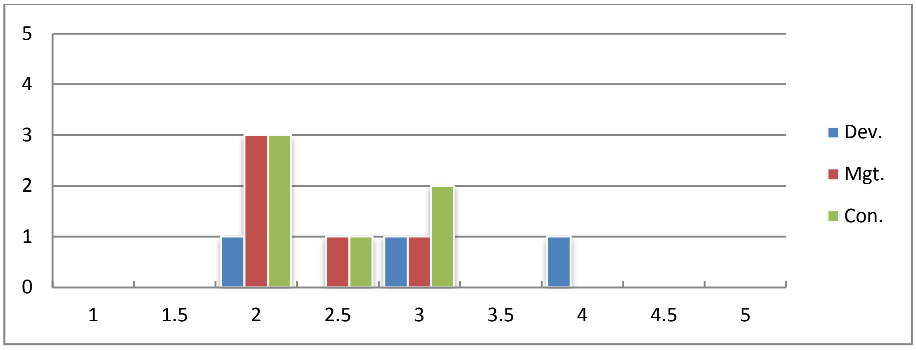


Figure 5.16: Different interview groups' rating on requirements capture

5.4.5.2 Analysis and design

Most of the interviewees (n = 21, 81%) have rated the second development phase – analysis and design. *Five* persons (19%) did not comment on this phase. Figure 5.17 presents the rating provided by these 21 respondents for the phase of analysis and design.

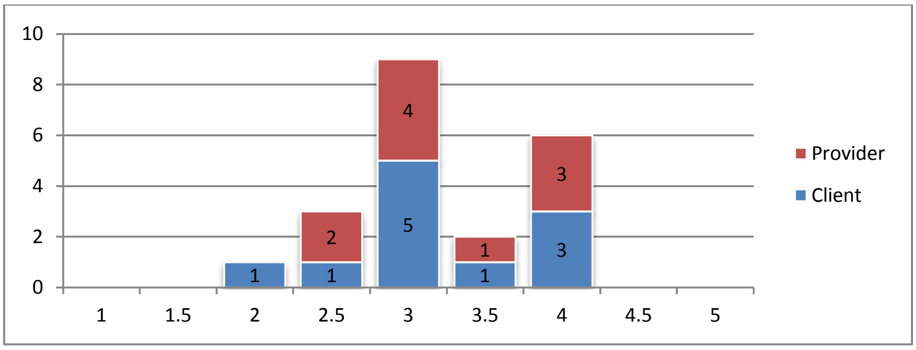


Figure 5.17: The interviewees' rating on analysis & design

The above diagram indicates that the majority (17 out 21, 81%) of the respondents' rated this phase between 3 (fair) and 4 (good). Amongst them, 53% (n = 9) reported that analysis & design was performed fairly (3 on the scale) in GSO projects; around 41% (n = 6) claimed that this phase was carried out at a good standard (4 on the scale); and only *four* people (19%) thought that the performance of this phase was below fair. The mean of the respondents' rating for this development phase is 3.2 – *just above fair*.

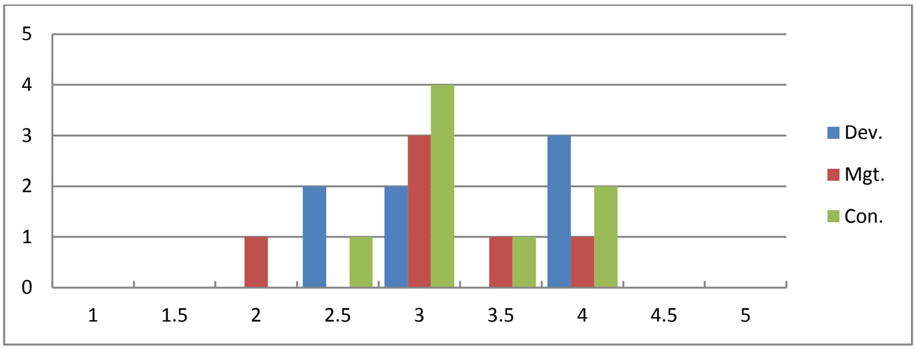


Figure 5.18: Different interview groups' rating on analysis & design

Figure 5.18 presents three different interview groups' ratings on analysis and design. According to the diagram, *seven* developers (41%) have commented on this phase and their rating is ranged from 2.5 to 4; the mean of this group's rating is 3.3 – *just above fair*. *Six* managers (29%) have given their rating (ranged from 2 to 4) and the mean of their rating is 3.1, *just above fair*. *Eight* consultants (38%) rated on this development phase (ranged from 2.5 to 4) and the mean is 3.3 – *just above fair*. The rating of analysis and design suggests that the majority of the interview respondents (n = 17, 81%) thought that the performance of this phase was somewhat satisfactory; only *four* respondents thought that this development was carried out below fair. The finding indicates that analysis and design was carried out *reasonably acceptable* in GSO practices.

5.4.5.3 Implementation – development except testing

In the development, different levels of testing (e.g., unit testing and system testing) often operate in dissimilar development phases by varied development parties (Haag *et al.* 2006). For example, in GSO practices, unit testing is often carried out by the provider's offshore teams in the implementation, whereas system level testing normally involves development teams such as the client's in-house testing team, the GSO provider's onshore project team, and sometimes the client's business sector (Tiwari 2009). Thus, in order to differentiate the performance of the standard development work (e.g., coding and debugging) from testing tasks, the interviewer separated the development work from testing in the GSO interviews. In this section, the interviewees were asked to rate merely on the development work (excluding testing) in the implementation phase.

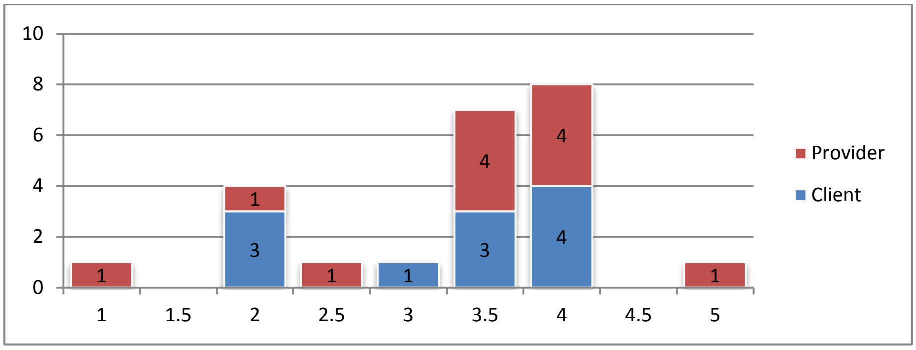


Figure 5.19: The interviewees' rating on the development work except testing

23 people (89%) gave rating towards the development work (except testing) in the phase of implementation, followed by only *three* persons (11%) who did not comment on this topic. Figure 5.19 presents the respondents' rating of the development work in GSO projects. The diagram shows that the majority (21 out 23, 81%) of the respondents thought that the development work was performed between 2 (poor) and 4 (good). Interestingly, an interviewee from the provider group rated the development work as very poor (1 on the scale), compared with one provider also gave excellent rating (5 on the scale). Amongst these respondents, 17 people (74%) thought that the development was carried out *between fair and good* (3.5 on the scale), followed by five people (22%) rated *poor* (2 on the scale). Noticeably, 9 people (39%) believed that the development was conducted well. The mean of the rating is 3.26, *between fair and good*.

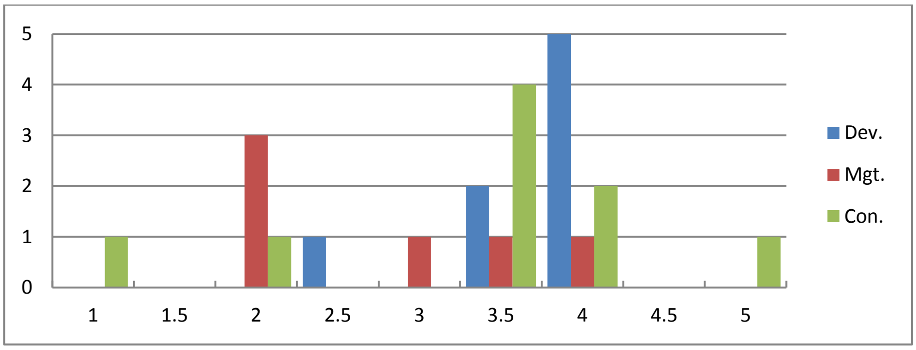


Figure 5.20: Different interview groups' rating on GSO development except testing

Figure 5.20 presents three different interview groups' rating on the development in GSO projects. According to the diagram above, *eight* developers (35%) gave their rating (ranged from 2.5 to 4) and the mean of this group's rating is 3.7, *just below good*. *Six* managers (26%) rated on this phase (ranged from 2 to 4) and the mean of their rating is 2.8, *just below fair*. *Nine* consultants (39%) provided rating, which is widely ranged from 1 to 5; the mean of this group's rating is 3.3, *just above fair*. The results suggest that most of the respondents (n = 17, 74%) claimed that the development work (except testing) in GSO projects had been conducted *reasonably well*. However, when analysing the ratings according to interview groups, varied results emerged:

1) **The development group** rated much higher than the other two groups;
2) **The managerial group** gave much lower rating than the other two groups; and,
3) Although **the consultancy group**'s rating is widely different, most of them stated that the GSO development was performed beyond acceptable.

The above discussion indicates that people with different project responsibilities had diverse views on the performance of the implementation phase (except testing) in GSO practices. Generally speaking, this phase was conducted reasonably satisfactory in practice.

5.4.5.4 Implementation – testing

Over 85% of the interviewees (n = 22) rated on the testing work in GSO projects, followed by only four people (15%) who did not comment. Figure 5.21 presents the respondents' rating on testing according to their experiencing GSO projects. According to the diagram, the majority (21 out 22, 95%) of the respondents rated the testing work beyond fair. Amongst them, 62% (n = 13) trusted that testing was performed *between good and excellent* (4 and 5 on the scale). Still, around 27% of the interview respondents (n = 6) thought that testing work was only conducted *fair* (3 on the scale) in GSO projects. Noticeably, one person from the provider group had rated the testing work as *poor* (2 on the scale). The mean of the rating is 3.76, just below *just good*.

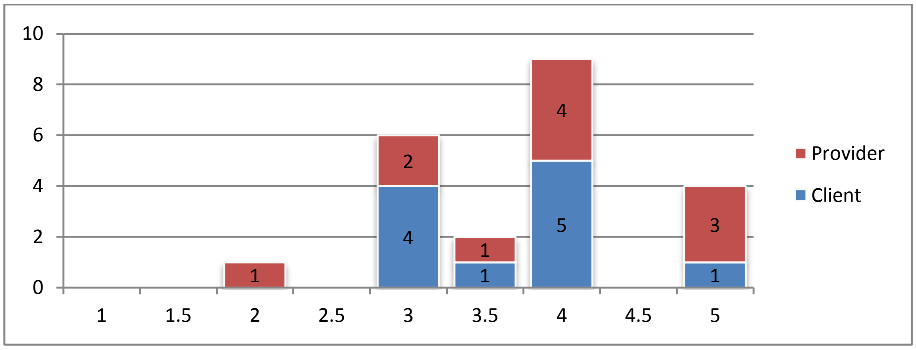


Figure 5.21: The interviewees' rating on testing

Figure 5.22 below shows three different interview groups' rating on the testing work in GSO projects. According to the diagram below, *eight* developers (36%) gave their rating (ranged from 3 to 4) and the mean of this group's rating is 3.7, *just below good*. *Six* managers (27%) rated on testing (ranged from 2 to 5) – the mean of their rating is also 3.7, *just below good*. *Eight* consultants (36%) provided rating, which is ranged from 3 to 5 – the mean of this group's rating is 4, *good*.

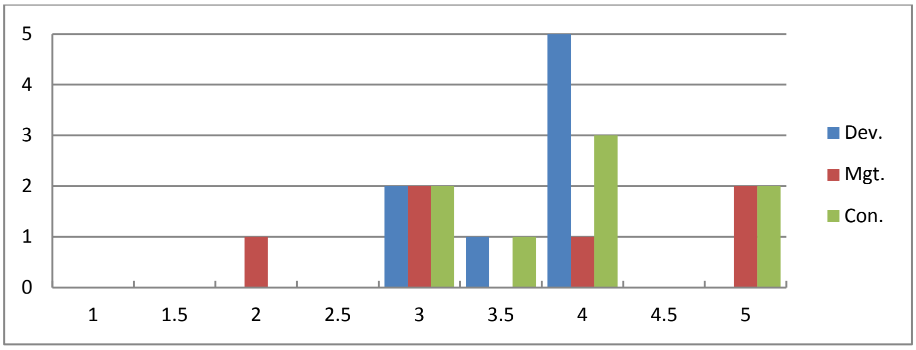


Figure 5.22: Different interview groups' rating on testing

The above results suggest that testing had the best performance amongst examined phases. Only one manager thought that testing was carried out poorly. Many respondents (n = 13, 62%) claimed that testing work was conducted excellently (ranged from 4 to 5), which indicates that GSO workers agreed that the performance of testing was beyond satisfactory.

5.4.5.5 Discussion of key development phases

The first part of interview Question Four investigates three key development phases in the software development lifecycle. For the performance of three development phases (the phase of implementation is divided into two parts, development excluding testing and testing) in GSO practices, the interviewees' opinions are summarised in Table 5.10 below.

Table 5.10: The performance of key development phases in GSO projects

Key Development Phases	Interview Groups	Interviewees' Rating	RAG Status
Requirements capture	**Phase one overall rating**	**Just below fair**	
	The development group	1) Fair	
	The managerial group	2) Just above poor	
	The consultancy group	3) Just above poor	
Analysis & design	**Phase two overall rating**	**Just above fair**	
	The development group	4) Just above fair	
	The managerial group	5) Just above fair	
	The consultancy group	6) Just above fair	
Implementation (excluding testing)	**Phase three overall rating**	**Between fair and good**	
	The development group	7) Just below good	
	The managerial group	8) Just below fair	
	The consultancy group	9) Just above fair	
Implementation – testing	**Phase four overall rating**	**Just below good**	
	The development group	10) Just below good	
	The managerial group	11) Just below good	
	The consultancy group	12) Good	

In the table, interview participants' ratings on key development phases are divided into three groups (based on the interviewees' development responsibilities). It suggests that, generally speaking, the managerial group and the consultancy group gave lower ratings to the GSO development work than those given by the development group. In the above table, *fair* and *good* ratings are coloured amber and green respectively, whereas *poor* rating is coloured in red in the RAG Status column (red status means *at risk*, amber status means *maybe at risk*, and green status means *within plan*). The interviewees' ratings indicate that the phase of *implementation* (including testing) was performed better than other tested phases:

1) **Requirements capture** was performed *below fair* in practice. Especially for managers and consultants, most of them stated that the performance of this phase was under their expectations.

2) For **analysis and design**, people from different interview groups claimed that this phase was performed *reasonably acceptable* (overall rating is above fair).

3) Interestingly, the interview results indicate that **implementation (without testing)** was only rated as *between fair and good* by the interview participants. However, when dividing the results according to interviewees' GSO project responsibilities, it is evident that many developers thought that the implementation phase was carried out satisfactorily, whereas many managers claimed that this phase was conducted under their expectations. Many people from the consultancy group thought that this phase was performed relatively acceptable.

4) **Implementation (testing)** was performed better than other key phases. Most of the interviewees were *satisfied* with the performance of the testing work, which implies that testing was widely treated as one of the well-performed parts in GSO practices.

5.4.5.6 Verification – the quality of the delivery

From section 5.4.5.5 to section 5.4.5.7, the interviewer asked the participants to rate three performance factors in order to verify the performance of their experienced GSO. Also, these interviewees were requested to give rating to both the provider group as well as the client group, thus their ratings could differentiate the performance between two GSO parties. For example, interviewees from GSO client companies were asked to give rating to performance of their companies and their GSO services providers. For the first performance factor – the delivery quality, 89% of the interviewees (n = 23) had shared their opinions, compared with only *three* people (11%) who did not comment. According to the overall results, the mean of the client's delivery quality is 2.9, *just below fair*; whereas the mean of the provider's delivery quality is 3.5, *between fair and good*.

5.4.5.6.1 The delivery quality for the client group and the provider group

Figure 5.23 presents the interviewees' rating on the quality of the client's delivery. The left part of the diagram shows the ratings provided by the interviewees from GSO clients (n = 11, 50%); and the right part of the diagram shows the ratings given by the participants from GSO providers (n = 11, 50%).

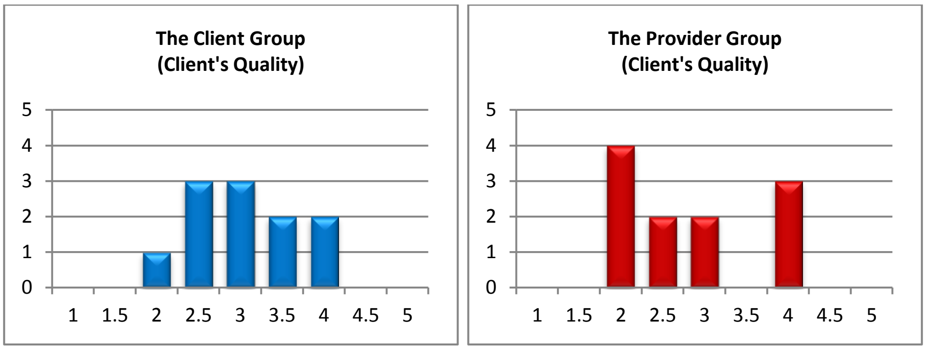


Figure 5.23: The interviewees' rating on the client's delivery quality

It is observable that people from the client group's rating on the client's delivery quality ranged from 2 (poor) to 4 (good). Most of them (n = 8, 73%) gave fair rating to this factor (from 2.5 to 3.5) and the mean of the client group's rating is 3.05, *just above fair*. The provider group, on the contrary, rated somewhat differently compared with the client group. The provider group's rating also ranged from 2 to 4. However, over half of them (n = 6, 55%) thought that the client's delivery quality was below fair (from 2 to 2.5), which makes the mean of the rating *just below fair* (mean = 2.8).

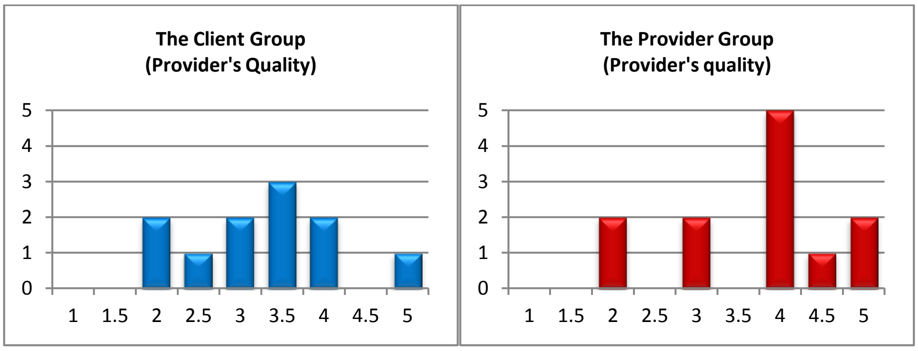


Figure 5.24: The interviewees' rating on the provider's delivery quality

Figure 5.24 shows the interviewees' rating on the quality of the provider's delivery. The left part of the diagram presents the rating provided by the client group (n = 11, 50%); and the right part of the diagram presents the rating given by the provider group (n = 11, 50%). According to the above diagram, it is evident that the client group's rating on the provider's delivery quality ranged from 2 (poor) to 5 (excellent). Most of them (n = 8, 73%) gave rating ranging from 2.5 to 4; the mean of the client group's rating is 3.27, *just above fair*. The provider group's rating also ranged from 2 to 5.

However, most of the interviewees from this group (n = 8, 73%) thought that the provider's delivery quality was between good (2 on the scale) and excellent (5 on the scale). Therefore, the mean of the provider group's rating is higher than that of the client group – 3.7, *just below good*.

5.4.5.6.2 Different interview groups' rating on the delivery quality

Figure 5.25 presents three different interview groups' rating on the delivery quality in GSO projects. According to the diagram below, the three interview groups' rating is as follows:

1) **Nine developers** (40%) gave their rating (ranging from 2 to 5) and the mean of this group's rating is 3.5, *just between fair and good*. However, within these, the mean of the client developers' rating (3.2, *just above fair*) is lower than that of the provider group's rating (3.8, *just below good*).

2) **Seven managers** (30%) rated on the delivery quality (ranging from 2 to 4) – the mean of their rating is 3, *fair*. Within these managers, ratings provided by the client managers are nearly the same compared with those given by the provider managers. The mean of the client's managerial group is 3, and the mean of the provider's managerial group is 3.1.

3) **Seven consultants** (30%) provided rating ranged from 2 to 5; the mean of this group is also 3, *fair*. It is interesting to see that the client's consultants (mean = 3.3, *just above fair*) rated fairly higher than those in the provider group (mean = 2.8, *just below fair*).

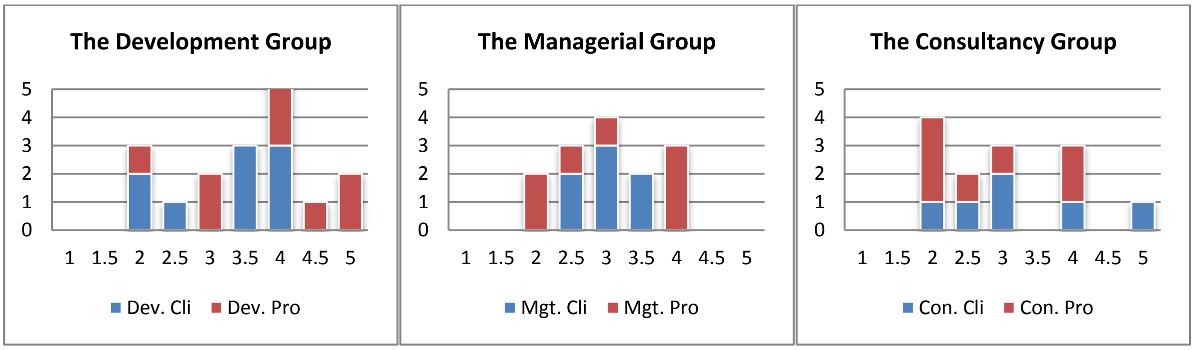


Figure 5.25: Different project groups' rating on the delivery quality

5.4.5.6.3 Discussion on the delivery quality

The above findings suggest that people from the client group thought that the delivery quality in their GSO project was acceptable (mean = 3.2), although the quality of the provider's delivery (mean = 3.3) is somewhat higher than the client's (mean = 3.1). For the interviewees from the provider group, they also reported that the quality of the delivery in GSO practices was acceptable (mean = 3.3); however, the provider's quality (mean = 3.7) is much higher than the client's (mean = 2.8), which clearly indicates that the quality of the provider's delivery was observably higher than that of the client.

Table 5.11 below summarises the delivery quality reported by interview participants. The RAG Status column in the table below suggests that the provider's delivery quality was fairly satisfactory (coloured green), whereas the client's was just acceptable (coloured amber).

Table 5.11: The delivery quality reported by the client group and the provider group

Performance Factor	Client/Provider	Interview Groups	Ratings	RAG Status
The quality of the delivery	The client's delivery quality	**Overall rating**	**Just below fair**	
		The client group	1) Just above fair	
		The provider group	2) Just below fair	
	The provider's delivery quality	**Overall rating**	**Between fair and good**	
		The client group	3) Just above fair	
		The provider group	4) Just below good	

When looking into the delivery quality according to the interviewees' responsibilities in GSO projects, it is evident that the development group rated higher than other two groups – overall, the development group claimed that the delivery quality in GSO projects is *between fair and good* (coloured green in the RAG column in Table 5.12 below). However, both the managerial group and the consultancy group thought that the quality was just acceptable – coloured amber in the table.

Table 5.12: The delivery quality reported by interviewees with different GSO responsibilities

Performance Factor	Interviewees' GSO Responsibility	Ratings	RAG Status
The quality of the delivery	**Development group's overall rating**	**Between fair and good**	
	The client's development group	1) Just above fair	
	The provider's development group	2) Just below good	
	Management group's overall rating	**Fair**	
	The client's managerial group	3) Fair	
	The provider's managerial group	4) Just above fair	
	Consultancy group's overall rating	**Fair**	
	The client's consultancy group	5) Just above fair	
	The provider's consultancy group	6) Just below fair	

5.4.5.7 Verification – the project satisfaction

This section introduces the interviewees' rating on project satisfaction based on their experiences of GSO projects. Similar to the last performance factor, the interview participants were required to give ratings for both GSO clients as well as GSO providers. All interviewees (n = 26) have rated.

5.4.5.7.1 The project satisfaction for the client group and the provider group

Figure 5.26 shows the interviewees' rating on project satisfaction for GSO clients. The left part of the diagram shows that the client group's rating widely ranged from 1 (very poor) to 5 (excellent); however, the majority of the respondents (n = 11, 85%) thought that project satisfaction for the client group was between 1 (very poor) and 3 (fair). Hence, the mean of the client group's rating is 2.5, *between poor and fair*.

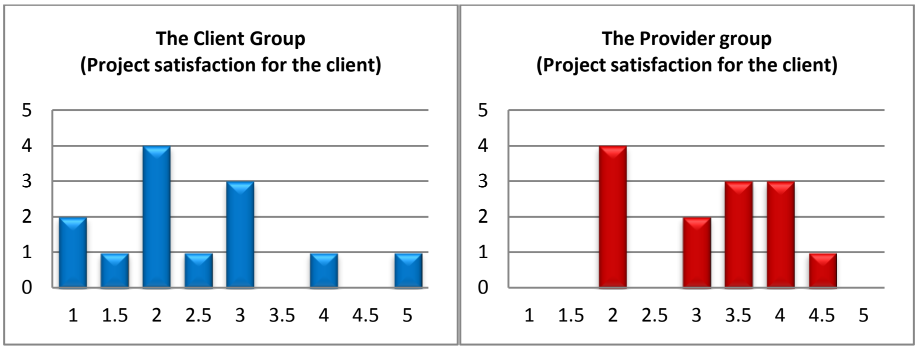


Figure 5.26: The interviewees' rating on project satisfaction for the client

The right part of Figure 5.26 shows that the provider group's rating, which ranged from 2 (poor) to 4.5 (between good and excellent). It shows that many people from the provider group (n = 9, 69%) rated between 3 (fair) and 4.5 (between good and excellent) for the provider's work; and the mean of this group's rating is 3.2, *above fair*.

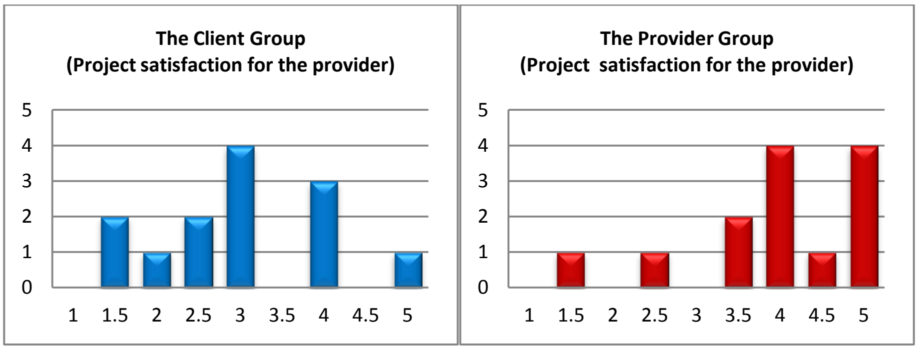


Figure 5.27: The interviewees' rating on project satisfaction for the provider

Figure 5.27 shows the interviewees' rating on project satisfaction for the provider in GSO projects. The left part of the diagram shows that the client group's rating on this factor widely ranged from 1.5 (between very poor and poor) to 5 (excellent). Many respondents from the client group (n = 9, 69%) believed that project satisfaction for the provider was between 1.5 and 3 (fair). Hence, the mean of this group's rating is 3, *fair*. Different to the client group, the right part of Figure 5.27 shows that the provider group's ratings are reasonably higher than those given by the client group. According to the diagram above, it is noticeable that the GSO providers' ratings are widely ranged from 1.5 to 5 (excellent). The majority of the providers (n = 11, 85%) rated between 3.5 (between fair and good) and 5. Thus, the mean of this group's rating is 3.96, *slightly below good*.

5.4.5.7.2 Project satisfaction according to different interview groups

Figure 5.28 shows three different interview groups' rating on project satisfaction in GSO projects. The three groups' rating is described as follows:

1) **Ten developers** (38%) gave their rating (ranged from 1.5 to 5) and the mean of this group's rating is 3.3, *just above fair*. However, within this group, the client developers' rating (2.9, *just below fair*) is noticeably lower than the rating provided by the developers from the provider group (3.6, *just below good*).

2) **Eight managers** (31%) rated on this factor (ranged from 1 to 4.5) – the mean of their rating is 2.9, *just below fair*. Within the managerial group, rating provided by the client managerial group is very different to the provider managerial group – the mean of the client managers' rating is only 2.1 (*just above poor*) – much lower than the mean of the provider managers' rating (3.6, between fair and good).

3) **Eight consultants** (31%) provided rating ranging from 1.5 to 5; the mean of this group is 3.3, *just above fair*. Within the group, it is interesting to see that consultants from the client group (mean = 3.1, *just above fair*) had different views on this performance factor, whereas consultants from the provider group (mean = 3.5, *between fair and good*) mostly rated this factor between 3 and 4.

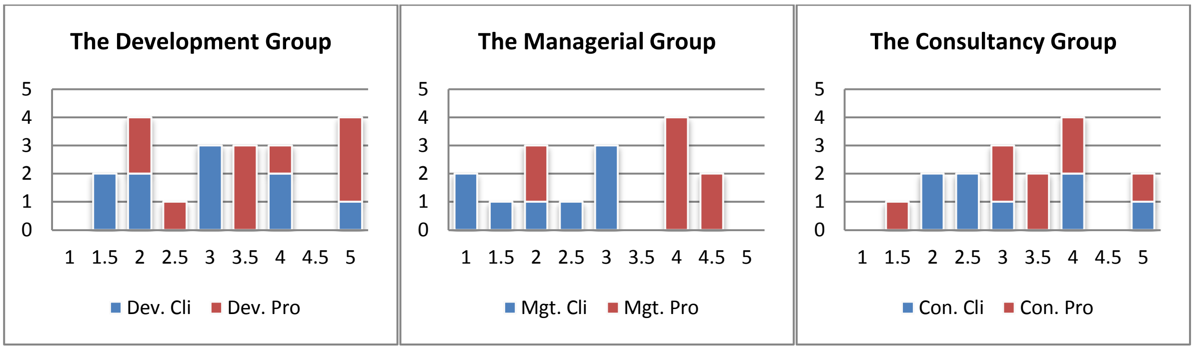


Figure 5.28: Different interview groups' rating on project satisfaction

5.4.5.7.3 Discussion on the project satisfaction

Table 5.13 summarises the discussion of the project satisfaction of the client group and the provider group, which suggests that the project satisfaction for GSO clients was not entirely acceptable (*just below faire*, coloured with amber in the table below); whereas project satisfaction for GSO providers was noticeably higher than GSO clients (*between fair and good*, coloured with green).

Notably, for the interviewees from the client group, most of them pointed out that the project satisfaction for GSO clients was unsatisfactory (*between poor and fair*, coloured with red), compared with interviewees from the provider group claimed that project satisfaction for GSO providers was satisfactory (*just below good*, coloured with green). These findings indicate that most of the interviewees were more satisfied with the quality of GSO providers' work than the clients'.

Table 5.13: The project satisfaction reported the client group and the provider group

Performance Factor	Client/Provider	Interview Groups	Ratings	RAG Status
Project satisfaction	Project satisfaction for the client	**Overall rating**	**Just below fair**	
		The client group	1) Between poor and fair	
		The provider group	2) Just above fair	
	Project satisfaction for the provider	**Overall rating**	**Between fair and good**	
		The client group	3) Fair	
		The provider group	4) Just below good	

When looking into the performance factor according to interviewees' project responsibilities (see results in Table 5.14), it is understandable that the managerial group rated lower than other two groups – generally speaking, managers claimed that the project satisfaction was *below fair* (coloured amber in the table below); whereas many developers and consultants thought that the factor was *above fair*. Especially for managers from client companies, their ratings (*just above poor*, coloured red) were much lower than those from provider companies (*between fair and good*, coloured green).

Table 5.14: The project satisfaction reported by interviewees with different GSO responsibilities

Performance Factor	Interviewees' GSO Responsibility	Ratings	RAG Status
Project satisfaction	**Development group's overall rating**	**Just above fair**	
	The client's development group	1) Just below fair	
	The provider's development group	2) Just below good	
	Management group's overall rating	**Just below fair**	
	The client's managerial group	3) Just above poor	
	The provider's managerial group	4) Between fair and good	
	Consultancy group's overall rating	**Just above fair**	
	The client's consultancy group	5) Just above fair	
	The provider's consultancy group	6) Between fair and good	

The findings imply that although the development group, the consultancy group and the managerial group had diverse opinions on the project satisfaction of their experienced GSO projects, it was evident that the quality of the provider's delivery had been rated higher than the client's delivery in GSO practices; and most of the clients' managers were not satisfied with their GSO projects.

5.4.5.8 Verification – project management

This section introduces the interviewees' rating on project management in GSO practices. For the client's project management, 18 interviewees (69%) have rated on this factor and *eight* people (31%)

did not comment. For the provider's project management, 22 interviewees (85%) have commented, followed by *four* people (15%) who did not answer.

5.4.5.8.1 The client group and the provider group's project management for

Figure 5.29 shows the interviewees' rating on the client group's project management. The left part of the diagram presents GSO clients' ratings, which is ranged from 2 (poor) to 5 (excellent). The majority of them (n = 9, 82%) claimed that the client's project management was between 2 (poor) and 3 (fair) and the mean is 2.9 (*just below fair*). The right part of the diagram shows that the provider group's rating on the client's project management. The rating is ranged from 2 (poor) to 4 (good). Most of the providers' (n = 7, 78%) ratings are between 3 and 4 – the mean is 3.3, *just above fair*.

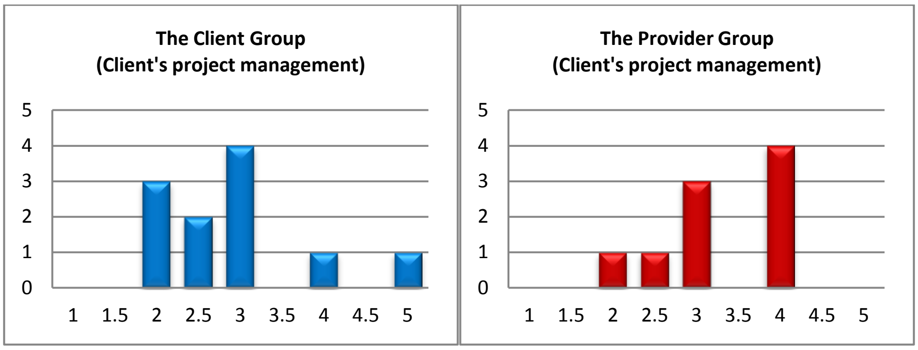


Figure 5.29: The interviewees' rating on the client's project management

Figure 5.30 shows the interviewees' ratings on the provider's project management. The left part of the diagram shows that the clients' ratings are ranged from 2 (poor) to 4 (good). Many people from the client group (n = 8, 73%) claimed that the provider's project management was between 2 and 3 – the mean is 3.3, *just above fair*. The right part of the diagram shows GSO providers' ratings, which was noticeably higher than the ratings given by the client group. Although the rating widely ranged from 1.5 to 4.5, the majority of the provider group (n = 8, 89%) rated between 3 and 5 – the mean of the provider group's rating is 3.7, *just below good*.

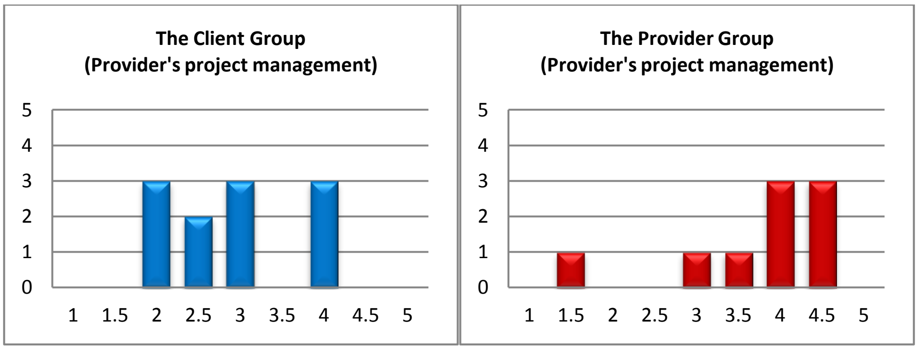


Figure 5.30: The interviewees' rating on the provider's project management

5.4.5.8.2 Project management according to different interview groups

Figure 5.31 presents three different interview groups' rating on project management in GSO projects. According to the diagram below, three groups' ratings are summarised:

1) **Nine developers** (41%) were relatively satisfied with the project management in their GSO projects (mean = 3.6, *between fair and good*). Within this group, developers from GSO clients thought that the project management was acceptable (mean = 3.3, *just above fair*), which is noticeably lower than developers from GSO providers (mean = 4, *good*).

2) **Six managers'** (27%) ratings on the project management are ranged from 2 to 4 – the mean is 2.9, *just below fair*. Noticeably, within the managerial group, rating provided by the client managers (mean = 2.3, *just above poor*) is much lower than the provider managers' (mean = 3.5, *between fair and good*).

3) **Seven consultants** (32%) provided ratings ranging from 1.5 to 4.5. The mean of this group's rating is 3, *fair*. Within the group, consultants from the client group (mean = 2.9, *just below fair*) had more or less the same opinions on the project management as the provider group's consultant (mean = 3.1, *just above fair*).

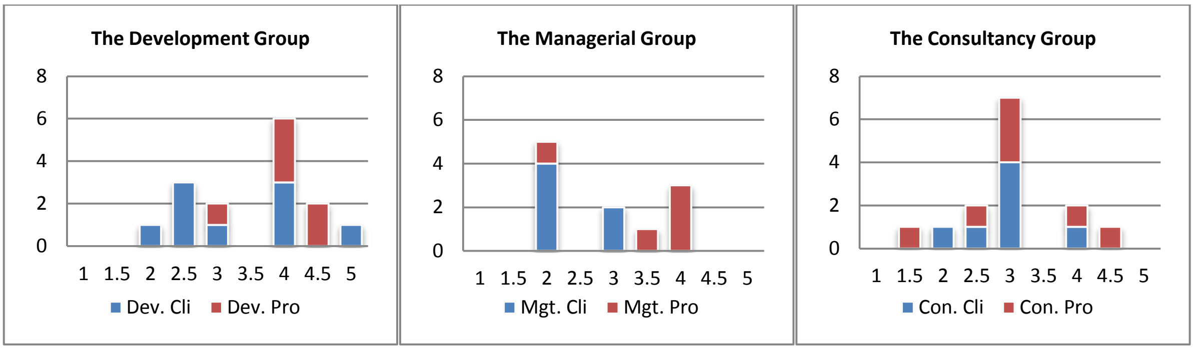


Figure 5.31: Different interview groups' rating on project management

5.4.5.8.3 Discussion on the delivery quality

Table 5.15 summarises the discussion on project management in GSO projects. In the table, the rating of GSO clients' project management was relatively acceptable (*just above fair*), which is lower than the rating of providers' project management (*between fair and good*). Especially for interviewees from provider companies, people stated that their project management was satisfactory (*just below good*), which is noticeably better than the client's (*just above fair*). The findings indicate that most of the interview respondents claimed that project management was performed beyond acceptable; however, the performance of providers' project management was performed better than the client's.

Table 5.15: Project management rated by the client group and the provider group

Performance Factor	Client/Provider	Interview Groups	Ratings	RAG Status
Project management	The client's project management	**Overall rating**	**Just above fair**	
		The client group	1) Just below fair	
		The provider group	2) Just above fair	
	The provider's project management	**Overall rating**	**Between fair and good**	
		The client group	3) Just above fair	
		The provider group	4) Just below good	

When looking into project management according to different interviewees' GSO project responsibilities, it is observable that the development group rated considerably higher than other two groups: the development group reported that project management in GSO projects was *between fair and good*, whereas both the managerial group and the consultancy group thought that project management was performed just *acceptable* (see Table 5.16 below). It seems that, beyond the operation level, managers and consultants were not entirely satisfied with the performance of project management in GSO practices; furthermore, as generally GSO providers rated higher than GSO clients, it implies that GSO providers might implement better project management activities in software offshore outsourcing projects.

Table 5.16: Project management rated by interviewees with different GSO responsibilities

Performance Factor	Interviewees' GSO Responsibility	Ratings	RAG Status
Project management	**Development group's overall rating**	**Between fair and good**	
	The client's development group	1) Just above fair	
	The provider's development group	2) Good	
	Management group's overall rating	**Just below fair**	
	The client's managerial group	3) Just above poor	
	The provider's managerial group	4) Between fair and good	
	Consultancy group's overall rating	**Fair**	
	The client's consultancy group	5) Just below fair	
	The provider's consultancy group	6) Just above fair	

5.4.5.9 Discussion of performance factors

Interview Question Four investigates interviewees' views on the performance of three key development phases in GSO projects as well as three performance factors when verifying the outcome of GSO projects. For three phases (e.g., requirements capture, analysis and design, implementation, and verification), the interview findings are specified in section 5.4.5.5.

During the survey period, many interview participants reported that early development stages of GSO projects (e.g., requirement capture, systems analysis and design) were not performed well, whereas the phase of implementation was conducted relatively satisfactory in practice. On the basis of the research findings reported in the preliminary industrial study (e.g., development styles and the maturity of development processes), results of this interview question indicate that extra attention shall be paid on early development phases in order to seek issues that had caused the unsatisfactory performance in GSO practices. For performance factors in the phase of verification, it is observable that the interviewees' views are differentiated between different development groups:

1) **The quality of the delivery** – The interviewees have given mixed reactions to this factor. Although most of the interviewees claimed that the quality of the delivery in GSO projects was acceptable, the provider's delivery quality was noticeably higher than the client's. The development group gave noticeably high rating to this factor, whereas people from the managerial and consultancy groups thought that the delivery quality was just acceptable. The findings indicate that people were not fully satisfied with the delivery quality in GSO practices.

2) **Project satisfaction** – It is evident that the project satisfaction for GSO providers was reasonably higher than that for GSO clients, which suggests that most of the interviewees were more satisfied with the provider's project performance than the client's. Although developers, consultants and managers had diverse opinions on this performance factor, generally speaking, the project satisfaction for GSO providers' delivery in GSO practices was higher than that of GSO clients.

3) **Project management** – Similar to project satisfaction, the results suggest that although project management in general was performed relatively acceptable, the performance of the client's project management was not as good as the provider's. Many developers reported that their experienced project management in GSO practices was relatively satisfactory, whereas the consultancy group thought that project management was just acceptable and the managerial group was not satisfied with this factor. The finding advises that, at the operation level, project management was performed reasonably well; however, beyond the operational level, further exploration is needed to explore reasons that had caused the unsatisfied project management.

5.4.6 Interview Question Five

The fifth question: What would you suggest for your company's forthcoming GSO projects? (At the end of the discussion, ask whether or not other important issues or topics need to be mentioned before finishing the interview)

The last question asks the interviewees to provide suggestions for their companies' forthcoming GSO projects. Based on strengths and weaknesses discussed in Question Two, CSFs mentioned in

Question Three, and key development phases and various performance factors investigated in Question Four, what else shall be examined at the end of the interview.

5.4.6.1 Main recommendations

Due to the time limits in an interview, when discussing this question, the author usually required the interviewees to *briefly* discuss what can be improved in GSO practices and what types of suggestions could be provided by them. Figure 5.32 below illustrates some major suggestions reported by the interviewee participants, which include recommendations such as GSO project arrangements, further cost saving, project management, knowledge transfer, development framework, communications, and stricter contracts in GSO projects.

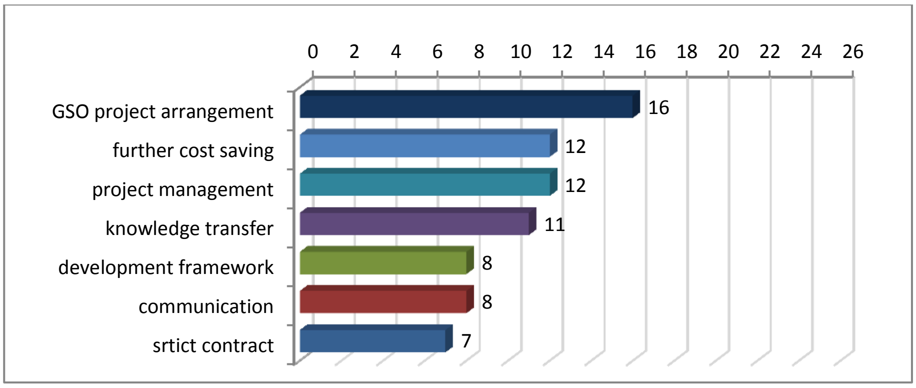


Figure 5.32: The interviewees' main suggestions for GSO projects in the future

According to the above diagram, 12 participants (46%) reported that actions should be taken to further cost saving and tighten project management. A client company's delivery manager said:

> "Management is crucial in outsourcing. Senior managers need to understand how to find a balance between price and quality; middle management needs to know the client should have total control over the provider; and the project manager needs to set a clear job boundary for the provider to follow…However, more importantly, we need to make our management more accountable, for example, through milestones, QA, measurement, etc..."

A domestic supplier's business analyst also talked about project management and GSO project arrangements. He said

> "Both the provider and the client should strictly follow the process. Onshore and offshore development frameworks need to have similar milestones and the same QA process. Let me give you an example, before a big release, one onshore provider staff members (just graduated from college) wrongly updated the client's commercial database and updated over 20 million customer records with dummy customer data used for training. This case would never happen if the provider staff followed the procedure and the client's project manager has better control…Interestingly, the client has CMM 5 and still did not prevent this mistake".

11 interviewees (42%) believed that knowledge transfer was a critical topic to consider for the GSO collaboration in the future. A GSO provider's onshore module leader said:

> "Knowledge transfer is crucial, as IT is always serving the business. Also, we have to understand how the business works in the client company…to communicate with the client needs business knowledge – otherwise we won't even understand what they are referring to".

Seven people (27%) stated that stricter contracts would benefit GSO projects as they could provide stricter measurement. An experienced business consultant said:

> "Customer involvement should be written in black and white, which will give more control to the client side and more responsibility to the provider…A very strict contract can punish the provider if they do not achieve the target. Therefore, we cannot simply give the project to the provider – we should prepare a stricter contract first".

5.4.6.2 Discussion of Question Five

Similar to the interview Question Three, these reported main suggestions can be divided into five categories (see the Table 5.17 for details). These suggestions can be seen as follows:

Table 5.17: Key suggestions reported in Interview Question Five

Project Domain	Key Suggestions
1. Project arrangements	1) Standardise the procedure for GSO project arrangements 2) Produce stricter contract 3) Refine GSO development framework
2. Relationship management	4) Provide training to transfer knowledge
3. Development Process	5) Further cost saving during the development
4. Communications	6) Improve communication channels
5. Project/people management	7) Tightening project/people management

1) **Project arrangements –** Standardising the procedure for project arrangements (n = 16, 62%), refining development framework (n = 8, 31%), and developing stricter contracts (n = 7, 27%);
2) **Relationship management –** Providing training to transfer knowledge (n = 8, 31%);
3) **Development processes –** Furthering cost saving in the development (n = 12, 46%);
4) **Communications** – Improving communication channels (n = 8, 31%); and,
5) **Project/people management** – Tightening project/people management (n = 12, 46%).

When comparing the suggestions with those in Question Three, these suggestions correspond with those identified CSFs, which mainly relate to project/people management, measurements in GSO practices, project control, and communications. The findings suggest that the following questionnaire survey shall continue to examine detailed project issues within five problem domains.

5.5 Findings and Conclusion

Chapter Five describes the GSO interview survey conducted in the detailed industrial study. The first half of the chapter introduces how the interview survey was designed, conducted, and analysed. Research findings are discussed in the second half of the chapter. In order to provide the richness of interviews, many important conversations in the interviews have been quoted. The overall finding indicates that many interviewees were *not* entirely satisfied with the performance of their GSO projects. It verifies the findings in the primary survey (section 1.2.2) and the literature review (section 2.3.4), which suggest that the GSO model is still maturing and more practical studies are required. The following sub-sections conclude the survey by discussing key indemnified issues, development areas for improvement, main advantages, and CSFs.

5.5.1 Key issues identified

Table 5.18 below summarises *24* key issues (similar reported issues are combined) reported in the interview survey. Similar to the framework produced in the preliminary industrial study (see section 4.6.1), *five* project domains are used to categorise these issues.

Table 5.18: Key issues in GSO projects reported by interviewees

Project Domain	Interview Group	Identified Issues
1. Project arrangements	GSO Clients	Project level contracts IT/IS skill loss Lack of business understanding
	GSO Providers	Low GSO service level
	UK's Domestic Suppliers	Losing flexibility of selecting GSO providers Unqualified provider staff Increasing hidden costs
2. Relationship management	GSO Clients	Dissimilar work styles Dissimilar work culture
	GSO Providers	Unsatisfied onshore and offshore collaboration
	UK's Domestic Suppliers	Lack of control over providers
3. Development Process	GSO Clients	Unsatisfied work quality Process and quality control
	GSO Providers	Insufficient requirement definition Poor process control
	UK's Domestic Suppliers	Poor quality of the delivery Poor requirements understanding Reduced delivery quality
4. Project/people management	GSO Clients	Poor providers' staff rotation policy Reduced quality of GSO providers' staff Lack of GSO related training
	GSO Providers	Inexperienced project management Lack of GSO related training Poor client and provider staff supervision
	UK's Domestic Suppliers	Low quality of GSO providers' staff Inexperienced GSO project management
5. Communications	GSO Clients	Poor client/provider communications Language barrier
	GSO Providers	Poor communications between different development parties
	UK's Domestic Suppliers	Poor business background and systems understanding

The table above shows that: 1) **GSO clients** mainly talked about issues such as project arrangements and people/project management; 2) **GSO providers** focused on development process and managerial issues; and, 3) **the domestic suppliers** discussed project arrangements and development process. After comparing these issues with those found in the multiple-case study and the literature review, the survey results can be developed into an issue framework:

1) **Project arrangements** – GSO providers thought that low service level prevented the clients from fully exploiting the GSO model. However, the domestic services suppliers claimed that higher service level would decrease the flexibility in GSO practices, which means that some unqualified provider staff could be introduced to GSO projects. Moreover, domestic suppliers pointed out that hidden cost should be carefully considered by the clients. Interviewees from GSO client companies also reported many project arrangement issues, such as project level contracts, possible skill loss, and lack of business/systems understanding. Interestingly, in comparison with the issue framework established in the preliminary study, few people had talked about development process issues (e.g., process maturity, incompatible methods) and software licensing issues, which might be caused by two reasons: 1) the recent change of the GSO model – from SAP to SaaS (Baumer *et al.* 2007; Fan *et al.* 2009); 2) the confidential nature of software licenses.

2) **Relationships management** – Unlike results found in the preliminary study, participants chiefly discussed relationship management issues in the collaboration. For example, GSO clients claimed that dissimilar work styles and work cultures produced problems in the development, whereas GSO providers were not satisfied with the efficiency and effectiveness of their onshore and offshore collaboration. As for the domestic suppliers, they particularly stated that client companies should enhance the control over providers, due to the poor performance in the cooperation between varied development parties – a similar study has been conducted by Ranganathan and Balaji (2007), which examines how to control outsourcing providers.

3) **Development process** – Interviewees paid extra attention to the delivery quality and requirements understanding. Instead of discussing milestones and development processes (see discussion in the multiple-case study), GSO clients and domestic suppliers worried about the quality of GSO providers' work and their requirements understanding; moreover, people from both GSO clients and GSO providers reported that process and quality control should be improved, as it could unify onshore and offshore development processes as well as smooth the GSO collaboration – this topic has also been discussed by Lacity and Rottman (2008).

4) **Project/people management** – Many findings in this domain have also been discovered in the preliminary study. For example, issues such as inexperienced project management and lack of project planning/tracking were reported in the previous stage. Hence, to that end, the GSO interviews verify these findings. Additionally, results in the survey indicate that providers' staff

rotation policy and lack of GSO related training had negative impacts on the project/people management in GSO practices; according to the interview discussion, these issues might develop into problems such as the reduced quality of GSO providers and poor client/provider staff maintenance – see similar studies that have been conducted by Raiborn *et al.* (2009).

5) **Communicative issues** – Most of the communicative issues reported in this survey include both corporative and technical communication issues. Generally speaking, interviewees from three interview groups regarded poor communications between different development parties as the major issue in this domain, which was mainly caused by language barrier and poor business/systems understanding. This finding confirms the results discovered by Aspray *et al.* (2006) with respect to the study on communication topics when deploying globalised software solutions in the business world.

5.5.2 Development areas for improvement

Interview participants' ratings on three development phases and three performance factors indicate that the phase of implementation (including testing) was performed better than other development phases. Amongst these tested development phases: 1) **requirements capture** was performed below fair; 2) the performance of **analysis and design** was reasonably acceptable; 3) the phase of **implementation (without testing)** was rated as between fair and good; and 4) t**esting work** was conducted significantly better than other phases.

The above findings suggest that further research attention shall be paid on early phases in the development to seek reasons which had caused the unsatisfactory performance in GSO practices. To be specific, although interviewees' views on the quality of the delivery suggest that the provider's delivery quality was noticeably better than the client's, generally speaking interviewees were not satisfied with the delivery quality in GSO practices. While the project satisfaction for GSO providers was reasonably higher than that for GSO clients, the overall project satisfaction were still complicated in practice. The performance of project management suggests that this factor was performed somewhat well at the operation level; however, at the project level or systems level, many managers and consultants had different views according to their GSO project experiences.

5.5.3 Main advantages

Besides the key issues and development areas for improvement discussed in the previous two sections, the interview survey also investigates key advantages and CSFs in GSO practices. In Table 5.19, 14 advantages (similar strengths are combined) were reported by the interview participants. Amongst these advantages, it is noticeable that GSO providers had contributed most of the project level benefits during the survey.

Table 5.19: Key advantages in GSO projects reported by interviewees

Project Domain	Interviewee Group	Identified Key Advantages
Project arrangements	GSO Clients	1. Cost saving 2. Less in-house staff
	GSO Providers	Cost saving 3. Better project satisfaction 4. Increased service level
	UK's Domestic Suppliers	Cost saving Less in-house staff
Relationship management	GSO Clients	N/A
	GSO Providers	N/A
	UK's Domestic Suppliers	N/A
Development Processes	GSO Clients	5. Expertise and experiences in IT 6. Repetitive work
	GSO Providers	7. Extend working hours 8. Quality of the delivery Expertise and experiences in IT 9. Increased development efficiency 10. Advanced expertise and experiences 11. Hardworking
	UK's Domestic Suppliers	N/A
Project/people management	GSO Clients	12. Resource flexibility
	GSO Providers	13. Deliver on time
	UK's Domestic Suppliers	Resource flexibility & availability
Communications	GSO Clients	N/A
	GSO Providers	14. Core competence
	UK's Domestic Suppliers	N/A

The table above shows that factors such as *resource flexibility*, *less in-house staff*, *cost saving*, and *expertise and experiences in IT* are commonly agreed by interviewees in the survey. However, the table also shows that very limited advantages were reported in project domains such as *relationship management*, *communications*, *and project and people management*, which suggests that the practical performance of these project domains may have been impacted by GSO practices. It partially explains the reasons why few interview participants had reported advantages in these areas. Still, in order to verify this hypothesis, more studies on topics such as relationship management, project/people management, and communications shall be carried out in the following exploration.

5.5.4 CSFs

Most of the interviewees talked about five types of CSFs (see details in section 5.4.4), which are normally considered when suggesting improvements for on-going and forthcoming GSO projects. Most of the CSFs identified in the interview survey have been verified in the online questionnaire survey (refer to section 6.9), which are listed as follows:

1) **GSO project arrangements** – Including stricter contract, appropriate service level, refine development framework, and reconsidering outsourced work;

2) **Relationships management** – Including choosing closer team work and coordinating different work styles;
3) **Development process** – Including process control and quality assurance process, stricter measurement systems, and track records of GSO services providers;
4) **Communications** – Including simplifying communication channels and providing better requirements definition; and
5) **Project/people management** – Including tightening management on providers, providing GSO related training, and improving staff maintenance to reduce the staff turnover.

5.5.5 Conclusion

Based on the above discussion, it is reasonable that further studies are required to focus on *examining* and *validating* these issues, development areas, and CSFs reported in the interview survey. Furthermore, according to the overall research objectives (refer to section 1.8), the subsequent research shall pay attention to reasons behind these industrial phenomena, so that *suggestions* and *recommendations* can be made for future studies. Thus, bearing some recent GSO project level research in mind (Herbsleb 2007; Kurbel 2007; Philip & Schwabe 2009), the author decides to continue validating and developing *the framework of GSO project issues* and *other related topics* (e.g., the performance of key development areas and CSFs) in the following detailed industrial study – many detailed development and performance related questions have been designed and included in the online questionnaire (see the design of the online questionnaire in Chapter Six).

Chapter 6 An Online Questionnaire Survey

The previous chapter describes 26 interviews conducted in the phase of the detailed industrial study. When analysing the interview data, many strengths and weaknesses in GSO projects were identified together with several CSFs and recommendations. In this chapter, in order to investigate detailed GSO project factors through a quantitative research approach, an online questionnaire was accomplished in 2008. This chapter explains the survey in three sections: 1) the introduction of the survey, which includes survey methods, target groups, and the progress; 2) the survey design, which contains the design of the questionnaire, reliability/validity analysis, and data analysis; and, 3) an explanation of questions in the questionnaire and correlations between these questions.

6.1 Introduction of the questionnaire survey

According to the research framework of this project (see section 3.4 and 3.6), a mixed methods approach is used to conduct the detailed industrial study. In Chapter Five, the qualitative research approach (i.e. the GSO interviews) is specified in detail. This chapter explains the quantitative research approach (i.e. the online questionnaire survey).

6.1.1 The research foundation of the survey

The GSO interviews report *24* project issues in *five* domains. It develops the issue framework established in the early stages. Based on the findings in Chapter Five, the author designates the online questionnaire to achieve an in-depth view of some detailed project issues in GSO practices. Questions used in the questionnaire represent findings from early research phases:

1) **The primary study** (see section 1.3 – various issues in the GSO practices)
2) **The literature review** (see section 2.4.5 – how to outsource, section 2.4.6 – outsourcing outcomes, and section 2.5 – how to implement IT/IS outsourcing)
3) **The preliminary industrial study** (see section 4.6 – research findings of the multiple-case study of three GSO projects in Company Alpha)
4) **The GSO interview survey** (see section 5.5 – results conclude in the GSO interviews)
5) **Other related questions** – After considering some recent outsourcing questionnaire surveys (Tsuji *et al.* 2007; Trategy & Fitzgerald 2008), the author requires recipients to answer questions such as personal backgrounds, their companies' GSO states, and their employment, so that the author can examine GSO projects from different perspectives.

6.1.2 Research objectives of the questionnaire survey

Based on research findings of the previous phases of this PhD research, the overall aim of this questionnaire survey intends to achieve a comprehensive view of *issues in GSO projects* as well as to examine and validate *earlier research results*. In particular, *five* research objectives are identified before this questionnaire survey. These are:

1) To *augment* research data for this PhD project;
2) To *collect* sufficient quantitative data (information related to GSO practitioners, GSO related companies, and GSO projects) for statistical data analysis;
3) To *develop* the understanding of GSO practitioners and their employment, GSO related companies, and GSO projects;
4) To *identify* project level issues from a different angle; and,
5) To *discover* critical project topics and their impacts on GSO practices.

In order to fulfil these objectives, the author designs various questions to investigate areas such as GSO practitioners' background (e.g., age groups, income, and GSO experiences – see section 6.5), GSO companies (e.g., company size and industrial sector – see section 6.6), GSO practitioners' employment (e.g., staff group and positions – see section 6.7), GSO projects (e.g., issues/factors in the development, project arrangements, project/people management, communications, quality and process control – see section 6.8).

6.2 The survey method

Based on the discussion in section 3.2.1 (how to conduct quantitative research), the author designs this online questionnaire survey which contains *46* questions as shown in Appendix F. After having double-checked with the PhD supervisory team and UEA's ICARUS office (information collection, analysis and reporting user service), a draft version of the questionnaire was produced at the end of 2007. With an aim of efficiently administer the survey, the author used a web-based questionnaire design software system (supported by SurveyMonkey) in the survey. It includes four sections: 1) recipients' background; 2) their companies' states; 3) recipients' employment; 4) their experiences of GSO projects. In total, the author had invited over 250 GSO practitioners (see section 6.2.3).

6.2.1 Target groups of the survey

In order to ensure that the questionnaire would be distributed as broadly as possible, before officially distributing the survey, the author contacted three types of GSO companies. They are:

1) **GSO client companies in the UK** – Most of them are in the financial services sector, which had employed the GSO model for years. Besides Company Alpha and Company Epsilon (the same participating companies in the interview survey), other approached companies all had strong business connections with either Company Alpha or Company Epsilon. For instance, Company Zeta was Company Alpha's financial services broker and also subcontracted projects to a leading GSO services provider in India – Provider Theta; Company Iota was Epsilon's domestic partner and has been jointly investing on the company's GSO projects since 2006.

2) **Domestic IT software services suppliers** – during the survey period (i.e. 2008), all of those approached domestic services suppliers were involved in Company Alpha or Company Epsilon's GSO projects. Their main project responsibilities in GSO projects were systems analysis/design, some specific implementation activities (e.g., back-end systems development), and verification/review duties (e.g., quality assurance).

3) **International GSO services providers** – since early 2007, all the contacted offshore GSO services providers have signed long-term strategic IT software services contracts with many UK client companies. For example, Provider Beta has become Company Epsilon's global services partner (GSP) since the middle 2007. Since then, it has been supplying the majority of the client company's IT/IS functions. All of these offshore GSO providers are world leading IT software services companies based in India.

According to the above description, it is evident that, in order to successfully conduct this online questionnaire survey, permission granted by these companies' senior management was critical. Thus, with aims of requesting these companies' approvals of this survey, the author and his PhD supervisor have spent much time to build up relationships with these companies – see a template of the survey request letter in Appendix E.

6.2.2 The pilot study

The official permission for the online questionnaire was granted in February 2008. Hence, the draft of the questionnaire was piloted to four IT/IS experts representing from varied potential respondent groups. These experts had dissimilar project duties in GSO projects, for example, the development function (e.g., a lead systems analyst in Company Alpha), the managerial function (e.g., a Head of IT Change department in Company Epsilon, and an onshore deliver manager in Provider Beta), and the consultancy function (e.g., a senior IT consultant in Supplier Delta). According to their comments and suggestions, the author reworded several questions and dropped ones that were too technically based, too hard to answer quickly, or unsuitable for some respondent groups (e.g., people from the business sector). In the pilot study, it is evident that the questionnaire normally requires a native English professional around 20-25 minutes to complete.

6.2.3 Survey respondents

Notably, it is vital that right people should be invited to this survey. Thus, similar to the arrangement in GSO interview survey, professionals from three project groups have been contacted (also see section 5.1.4). These are: the managerial group, the development group, and the consultancy group.

In the first group, an email solicitation request was sent to project level managers and middle management in 11 GSO related companies, i.e. GSO client companies, the UK's domestic services suppliers, and GSO provider companies. In the second group, the author emailed a large number of developers and testers with development roles in GSO projects. For the third group, IT/business consultants from these companies were approached through a similar email request. People from all three groups received a similar email request:

> "Sorry to disturb you, this is Ji Zhou (aka Gash) from University of East Anglia (UEA), Norwich. As I am currently exploring GSO (global software outsourcing) projects in the UK, I would really appreciate if you and your colleagues could spend around 15-20 minutes to complete an online questionnaire survey for me…
>
> If you are interested, please click the following link to open the questionnaire:
> http://www.surveymonkey.com/s.aspx?sm=CIk61azjgZdBRW5Q0Z_2brlw_3d_3d.
> Allow me to thank you for your time and help in advance!"

In order to randomly select GSO practitioners in the financial services sector in the UK, the author used the *snowball sampling approach* (Trategy & Fitzgerald 2008). To be specific, at the beginning of the survey, the author has sent the email solicitation request to many project level managers and IT/software developers whom he had been working with during his time in Company Alpha. By doing that, not only these people but also their colleagues could be aware of the survey and might consider whether or not to contribute to it. Besides that, the author also encouraged the survey respondents to forward the survey link to other people who also had experiences of GSO projects. As a result, although the survey was purely voluntary, it had been conducted relatively efficiently together with a satisfactory response rate – the response rate is around 37% (93 out of 250 completed the questionnaire), which is considerably higher than the average return rate (around 20%) for a voluntary industrial survey (Trategy & B. Fitzgerald 2008).

6.2.4 The advancement of the survey

After the pilot study, a refined online questionnaire survey was officially distributed in the beginning of March 2008. From March 2008 to December 2008, the online survey has gone through four phases. Figure 6.1 presents the advancement of this survey:

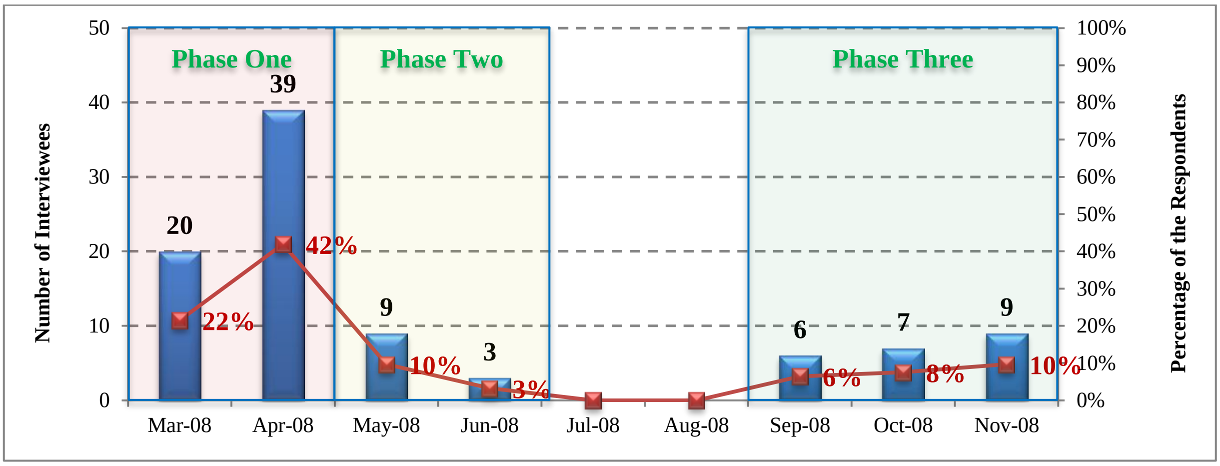


Figure 6.1: The advancement of the online questionnaire survey

1) **Phase One** (from March 2008 to April 2008) – a solicitation request was sent to around 140 professionals who had various project responsibilities in Company Alpha, Company Epsilon, Provider Gamma, and Supplier Delta. In this phase, 59 people (a response rate of **42%**) filled the questionnaire;

2) **Phase Two** (from May 2008 to June 2008) – In May 2008, the survey link was emailed to approximately 30 people in Company Zeta, Company Iota, and Supplier Eta. In June 2008, over 20 people in GSO Provider Theta and Provider Beta were invited to join to the survey. In this phase, 12 people (a response rate of **24%**) responded to the survey;

3) **A period of stagnation** (from June 2008 to September 2008) – the survey has been stopped due to Company Alpha's management change and the author's departure from the company in the first half of 2008. Luckily, after returning to the company in September 2008, he was allowed to continue this research; and,

4) **Phase Three** (from September 2008 to December 2008) – over 60 IT/business managers and consultants in the participated companies have been approached. In this phase, 22 people (a response rate of **35%**) have completed the questionnaire.

6.2.5 The validity control of the survey data

Because some sensitive information (e.g., the survey respondents' personal backgrounds, their employment, GSO project experiences, and individual opinions) were required by the online survey, therefore, for confidentiality reasons – as per agreements with Company Alpha and Epsilon, the respondents were made completely anonymous. Information that can identify a person (e.g. name), a company (e.g. company name), and a project (e.g. reference code) was not collected.

According to Foddy (1994) and Reja *et al.* (2003), it is necessary to prevent arbitrary inputs and some research participants modifying their selections due to the change of the research context (each phase of the survey had lasted for two-three months). Moreover, stricter survey research guidelines shall be followed when collecting survey results, in order to maintain validity of a questionnaire survey (Fitzgerald *et al.* 1999; McNeill & Chapman 2005). Hence, the author took four steps to avoid the possible input influences:

1) **A controlled survey period** – The survey URL (uniform resource locator) distributed in each phase was only valid within the phase. When a new phase begins, a brand new survey URL will be generated and distributed to different target groups. The old link will be invalid within 1-2 days after the new phase starts;

2) **A managed survey submission** – Answers can only be modified whilst filling the questionnaire. As soon as a respondent submits the questionnaire, he or she cannot access the submitted questionnaire again. If a respondent fails to complete the first two sections of the survey (e.g., the respondent's personal background and general information of their companies) at one time, all entered data will be discarded;

3) **Page/question logics** – The SurveyMonkey system provides page/question logic to stop people if their answers are inconsistent during the survey. For example, if a person claims that he or she belongs IT sector (Question E5), but specifies his or her occupational staff group as non-IT in Question E7. The survey system will stop the survey procedure and direct the person to a warning page; meanwhile, this person's input will be discarded;

4) **Cross-checking results of each phase** – Figure 6.1 shows a four-month interval between Phase Three and Phase One. Although the research context was reasonably stable during the survey period (see section 5.3.5 for explanation), essential statistical results from each phase (see Appendix F) were cross-checked against each other, in order to ensure that no major difference was reported between these phases.

6.3 Questionnaire design

As explained in section 3.5.3, a questionnaire is a suitable research instrument to gather information from a large number of research participants. However, it still contains some disadvantages, for example, possible misinterpretation, less flexibility due to standardised answers, and maybe time-consuming. Thus, when designing the questionnaire survey, the author has followed the quantitative research guidelines (see section 3.2.1) and some standard questionnaire survey guidelines (Straub 1989; Foddy 1994; McNeill & Chapman 2005).

To be specific, the design guidelines are: 1) to carefully design a questionnaire based on a sound understanding of the research domain; 2) to invite experts in the field to review the research instrument reviewed; 3) to conduct a well-formed pilot study; 4) to properly select target respondent groups; 5) to test internal reliability and viability; and, 6) to cross-validate statistical conclusions with previous research findings. Section 6.2 (the survey method) has discussed topics such as the pilot study, experts review, and the selection of target respondent group. In this section, the design of this questionnaire, reliability and content validity are specified.

6.3.1 The design of the questionnaire

Questionnaire has been used in IS related research for many years. It is a suitable research method to obtain views at a certain period of time (Galliers 1992). To design a questionnaire, a researcher needs to understand the research questions, the background, survey research guidelines, and pre-test/pilot questions to ensure the viability of the survey (Straub 1989; Fitzgerald *et al.* 1999; McNeill & Chapman 2005). Thus, based on a sound understanding of the domain and a detailed knowledge of the industrial situation, the author considers several questionnaire design factors, such as types of questions, survey questions, rules to construct questions, and the sequence of the questions.

6.3.1.1 Types of question

According to Van Dyke *et al.* (1997) and Reja *et al.* (2003), a questionnaire can contain a number of open-ended and close-ended questions. An open-ended question usually requests research respondents to enter their answers in a flexible way, whereas a close-ended question demands respondents to select one or several answers from a given option list. Because the author has already conducted GSO interviews to collect open-ended opinions regarding GSO projects, therefore, the majority of the questions in this questionnaire survey are designed close-ended to collect standardised answers from research participants. To design close-end questions, it is vital to provide a complete and mutually exclusive option list for each question. Hence, with the knowledge of what to concentrate on, option lists presented in this questionnaire are constructed through an iterative process of discussion between the author, his supervisor, and several GSO experts from the industry.

There are three types of questions used in the online questionnaire (see Appendix F for detailed questions and their option lists). These are: 1) **close-ended questions** with detailed option lists; 2) bounded close-ended questions (**scaled questions**) present a five-level Likert scale that contains five Likert items and an additional option (*Do not know*); 3) **open-ended questions** to record the respondents' comments or exceptional answers.

6.3.1.2 Survey question design

Questions in four sections of the questionnaire are designed according to the following three principles: 1) the **areas** covered by the questions should be determined by the identified research objectives and the aim of the survey; 2) the **design** of questions and their option lists should be based on earlier findings in the exploration; and, 3) the **wording** of each question should be simple and also determined by prior research findings. As discussed in the above sections, there are four sections of questions: 1) survey respondents' backgrounds, 2) their companies' states, 3) their employment, and 4) their experiences of GSO projects. The design of these questions can be seen as follows:

1) **In the first section**, general questions are designed to understand the background of the survey respondents (e.g., income, education, work experience, working languages, etc.); most of the questions are derived from the questionnaire-based offshore software outsourcing assessment scheme designed by Tsuji *et al.*'s (2007).

2) **The second and third sections** require information regarding the survey respondents' companies and their employment (e.g., company size, company location, the industrial sector, IT authentication, positions in GSO projects, etc.); questions included in these two sections are mostly based on several organisational level IT/IS outsourcing studies (Fleming & Low 2007; Tsuji *et al.* 2007; Trategy & B. Fitzgerald 2008).

3) **The fourth section** is the most important section in this survey, which contains many practical questions, for example, CSFs, the performance of key development phases, and various project level issues in the GSO collaboration. In order to design questions for this section, not only had the author referred to findings in the earlier research phases, he also consults a number of GSO project studies (Fleming & Low 2007; Tsuji *et al.* 2007; Trategy & B. Fitzgerald 2008; Philip & Schwabe 2009). (See detailed questions and option lists in Appendix F)

6.3.1.3 The sequence of questions

According to Foddy (1994), in order to obtain a better response, a questionnaire shall begin with some simple and less sensitive items and gradually develop to more complicated and sensitive questions. In addition, Galliers (1992) states that, when arranging the sequence of questions in a questionnaire, general facts shall always be placed in the early part. Hence, the designed sequence of question is:

1) *Introduction* – A brief description of the purpose of this online questionnaire survey;
2) *Section one* – General questions to understand the background of the respondents;
3) *Section two* – Questions to appreciate the status of the respondents' companies;
4) *Section three* – Questions about the respondents' employment;
5) *Section four* – More specific questions regarding various topics in GSO practices;
6) *Conclusion* – a short letter to express thanks to the research participation, which also encourages people to forward the link to appropriated professionals.

6.3.1.4 Other rules to consider

There are several important rules to consider when constructing questions in a questionnaire survey (Foddy 1994; Reja *et al.* 2003). Some rules applied in this survey are:

1) The **questionnaire administration mode** (e.g., a face-to-face mode, a paper-and-pencil mode, or a computerised questionnaire administration mode) needs to be determined before distributing the questionnaire (Dornyei 2003). Thus, due to the limited research funding and geographically distributed respondents, an online data collection and survey administration mode was selected;

2) In order to provide clear and **understandable questions**, each question and it options have been checked by the author's PhD supervisor, UEA's ICARUS office, and some GSO professionals; what is more, each item was reviewed to make sure that only one question is presented;

3) With aims of handling **unexpected answers**, following suggestions introduced by Reja *et al.* (2003), an option "Other (please specify)" has been added – if a respondent has different opinions or cannot find a suitable selection, he or she can enter an open-ended answer;

4) As a questionnaire might be answered by people whose first language is not English, therefore, **textual interpretation problems** can be happened (Kaplan & Duchon 1988). To ensure that questions would be interpreted in the same way by people with different backgrounds, wording and statements were reviewed by several Indian professionals before the distribution.

6.3.2 Content validity analysis

According to Mehrens and Lehmann (1978), validity analysis in a questionnaire can be approached in three ways: content validity, construct validity and criterion-referenced validity. Due to the feature of this survey, content validity was selected. As content validity cannot be assessed numerically – it shows the degree to which the established scales can properly reflect the measured factors (Straub 1989), therefore, evaluating content validity is often subjective and is largely determined by reviewers with an extensive knowledge of the research subject (Boudreau *et al.* 2001).

When conducting the content validity analysis, specialists from both academia (the PhD supervisory team and UEA's ICRAS office) and industry (experts with advanced experiences of GSO projects) were invited to review the questionnaire. As these questions was chiefly based on an in-depth analysis of academic publications, industrial reports, the author's industrial experience, and findings in earlier research phases, questions and their option lists were verified by the invited reviewers. Comments derived from the pilot study together with those concluded by the reviewers suggest that the survey questions and their option lists are representative and valid according to the research objectives.

6.3.3 A reliability analysis using the Cronbach's alpha (α) measure

The Cronbach's alpha (α) measure is commonly used to evaluate the internal consistency or reliability of a psychometric test score from a sample of people (Dyba 2003). The value of the Cronbach's alpha represents the reliability of multiple items on an established scale. Mathematically, it can be defined as follows (Cronbach 1971):

$$\text{Cronbach } \alpha = \left(\frac{k}{k-1}\right)\left(1 - \frac{\sum_{i=1}^{k} \sigma_{Y_i}^2}{\sigma_x^2}\right)$$

k = number of items on a scale; $\sigma_{Y_i}^2$ = variance of item i; σ_x^2 = variance of total score

According to Kline (2000), a value of 0.7-0.8 is acceptable for Cronbach's Alpha. Values substantially lower indicate an unreliable scale; on the contrary, a high reliability of internal consistency of a scale often leads to a higher Cronbach's alpha value (DeVellis 2003). For example, if the overall Cronbach's alpha is between 0.70 and 0.98, it suggests that the measured scale has a good reliability of internal consistency; if the overall Cronbach's alpha is below 0.35, it indicates that the measured scale is below the desired level and therefore some factors on the scale shall be removed. Although the acceptable Cronbach's alpha is usually greater than 0.70, in many exploratory studies (e.g., psychological research), values below 0.70 are expected due to the diversity of the measured construct/scale (Kline 2000).

Some questions in this questionnaire survey are measured with five-level Likert scales (see section 6.8). In order to test the reliability of these scales, the author has utilised SPSS (statistical package for the social sciences, release 17) to calculate Cronbach's alpha (α) values. According to Field (2005), the more factors on a measured scale usually lead to higher Cronbach's alpha. Hence, in order to prevent arbitrarily using Cronbach's alpha, the author has utilised SPSS to evaluate the reliability by following a more delicate evaluation procedure (Smith 1999; Field 2005). Figure 6.2 shows the work flow followed to evaluate the reliability of the scales used in this survey. When testing the Cronbach's alpha, the author calculates the overall value of the examined scale first. After that, he removes one factor from the scale and recalculate the overall Cronbach's alpha of the new scale – if the overall value of Cronbach's alpha for the new scale is reduced, it suggests that this factor need to be kept on the scale; however, if the Cronbach's alpha is decreased, it means that this factor might need to be removed from the scale. This process will be continuously repeated until every factor on the scale has been analysed and the highest reliability is reached. Only these items presenting highest reliability would be used in the analysis (see section 6.8.8, 6.8.9, and 6.8.12 for details).

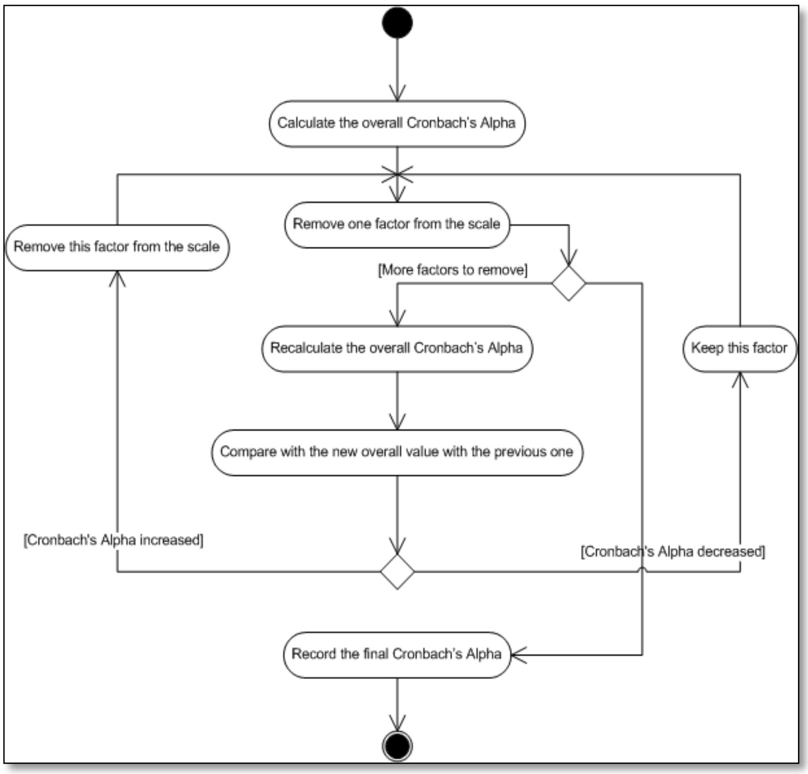


Figure 6.2: The flow diagram of evaluating the reliability of the scales used in this survey

Although it is arguable that composite reliability is more suitable for measuring the overall reliability of a collection of heterogeneous but similar items (Raykov 1998; Tseng *et al.* 2006), after sampling the composite reliability calculator (see the URL http://www.uoguelph.ca/~scolwell/cr.html), no major difference could be found between the Cronbach's value and the composite reliability calculation. Thus, the author decided to solely rely on Cronbach's value when analysing the reliability of the scales used in this survey.

6.4 Data analysis and related findings

The questionnaire had *93* respondents following its closure in January 2009. Amongst the respondents, *83* (89.2%) had completed all questions in the survey, in comparison with *10* people (10.8%) partially finished the questionnaire. Some questions (mainly in Section Four) have been skipped. A copy of the overall results and some essential statistical analysis for the response is included in Appendix F. Upon closure, the essential statistics, for example, total number of respondents, distribution of question responses, and percentage of response, are listed in Appendix F for preliminary review.

6.4.1 A brief caveat for the survey findings

Statistical analysis of the qualitative content (e.g., the performance of project variables in the development and practitioners' opinions in IT/IS outsourcing) is a very complicated subject (Tsuji *et al.* 2007; Elo & Kyngas 2008). Like most of other outsourcing researchers who have studied GSO practices in the West, the author could only possess a very limited amount of information (*93 samples*). According to CBI (2009), during the period of this questionnaire survey (from March 2008 to December 2008), *the target population* was at least around 250,000 – including both onshore and offshore IT professionals working on GSO related projects in the UK's financial services sector. Additionally, the research data collected through the questionnaire survey are merely from a handful large financial services companies in the UK as well as their domestic and overseas software services providers; whereas over *204* large-scale financial services companies in the UK had employed the GSO model in 2008 (FSA 2010). Hence, based on the above facts, it is notable that the people who took the time and effort to complete and return this online questionnaire may *not* be entirely representative of the target population in whom the author is interested.

Additionally, although the author carefully designed the research questions, option lists, rules to control the validity and reliability of this questionnaire survey (see section 6.2 and section 6.3), due to lack of control over how the questionnaire was answered, the survey respondents might answer questions incompletely, miss out questions or even sections, or pass the questionnaire onto other people who might be totally irrelevant. Even though the careful design of the questionnaire (section 6.3), using target groups (section 6.2.1), and pilot study (6.2.2) can largely minimise some of the listed problems (Myers 1997), the fact that the survey respondents had filled the questionnaire away from the author could cause inaccurate information collected from samples of the target population.

Following the above discussion, the samples, together with findings of this questionnaire survey, were almost certainly *not* fully representative of GSO practitioners as a whole in the UK's financial services sector. Furthermore, they were possibly *not* representative of those IT/IS professionals in these participated GSO companies. Nevertheless, the research findings of this online questionnaire survey should be *indicative* of typical issues in GSO projects, which GSO practitioners encountered when working in the UK's financial services sector.

6.4.2 Data analysis

As SurveyMonkey provides the preliminary survey results in a CSV (comma-separated values) format, the author could download the result file and store them into a Java based relational DBMS called Java DB (DB2 standard). When establishing a survey database to contain collected research data, Apache Derby technology (Apache License 2.0) and Oracle's NetBeans (release 6.5) were utilised. Although survey questions are discussed one by one in the following sections, most of the data analysis is based on cross-tabulating between results in survey questions and the survey respondents' demographic groups (e.g., positions in the company and project responsibilities in GSO practices). Most of the findings during the data analysis had been cross-verified with essential statistics and research results in earlier phases of this PhD research. Moreover, in order to produce comprehensive statistical analysis of various topics in GSO projects, SPSS (also called PASW, predictive analytics software) had been used to analyse some quantitative data in section 6.8.

6.5 Section One – survey respondents

In this section, questions are established to understand the survey respondents' personal backgrounds. In order to achieve a better understanding of GSO practitioners, questions are asked regarding the respondents' gender, education level, specialised area, salary band, work experience, GSO experience, and working languages. However, due to page limits, detailed questions, lists of options, and essential data analysis results are included in Appendix F.

Research results (from section 6.5 to section 6.8) help the author further his knowledge of areas such as project arrangements, critical project factors, issues associated with the collaboration, and important areas for improvement. In particular, section 6.5 (the survey respondents), section 6.6 (the GSO companies), and section 6.7 (the respondents' employment) collect background information of GSO projects; whereas section 6.8 (GSO projects) investigates detailed factors in GSO practices. The first three sections (from section 6.5 to 6.7) are described as concisely as possible in an effort to focus on discussing GSO projects related questions (section 6.8).

6.5.1 Question P1 – gender

Question P1: Are you? (Please tick one box)

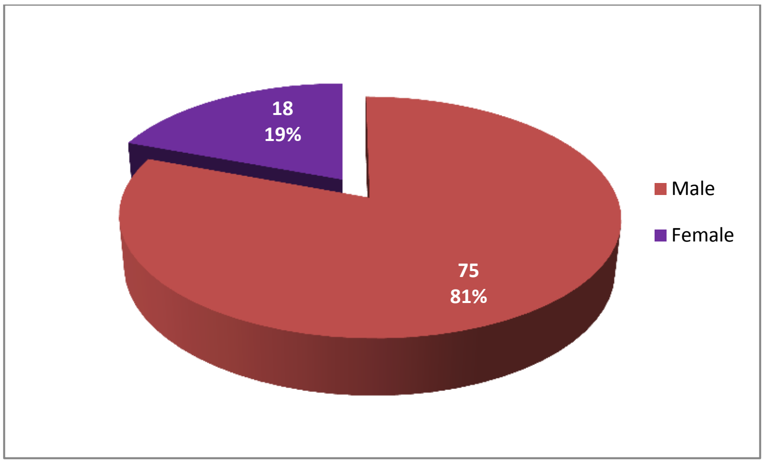


Figure 6.3: Question P1 – respondents' gender

Figure 6.3 illustrates the survey respondents' gender. It shows that most of the respondents (n = 75, 81%) were male professionals, which suggests that more male were working on GSO projects than female professionals.

6.5.2 Question P2 – nationality

Question P2: Please specify your nationality?

Figure 6.4 shows that the respondents came from varied backgrounds. Although people from the UK accounted for over half of the respondents (n = 53, 57%), Indians (23%) and people from other countries (14%) also played important roles in GSO practices.

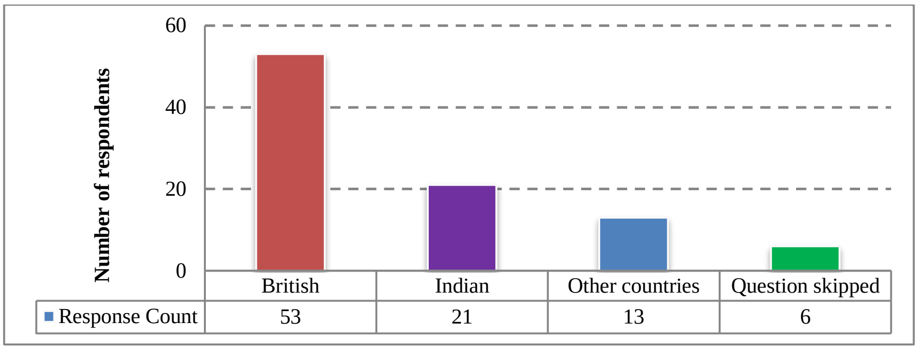


Figure 6.4: Question P2 – respondents' nationalities

6.5.3 Question P3 – age groups

Question P3: Into which of these age bands do you fall? (Please tick one box)

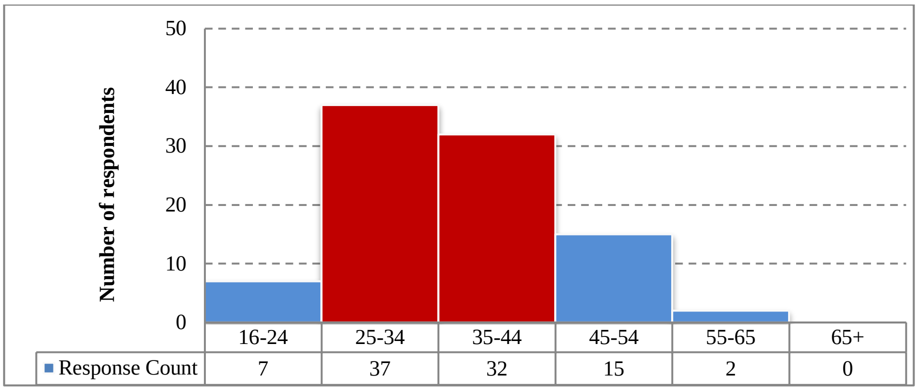


Figure 6.5: Question P3 – respondents' age groups

Figure 6.5 illustrates that most of the respondents were from two age groups (n = 69, 74%), coloured dark red in the diagram. The results explain that most of the GSO practitioners participated in this survey were between 25 years old and 44 years old, which implies that many people working in GSO projects were experienced professionals.

6.5.4 Question P4 - educational qualification

Question P4: What is your highest level of educational qualification? (Please tick one box)

Figure 6.6 demonstrates the respondents' educational qualification. The result reports that most of the respondents (n = 82, 88%) had equal or beyond degree level qualifications, which indicates that people with better educational backgrounds were involved in GSO projects.

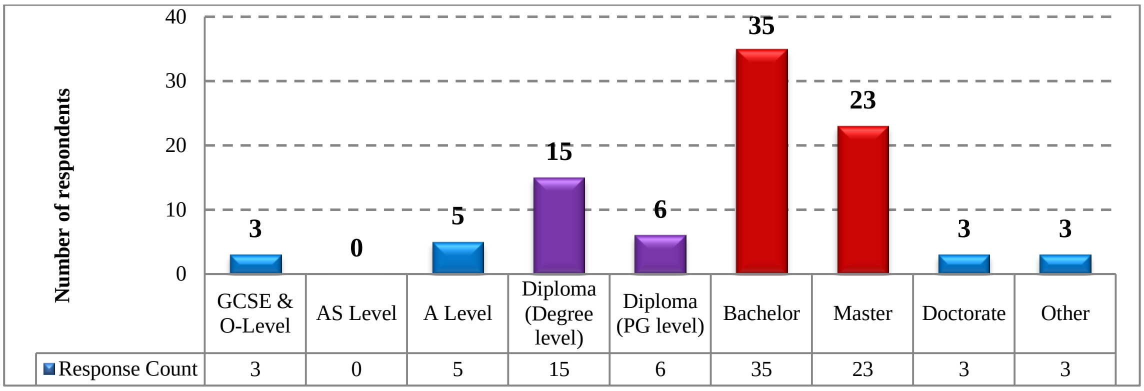


Figure 6.6: Question P4 – respondents' educational qualification

6.5.5 Question P5 – specialised subject

<u>Question P5: Is the subject of your most recent school/college/university study relating to? (Please tick one box)</u>

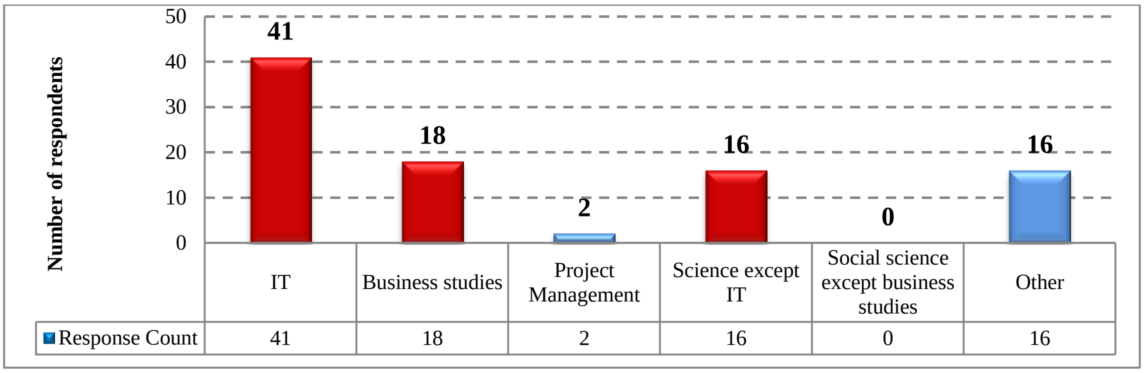


Figure 6.7: Question P5 – respondents' subjects

Figure 6.7 shows that IT, business and other science subjects were main specialised subjects for the respondents (n = 75, 81%). The result suggests that many GSO professionals came from science and business backgrounds (also see discussion in section 1.4).

6.5.6 Question P6 – work experience

<u>Question P6: How many years have you been working? (Please tick one box)</u>

Figure 6.8 presents the respondents' general work experience. The majority of the respondents (n = 75, 81%, coloured dark red) had over five years work experience – less than 20% had equal or less than five-year work experience (coloured light blue). The results suggest that, compared with an average five-year work experience in the global IT software services industry (Jaakkola 2009), GSO practitioners normally had more work experience.

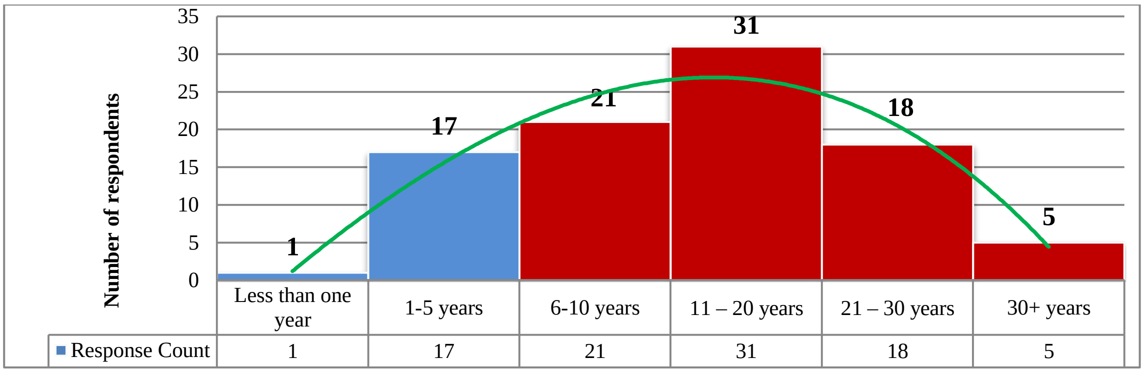


Figure 6.8: Question P6 – respondents' work experience

6.5.7 Question P7 – GSO experience

Question P7: How many years have you been working in GSO or GSO related projects? (Please tick one box)

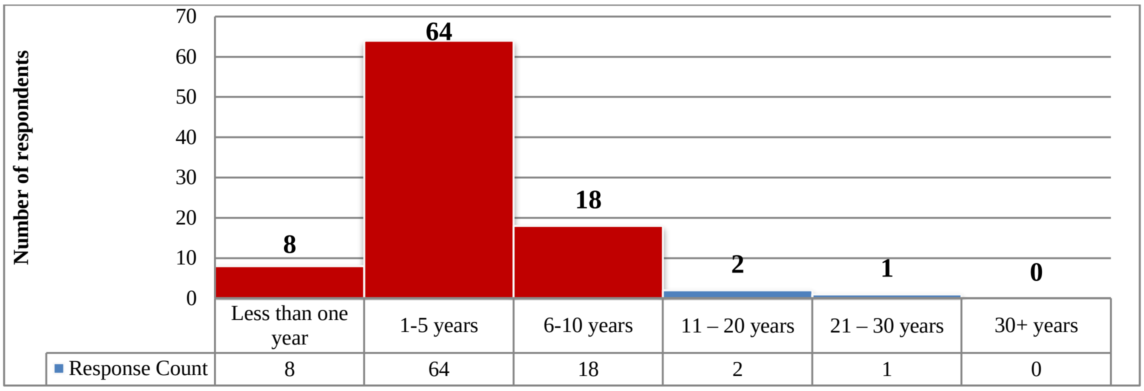


Figure 6.9: Question P7 – respondents' GSO experience

In terms of the respondents' experiences of GSO related projects, Figure 6.9 demonstrates that the majority of the respondents (n = 90, 97%) had been working on GSO related projects for less than ten years (coloured dark red). It is understandable as GSO is a relatively topical subject which was emerged in the UK in last decade (refer to section 1.2).

6.5.8 Question P8 – annual salary

Question P8: In which of these salary bands does your current annual income fall? (Please tick one box)

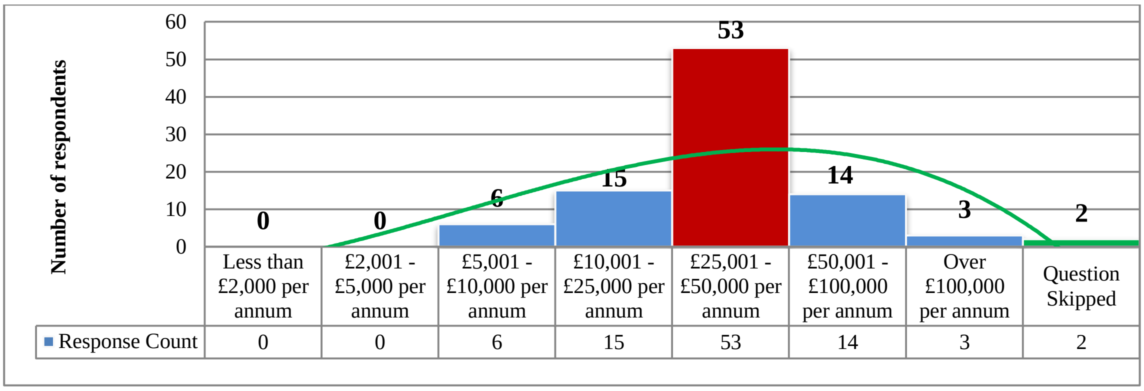
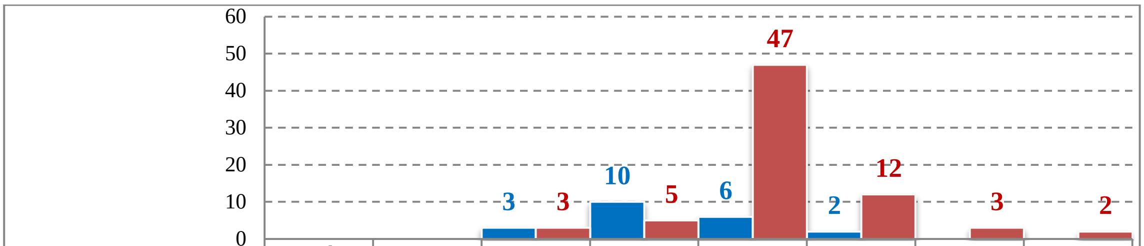


Figure 6.10: Question P8 – respondents' annual salary

Figure 6.10 shows the survey respondents' annual income. During the period of the survey, 58% of the respondents (n = 53) were earning £25,001-£50,000 per annum, coloured dark red, followed by 17% (n = 15) and 15% (n = 14) whose annual incomes were £15,001-£25,000 and £50,001-£100,000 respectively. However, as some people worked for GSO providers (see section 6.6.7), therefore, the author divides the annual salary into two group – Indian GSO providers and other survey respondents.



	Less than £2,000 per annum	£2,001 - £5,000 per annum	£5,001 - £10,000 per annum	£10,001 - £25,000 per annum	£25,001 - £50,000 per annum	£50,001 - £100,000 per annum	Over £100,000 per annum	Question Skipped
Indian Response Count	0	0	3	10	6	2	0	0
Other Response Count	0	0	3	5	47	12	3	2

Figure 6.11: Question P8 – Indian and other respondents' annual salary

Figure 6.11 illustrates two groups of respondents' annual earnings – Indian providers (coloured light blue) and other survey respondents (coloured dark red). Based on cross-tabulating results of Question P2 and Question P8, the diagram indicates that the majority of the Indian professionals' annual incomes (16 out of 21, 76%) were ranged from £10,001 to £50,000, whereas the majority of the other respondents (59 out of 72, 82%) were earning between £25,000 and £100,000 per annum.

The results suggest that, although cutting costs is one of the major drives for many UK companies to choose the GSO model, the difference in salary between the Indian software services workers and their western counterparts was not as *significant* as some firms claimed (Cherian 2008). However, the finding might be partially caused by the selection of target groups (see section 6.2.1 and 6.2.3) – many respondents from GSO services providers were working onshore, which means that their average incomes were much higher than compared with those for offshore GSO services workers. However, as discussed in the primary research and the GSO interview survey, many client companies in the UK required their GSO providers to send more workers onshore in order to improve communications, relationships between development parties, and the delivery quality for their GSO projects. Hence, the finding of this question strongly indicates that to have more GSO providers onshore may not extend client companies' cost saving due to the relatively high labour costs in this scenario.

6.5.9 Question P9 – first language

Question P9: What is your first language? (Please tick one box)

Figure 6.12 shows most of the respondents (n = 81, 87%) using English and Hindi as their first languages. Interestingly, although 21 people claimed that they had Indian nationalities, two Indian people were actual native English speakers. According to Chaturvedi (2007), in some ex-colonised regions in India, people use English as their first language, which partially explains why Indian GSO providers have the language advantage in this business.

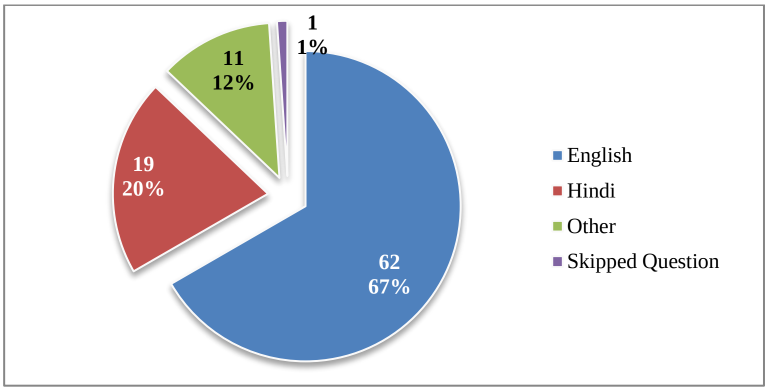


Figure 6.12: Question P9 – respondents' first language

6.5.10 Question P10 – working language

Question P10: Which language do you mainly use during your work? (Please tick as many boxes as appropriate)

In terms of the working language in GSO projects, Figure 6.13 shows that the majority of the respondents (n = 92, 99%) were using English at their work place, whilst 18% (17 out of 93) of the respondents were also speaking Hindi during the work (people were allowed to select more than one option when answering this question). The result suggests that English is the most dominant working language in the survey.

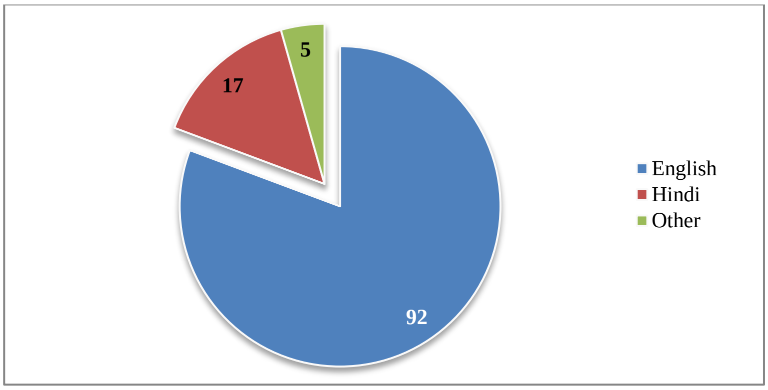


Figure 6.13: Question P10 – respondents' working language

6.5.11 Findings and discussions of Section One

This section requests the survey respondents to provide general information about their personal background. The results of this section suggest five types of information:

1) **General personal information** – According to Question P1 and P2, it seems that more male professionals worked on GSO projects than female; many GSO practitioners in this survey came from nations other than the UK.

2) **Educational background** – The results of Question P4 and P5 suggest that GSO workers normally had good educational backgrounds, which are mainly specialised in subjects such as IT, business, and other science related topics.

3) **Work experience** – The results of Question P3, P6 and P7 point out that the majority of the GSO practitioners had advanced work experiences (over five years); whereas many of them had relatively limited experiences of GSO practices (less than five years).

4) **Salaries** – The result of Question P8 shows that, although cutting costs is one of the most important reasons for choosing the GSO model, the difference in annual income between online Indian workers and their western counterparts was not substantial.

5) **Working language** – The results of Question P9 and P10 indicate that the dominant working language in the workplace was English; however, many Indian professionals used Hindi to work.

6.6 Section Two – respondents' companies

In this section, questions are designed to request information regarding these participating companies. Answers to these questions provide the author with information about GSO client companies as well as their services providers.

6.6.1 Question C1 – company type

<u>Question C1: What type of organisation is your employer? (Please tick one box)</u>

Figure 6.14 shows different types of companies that the respondents were working for during the survey. The result of this question shows that private companies (n = 49, 53%) and public oriented companies (n = 33, 36%) were two main types of organisations that were using the GSO model.

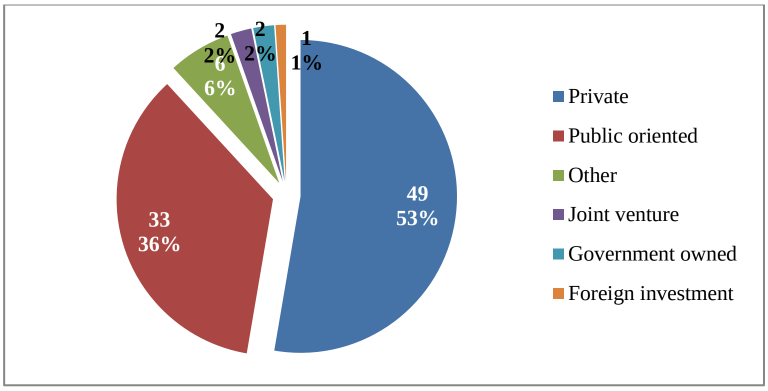


Figure 6.14: Question C1 – company types

6.6.2 Question C2 – company specialised sector

Question C2: Which field does your company specialise in? (Please tick as many boxes as appropriate)

Figure 6.15 illustrates the specialised areas of the respondents' companies. As many companies are operating in more than one industrial sector, therefore, multiple selections were allowed for this question. The result of this question shows that most of the survey respondents' companies were specialised in insurance industry and banking and financial services. Noticeably, 23% companies (n = 21) fall into "Other (please specify)", which means that the respondents needed to manually enter their companies' specialised areas.

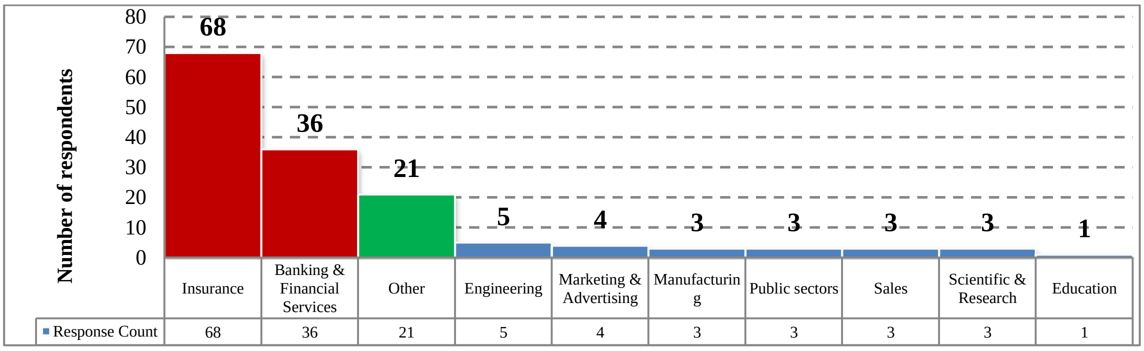


Figure 6.15: Question C2 – companies' sectors

Table 6.1 summarises the input when respondents were selecting "Other (please specify)" as their choices. In the table, their input is listed in the "Entered answers" column, and the "Sector coding" column contains the author's coding. Generally speaking, the input can be grouped into two areas: IT/software services companies (n = 14) and IT consultancy companies (n = 7). In a broad sense, these inputs can be classified into the IT software services industry.

The results show the specialised areas of the respondents' companies. According to Figure 6.15, the focused industrial sectors was the financial services sector – including insurance (73%), banking and financial services (39%), and their IT software services providers (23%). It coincides with the selected target groups of the survey (section 6.2.1). As many companies were involved in multiple sectors, therefore, it is observable that some respondents had also selected other industrial sectors.

Table 6.1: Question C2 – other specialised sectors

ID	Entered answers	Sector coding	ID	Entered answers	Sector coding	ID	Entered answers	Sector coding
1	Providing IT Services	IT/software services	8	IT Outsourcing Partner	IT/software services	15	software & System Integration	IT/software services
2	software services	IT/software services	9	IT Consultancy	IT consultancy	16	IT Consultancy	IT consultancy
3	software services	IT/software services	10	IT/Soft services	IT/software services	17	Software development	IT/software services
4	Software Services Provider	IT/software services	11	IT related services	IT/software services	18	CMM/CMMI Advisor	IT consultancy
5	Software Services	IT/software services	12	software services	IT/software services	19	IT	IT consultancy
6	Software Solution Provider	IT consultancy	13	IT Consultancy	IT consultancy	20	IT Services	IT/software services
7	IT Solution Provider	IT consultancy	14	IT/Software services	IT/software services	21	IT services	IT/software services

6.6.3 Question C3 – company location

Question C3: Where is the head office of your company? (Please tick one box)

Figure 6.16 shows the headquarters (HQ) of the survey respondents' companies. Most of the HQs are based in the UK (n = 67, 72%) and India (n = 22, 24%).

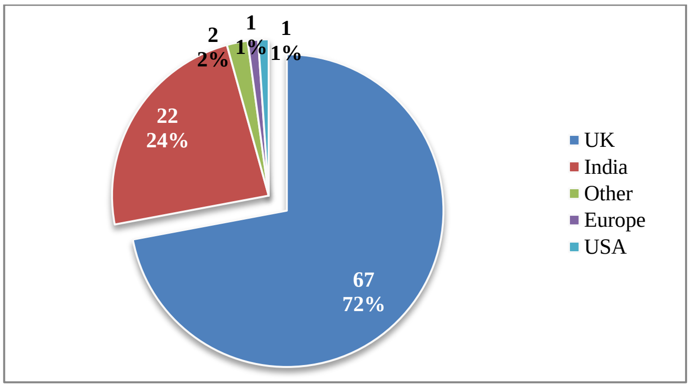


Figure 6.16: Question C3 – company locations

6.6.4 Question C4 – CMM/CMMI authentication

Question C4: Does your organisation have CMM/CMMI authentication? (Please tick one box)*

* The option list contains three options: 1) Yes – obtained CMM/CMMI authentication; 2) No – did not have CMM/CMMI authentication; and, 3) Do not know – did not know whether or not the company obtained CMM/CMMI authentication.

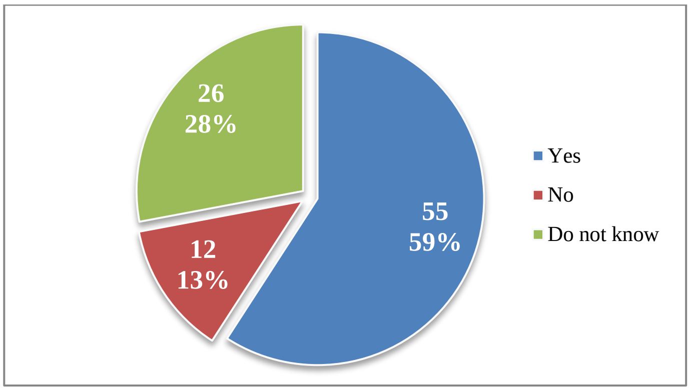


Figure 6.17: Question C4 – company's CMM/CMMI

Figure 6.17 demonstrates how many organisations had CMM or CMMI authentication. This question suggest that, in order to improve the software development capability and maturity, over half of the respondents' companies (n = 55, 55%) had been *appraised* of CMMI/CMM. Because some survey participants came from the business sector, therefore, it is reasonable that some people (n = 12, 13%) did not know their companies' CMM/CMMI level.

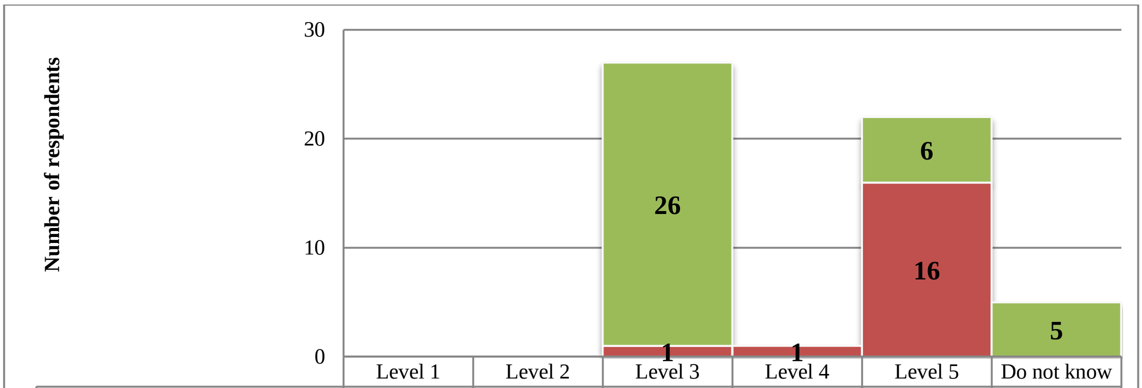
6.6.5 Question C5 – CMM/CMMI level (required if C4 is 'Yes')

Question C5: As your company has CMM/CMMI authentication, what is the CMM/CMMI level of your company? (Please tick one box)

Question C5 is only required if a respondent has selected 'Yes' in Question C4. In the previous question, 55 people reported that their companies had CMM/CMMI authentication. Hence, Question C5 requests these people to specify the level of their companies' CMM/CMMI authentication. Figure 6.18 below shows two types of companies' maturity levels – IT/software services companies and non-IT companies (IT/software companies are summarised by the option specified in Table 6.1):

1) **IT software services companies** – This type of companies are coloured dark red in the diagram below. 18 GSO professionals (33%) from IT services companies had reported their companies' CMM/CMMI levels – *16* claimed that their companies were operating at CMM/CMMI level 5, in comparison to only *two* reported that their companies operated below maturity level 5.

2) **Companies other than IT** – This type of companies are coloured light green in the below diagram. Totally, *37* people (67%) from non-IT companies answered this question. Most of them (n = 26, 70%) claimed that their companies were appraised CMM/CMMI level 3, followed by *six* people (16%) said that their companies operated at level 5. Strangely, although ticked 'Yes' in Question C4, there are *five* people did not report the maturity level of their companies.



	Level 1	Level 2	Level 3	Level 4	Level 5	Do not know
Other companies response count	0	0	26	0	6	5
IT companies response count	0	0	1	1	16	0

Figure 6.18: Question C5 – company's CMM/CMMI level

By cross-tabulating results of Question C2 and C5, it is observable that on average IT software services companies had much higher CMM/CMMI level than non-IT companies. Although many companies were not specialised in software services, they still paid enough attention to CMM/CMMI authentication. For instance, *37* respondents reported that their companies were operating at CMM/CMMI level 3 (the defined process); *six* claimed that their companies' software development maturity was at the highest level 5 (the optimised process). The result indicates that, although some interviewees had negative comments on CMM/CMMI authentication in GSO interviews (see section 5.4), different types of companies still widely accepted CMM/CMMI authentication as a feasible approach to improve the performance of their IT software development projects.

6.6.6 Question C6 – other IT authentication

<u>Question C6: Does your company have any other IT related ISO authentication? (Please tick one box)</u>

According to Table 6.2, *18* out of 20 respondents (90%) who had reported other IT authentication talked about several ISO 9000 guidelines – standards for quality management. *Two* people talked about their companies' own quality management systems (QMS). The result of this question indicates that besides CMM/CMMI authentication, many companies also selected other IT authentication/certification to improve their quality management and process control. Thus, it is clear that in order to manage and improve software development projects, both GSO client companies and GSO services provider firms had been following some industry specific guidelines.

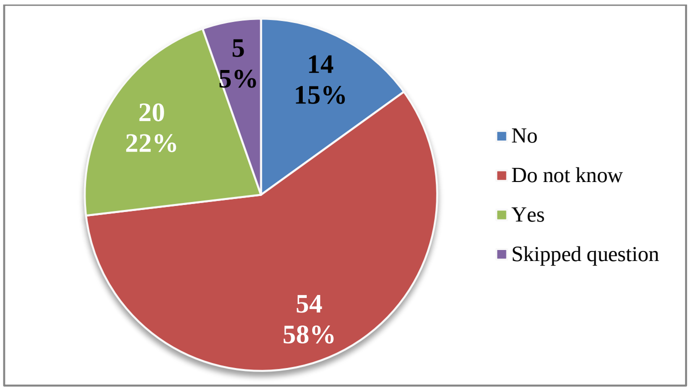


Figure 6.19: Question C6 – other IT authentication

Table 6.2: Question C6 – other reported IT authentication

ID	Specialised sector	HQ of the company	CMM/CMMI levels	Other IT authentication specified by the respondents
1	IT/software services	India	Level 5	ISO 9000, 14001
2	Financial services	UK	Level 3	ISO 9001 COBIT ITIL
3	Financial services	UK	Level 3	ITIL ISO 9001
4	Financial services	UK	Level 3	ISO90
5	Financial services	UK	N/A	9000, 9001
6	IT/software services	India	Level 5	ISO90
7	Financial services	UK	N/A	ISO 9002
8	IT/software services	India	Level 5	ISO 9002
9	IT/software services	India	Level 4	ISO 9000
10	IT/software services	India	Level 5	ISO 9000
11	IT/software services	India	Level 5	ISO 9001
12	IT/software services	India	Level 5	BS15000, ISO 9001, PCMM level 5, Six Sigma
13	IT/software services	India	Level 5	ISO 9001
14	Financial services	UK	Level 3	ISO 9001
15	IT/software services	India	Level 5	ISO 9000
16	IT/software services	India	Level 5	ISO 9000
17	IT/software services	India	Level 5	ISO 9000, ISO 27000, Tick IT
18	Financial services	UK	N/A	Tailor-made quality management
19	Financial services	UK	Level 3	Own QMS
20	IT/software services	India	Level 5	ISO 9001

6.6.7 Question C7 – company role in GSO

Question C7: Does your company (Please tick one box)?

As introduced in the literature review and the preliminary industrial study, many GSO client companies in the UK decided to retain some in-house IT/IS functions alongside the GSO model.

Because of that, when designing Question C7, the author added "work on both outsourcing and providing services" in the option list. Figure 6.20 presents the participating companies' roles in GSO projects. The results for this question shows that over half of the respondents (n = 50, 54%) described their companies as both outsourcing and providing IT software services (called "working on both" in the following sections), followed by 29% companies (n = 27) mainly outsourced their IT/IS functions to external services providers and 17% (n = 16) chiefly provided IT software services.

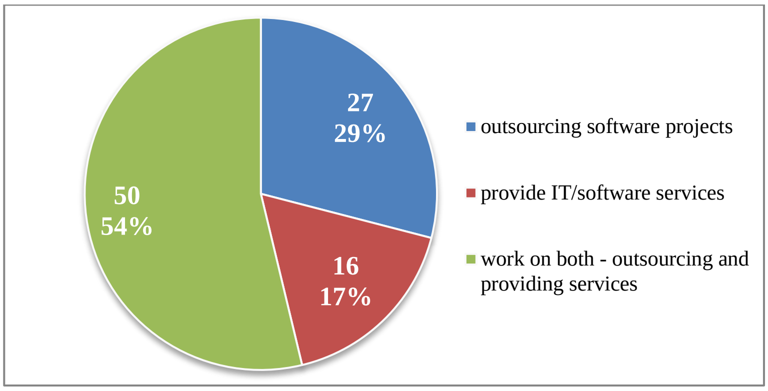


Figure 6.20: Question C7 – company role in GSO practices

After cross-tabulating the results of Question C3 and C7, amongst those people who reported their companies as "working on both", *33* of them (66%) worked for companies based in the UK, *15* people (30%) were employed by GSO services providers in India, and *two* (4%) worked for companies based in countries other than the UK and India. This result of Question C7 is not surprising, though it suggests that Indian companies also worked on both providing and outsourcing IT/IS functions at the same time. According to BBC (2006), in order to find cheaper labour resources globally, since early 2005 some leading Indian GSO services providers such as TCS, Wipro, and Infosys had established several service centres in developing countries such as China and Mexico.

The results of the cross-tabulation also indicate that for companies mainly outsourcing their IT/IS functions (n = 27), all of them were based in the UK; whereas for companies primarily providing IT software services (n = 16), companies in the UK and in India accounted for 44% (n = 7) and 50% (n = 8) respectively – one respondent's company was based in Mexico. The result of this question verifies two previous research findings:

1) Although some companies in the UK chose to rely on the GSO model, many firms still retained a number of **in-house IT/IS development capabilities**.
2) When supplying IT/IS services to their clients, some Indian GSO providers also **outsourced** some parts of their GSO work to destinations which could provide cheaper labour resources.

6.6.8 Question C8 – company size

Question C8: How many people work for your company? (Please tick one box)

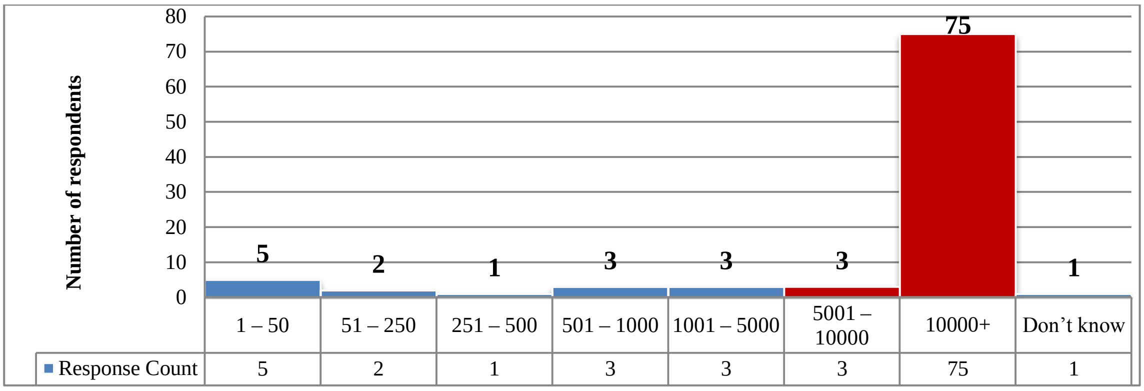


Figure 6.21: Question C8 – company size

Figure 6.21 shows the size of the participating companies in the survey. According to the diagram above, most of the respondents (n = 75, 81%) described their companies as large scale companies (more than 10,000 employees), coloured dark red in the diagram above. The result was expected, as most of the companies approached in this survey were large-scale organisations. However, because the author used the *snowball sampling approach* when administering this survey, thus, GSO practitioners (n = 17, 18%) in other types of companies had also contributed towards the survey – coloured with blue in the above diagram.

6.6.9 Findings and discussions of Section Two

This section requests information about the survey respondents' companies. Answers to the section help the author improve the understanding of the status of GSO related companies. General speaking, section two of the survey provides four types of information:

1) **Participating companies** – The results of Question C1, C2, C3 and C8 suggest that most of the participating companies were private and public oriented companies – most of them were specialised in sectors such as financial services and IT software services; the majority of the respondents' companies were large-scale UK or Indian organisations.

2) **CMM/CMMI authentication** – Question C4 and C5 indicate that over half of the GSO related companies had CMM/CMMI authentication. Amongst them, IT software services providers operated at a much higher maturity level than the GSO client companies'. It is evident that non-IT companies also paid attention to CMM/CMMI authentication.

3) **Other IT authentication/certification** – The result of Question C6 suggests that GSO related companies had followed other IT authentication/certification (mainly the ISO 9000 family) to improve their software development capabilities.

4) **Company's GSO representation** – The result of Question C7 illustrates that, although some companies in the UK were totally outsourcing IT/IS functions, many UK companies still retained some in-house IT/IS development capability; and what is more, some Indian GSO services provider companies worked on providing IT/IS services and outsourcing GSO work to other developing countries at the same time.

6.7 Section Three – respondents' employment

In this section, the survey collects information from the respondents regarding their GSO employment and the impacts of the GSO model on their career development. As Company Alpha used some results of this section, therefore, this section only introduces questions which will be used in section 6.8 – GSO projects. In addition, all questions in this section are described as concise as possible (see Appendix F for essential data analysis). Two respondents skipped all the questions in this section.

6.7.1 Question E5 – staff group

<u>Question E5: Which occupational staff group do you belong to? (Please tick one box)</u>

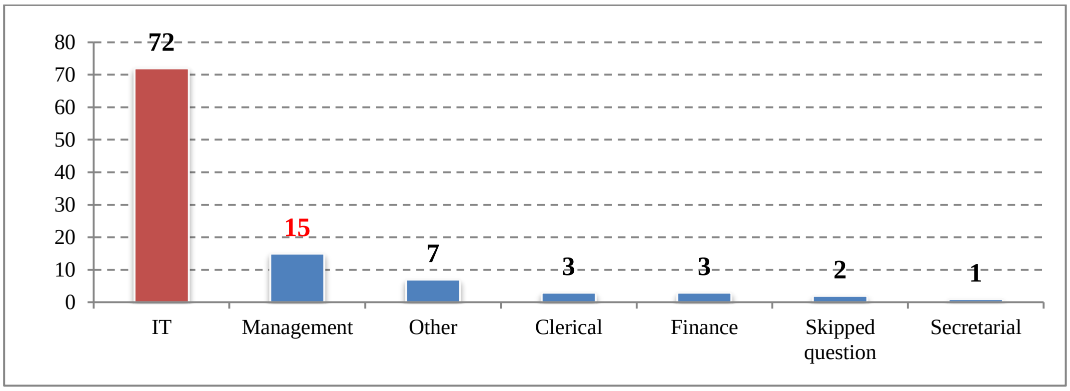


Figure 6.22: Question E5 – staff group

Figure 6.22 presents the respondents' occupational staff groups. The result shows that most of the survey respondents (n = 72, 77%) worked in the IT sector (coloured with dark red) and *15* people (16%) claimed that they were responsible for managerial duties.

6.7.2 Question E6 – IT positions (required if E5 is 'IT')

Question E6: If you are working in IT, which position best describes your role? (Please tick as many boxes as appropriate)

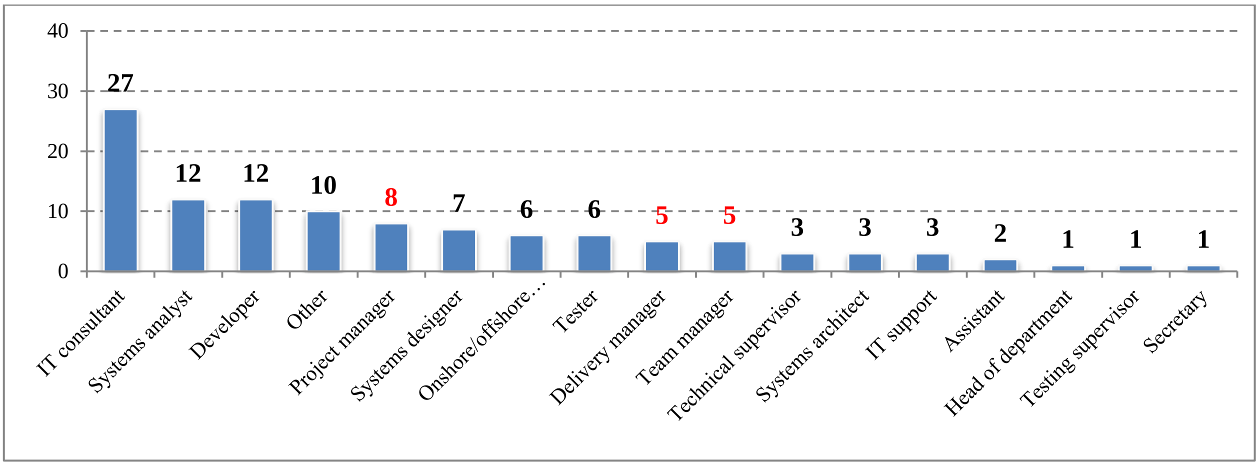


Figure 6.23: Question E6 – IT positions

This question has been changed from single option to multiple-choice before the distribution. The reason is that, according to the GSO interviews, many IT professionals claimed that they could have more than one role/position in GSO practices. For instance, a systems analyst could also act as a systems designer, whereas an IT consultant could work as a supervisor or a software architect. Figure 6.23 shows roles of the respondents who were working in the IT sector. *Eight* out of 72 (11%) reported project management duties (coloured red in the above diagram), *five* (15%) claimed delivery manager responsibilities, and *five* (15%) worked as team managers. Results of this question are used in the next section when looking into project related issues in GSO practices (see section 6.8).

6.7.3 Question E7 – positions other than IT

Question E7: If you are working in an area other than IT, which position can best describe your role? (Please tick one box)

Table 6.3 below summarises the open-ended answers entered by the non-IT respondents. Based on the survey respondents' answers, the author coded their positions and grouped them into seven sub-categories. These are: underwriting (n = 5, 24%), business consultancy (n = 4, 19%), management (n = 4, 19%), finance (n = 3, 14%), product development (n = 3, 14%), secretarial (n = 1, 5%), and marketing (n = 1, 5%). After cross-tabulating Question E6 and E7, for *15* people who have reported managerial responsibilities in Question E5, *eight* of them (53%) worked in project management areas, such as business consultancy, management, underwriting, and product development.

Table 6.3: Question E7 – positions other than IT

ID	Answers entered	Position coding	ID	Answers entered	Position coding
1	We work within Underwriting but it is a semi-IT role specialising in a piece of market software…	Underwriting	**12**	Actuary - Commercial Pricing	Finance
2	Underwriting Department in an Insurance company	Underwriting	**13**	Product Development	Product Development
3	Underwriter	Underwriting	**14**	Investment	Finance
4	Assistant	Secretarial	**15**	Business Lead on IT Projects	Business consultancy
5	IB business lead for projects	Business consultancy	**16**	underwriting	Underwriting
6	Collections	Finance	**17**	underwriting	Underwriting
7	Development Consultant	Business consultancy	**18**	Quality Assurance (QA) Manager	Management
8	Logistics and Resource Manager	Management	**19**	Senior onshore delivery manager	Management
9	Product Development	Product Development	**20**	Programme Manager	Management
10	Product Development	Product Development	**21**	Quality Strategy	Business consultancy
11	Marketing	Marketing			

6.7.4 Findings of Section Three

This section requests information about the respondents' GSO employment. Answers to the section help the author understand how the GSO model impacted professionals' employment as well as their career development. Due to confidentiality issues, only three questions have been concisely described in this section. Results of Question E5, E6 and E7 specify the survey respondents' staff group and their company positions (e.g., IT and non-IT) when working in GSO projects. Survey results in this section are used to effectively create project responsibility categories in the next section.

6.8 Section Four – GSO projects

This is the most important section of this survey. It investigates GSO project from different angles. For example, survey questions designed in this section had investigated project level issues such as communications, the performance of various development phases, and critical project factors.

Answers to these questions can direct the author to achieve a sound understanding of the performance of GSO projects as well as to examine and validate research findings (e.g., project issues, development areas for improvement, and CSFs) summarised in the previous research phases. Noticeably, due to various reasons, *10* survey respondents had skipped all the questions in this section. Because of that, 83 respondents' answers are used during the data analysis.

6.8.1 Question D1 – company GSO experiences

Question D1: How long has your company been working on GSO related projects? (Please tick one box)

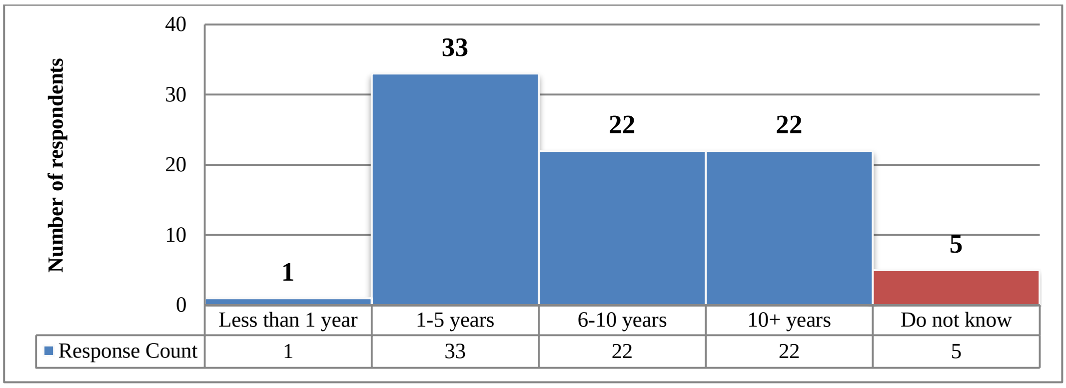


Figure 6.24: Question D1 – company GSO experiences

Figure 6.24 shows the participating companies' experiences of GSO projects. Amongst 83 respondents who had answered this question, over half of them (n = 55, 66%) said that their companies had employed the GSO model between one and 10 years, compared with 22 people (27%) who stated that companies had worked on GSO projects for over 10 years. When cross-tabulating results of Question C7 and D1 (see Table 6.4 for tabulated results), more interesting findings emerge:

Table 6.4: Question D1 – Companies' GSO experiences

Company's role in GSO	Less than one year	1-5 years	6-10 years	10+ years
GSO clients	0	11	10	1
GSO providers	0	4	3	8
Working on both	1	18	9	13

1) **GSO client companies** – The majority (21 out of 22, 96%) of the GSO client companies had been working on GSO projects for less than 10 years.

2) **GSO provider companies** – This group is more experienced in GSO projects. *Eight* out of 15 (53%) from GSO providers claimed that their companies had more than 10-year experiences – only *four* reported less than five-year GSO experiences.

3) **Companies working on both** – For firms working on both outsourcing and providing GSO services, their GSO experiences were rather varied: 44% of them (n =18) reported 1-5 years experiences, 22% (n = 9) had 6-10 years experiences, and 32% (n = 13) claimed that their companies had over 10-year experiences.

The results of this question are expected, as they suggest that GSO services providers are more experienced in GSO related projects than GSO clients. In the literature review (section 2.4.2 – why to outsource), GSO services providers are regarded as specialists in IT/IS services who are more qualified than client companies in IT related solutions. However, it is noticeable that, for companies who were working on both outsourcing and providing IT software services, their GSO experiences were really mixed – although some of them were more experienced in GSO practices, nearly half of companies in this group still needed to develop their understanding of this area.

6.8.2 Question D2 – respondents' project responsibilities

Question D2: Which part of a GSO project are you normally involved with? (Please tick as many boxes as appropriate)

In order to ensure the survey results can reflect a complete software development lifecycle in GSO practices, Question D2 is designed to investigate the respondents' responsibilities in GSO projects. As many GSO practitioners normally had more than one duty in GSO practices (see section 5.4.2), therefore multiple selections are allowed in this question. Figure 6.36 below shows *six* categories of the respondents' responsibilities in GSO projects.

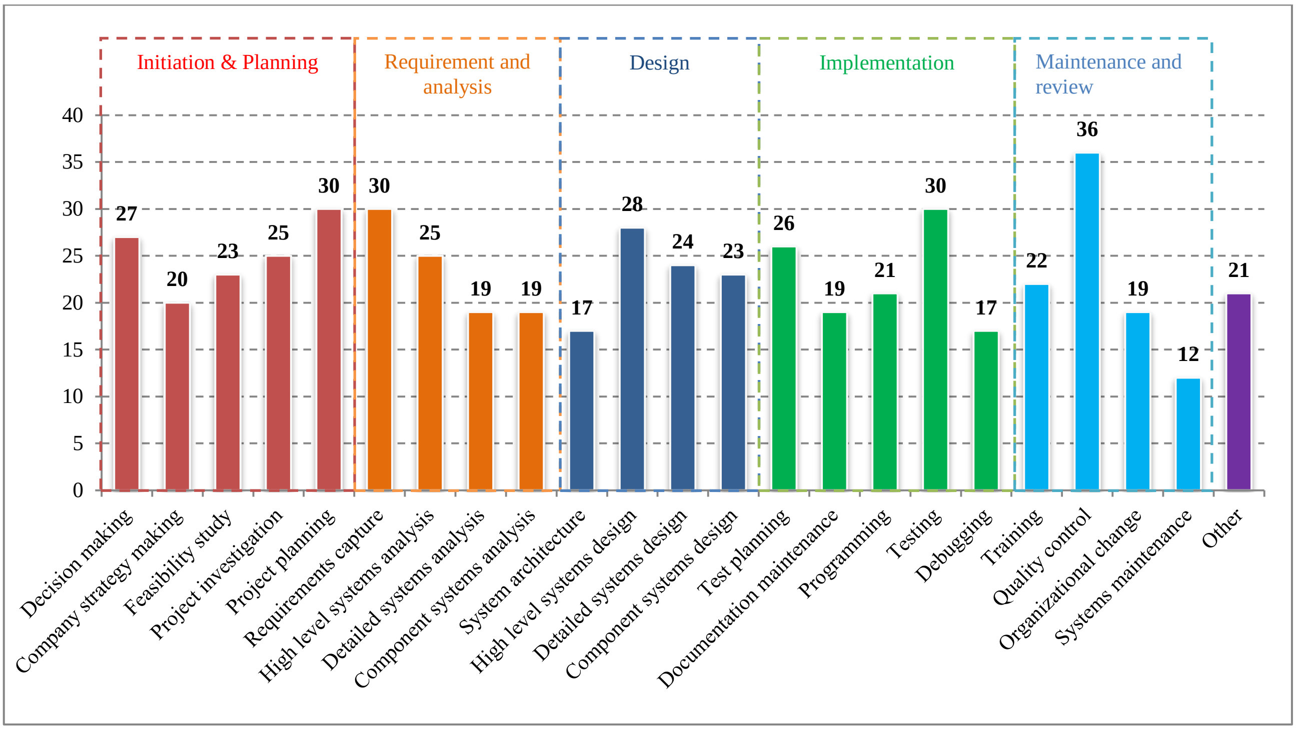


Figure 6.25: Question D2 – respondents' GSO project responsibilities

Project duties or activities that belong to the phase of *initiation and planning* are coloured with dark red (on average, 30% of the respondents). Activities that fit in the phased of *requirement and analysis* are coloured with orange (on average, 27% of the respondents). Duties that can be categorised in the *design* phase are coloured with dark blue (on average, 26% of the respondents). Responsibilities that belong to the phase of *implementation* are coloured light green (on average, 27% of the respondents). Activities for *maintenance and review* are coloured light blue (on average, 26%). Other duties are coloured with purple (25% of the respondents).

21 out of 83 survey respondents had selected 'Other' as their GSO project responsibilities. Hence, they were required to provide open-ended description of their duties. Table 6.5 below summarises these people's specified answers. The column labelled "Project duties" contains the author's coding based on these answers. Except the first respondent who had answered "too much", all other open-ended answers have been grouped into a project duty group.

Table 6.5: Question D2 – respondents' specified GSO project duties

Respondent ID	Specified answers	Project duties
1	too much	N/A
2	Capacity implications & requirement	Requirement
3	System Support	Management and support
4	IT Support	Management and support
5	Oversee the project from Initiation to Execution	Management and support
6	Business Case	Requirement
7	Project Management	Management and support
8	Knowledge Transfer	Analysis and design
9	Problem analysis, coordinating onshore and offshore work	Management and support
10	understanding onshore requirements	Requirement
11	Create Requirement Documents	Analysis and design
12	Investment, data analysis	Initiation and planning
13	End to End Project Management	Management and support
14	Onshore/offshore coordination	Management and support
15	IT related consultancy	Management and support
16	Costs controlling	Management and support
17	Company rationalisation	Maintenance and review
18	Development methods	Initiation and planning
19	Outsourcing Transition and IT Process Definition	Maintenance and review
20	advice on CMM/CMMI	Management and support
21	People management	Management and support

In order to examine a complete GSO project lifecycle as well as outsourcing practitioners' project duties (Kshetri 2007), Question D2 is designed and verifies the survey respondents' responsibilities and project functions in GSO practices. In the table above, the column labelled "project duty" contains *11* "management and support" duties – after cross-tabulating with results of Question E5, E7 and D2, a project management group is established for the following data analysis. In brief, the results of Question D2 suggest that collected data correspond with the design of this questionnaire survey (e.g., people who filled and returned the questionnaire undertook certain duties in GSO practices); and moreover, according to Figure 6.25, it is evident that the respondents are relatively equally distributed in six project duty groups (on average, 25-30% of the respondents in each group), which suggest that the survey respondents are able to represent every key aspect of a GSO project lifecycle.

6.8.3 Question D3 – GSO project communication

Question D3: Do you work directly with the GSO partners*? (Please tick one box)

* For a GSO client company, "GSO partners" means GSO services providers; for a GSO provider company, "GSO partners" means GSO client companies; for a company works on both outsourcing, "GSO partner" can mean either GSO providers or clients – it depends on the GSO project arrangements.

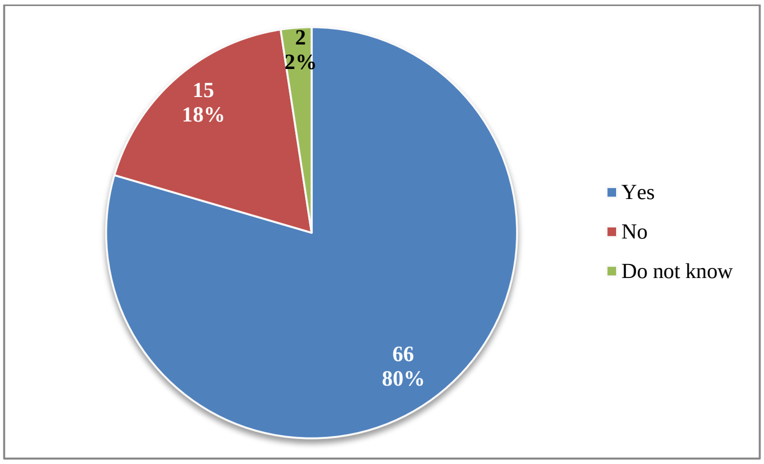


Figure 6.26: Question D3 – GSO partners contact

As communication issues in GSO projects have been repeatedly come across in early phases (e.g., the literature review, the preliminary industrial study, and the GSO interview survey), therefore, the author designed three questions in this section (Question D3, D4, and D5) to examine communication related issues in GSO projects. Question D3 looks into the connection between GSO development parties. Figure 6.26 shows that many respondents (n = 66, 80%) worked directly with GSO partners, followed by *15* (18%) claimed that they did not need to have direct contact with GSO partners.

Surprisingly, two people selected "Do not know" as their answers. When cross-tabulating this question with Question C3, it seems that both of them were working for Indian GSO provider companies; hence, their answers might be caused by their companies' data protection policies. In addition, when cross-tabulating this question with Question E5, it seems that *15* respondents who did not need to communicate with GSO partners were mainly served in various business sectors.

6.8.4 Question D4 – project communication methods

Question D4: If you need to communicate with the GSO partners, which method(s) do you usually adopt? (Please tick as many boxes as appropriate)

Figure 6.27 shows different types of communication methods that the survey respondents used in order to contact their GSO partners. As in the last question *15* people reported that they did not work with GSO partners directly. By cross-tabulating results of Question D3 and D4, it is noticeable that *five* of them contributed to this question, which suggests that these people might need to communicate with GSO partners *indirectly*; whereas the other 10 people still chose the same answers "No need to communicate with the GSO partners".

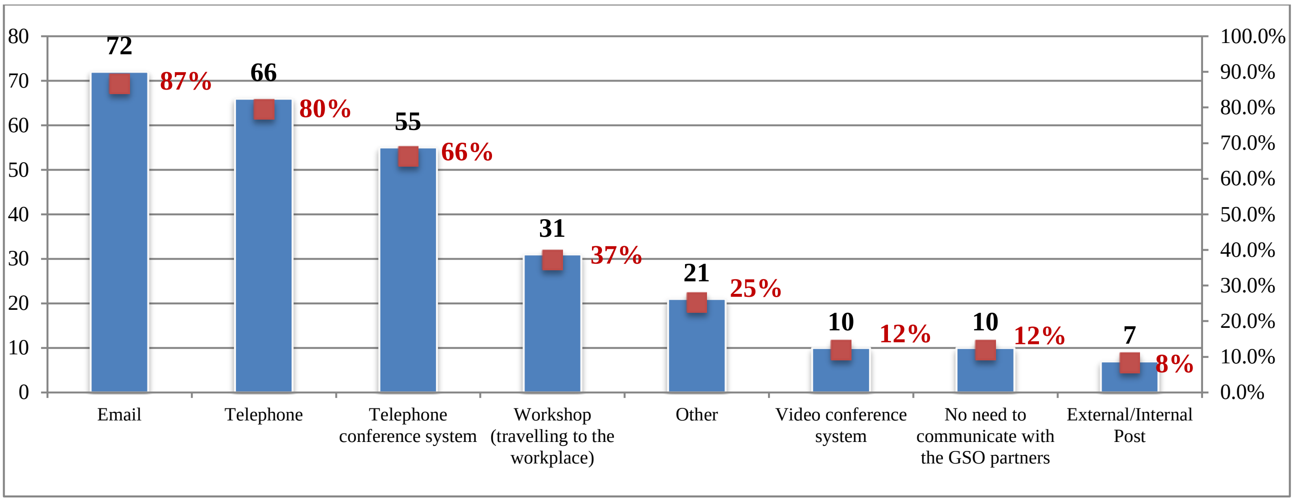


Figure 6.27: Question D4 – communication methods

According to the diagram, the majority of the respondents selected email (n = 72) as their main communication methods, followed by telephone (n = 66), telephone conference system (n = 55), workshop (n = 31), and other methods (n = 21). Table 6.6 specifies 21 defined communication methods in the column labelled "Specified answers". The author's coding includes in the column labelled "Communication methods" – amongst 21 specified answers, two communication methods are found: online instant messaging (n = 9, 43%) and face-to-face communication (n = 12, 57%).

The results of Question D4 indicate that, although traditional communication methods such as workshop and face-to-face discussion still played important roles in the collaboration in GSO practices, instant information exchanging methods (e.g., online instant messaging, telephone, telephone conference systems, and email) were evidently much more popularly used in order to interchange information between different development parties. Because the development work is geographically distributed, it is reasonable that instant message exchanging methods were more acceptable than other methods. Interestingly, although many GSO companies have installed many expensive video conference systems for global communication since the GSO employment (Cherian 2008), it seems that this method had not been exploited as much as possible.

Table 6.6: Question D4 – respondents' specified communication methods

Respondent ID	Specified answers	Communication methods
1	Sametime - instant messaging	Online instant messaging
2	direct communication	Face-to-face
3	Instant messenger	Online instant messaging
4	Face to Face discussion	Face-to-face
5	Face to Face, on site	Face-to-face
6	Sametime	Online instant messaging
7	Instant Chat application (Sametime)	Online instant messaging
8	In Person	Face-to-face
9	Sametime (IM and collaboration software)	Online instant messaging
10	Sametime - online chatting system	Online instant messaging
11	online chatting tools such as MSN	Online instant messaging
12	face-to-face with onshore GSO reps	Face-to-face
13	MSN Live or Internet phone	Online instant messaging
14	online chat - i.e. MSN	Online instant messaging
15	Sametime	Face-to-face
16	online chatting tools such as MSN or Yahoo messenger	Online instant messaging
17	team meeting	Face-to-face
18	face to face	Face-to-face
19	online chatting tools	Online instant messaging
20	Face to face at desks	Face-to-face
21	Sametime	Online instant messaging

6.8.5 Question D5 – GSO project contact

<u>Question D5: Who do you usually communicate with in the GSO projects? (Please tick as many boxes as appropriate)</u>

Question D5 is designed to recognise with whom GSO practitioners *usually* communicated as well as how communications were carried out between different parties in GSO projects. Figure 6.28 below presents *eight* project stakeholder groups that the survey respondents usually communicated with in the collaboration. As this question is not mandatory for people who did not need to contact GSO partners (Question D3, section 6.8.3), therefore, *74* out of 83 survey respondents (89%) answered this question, whereas *nine* people (11%) skipped this question. Similar to what has been done in Question D2, the author categorises the results into *eight* project stakeholder groups:

1) **Senior manager group** (16% of the respondents, coloured dark red) which includes chief information officer (CIO), director of sector (Dof), and Head of department (Hof);

2) **Project management group** (52% of the respondents, coloured orange) which includes project manager, delivery manager, and team manager;
3) **Consultancy group** (38% of the respondents, coloured purple), which includes technical supervisor and IT consultant;
4) **Systems analyst & designer group** (41% of the respondents, coloured dark blue), which includes systems architect, systems analyst, and systems designer;
5) **IT support group** (41% of the respondents, coloured blue) which includes IT supporter and onshore/offshore coordinator;
6) **Developer group** (45% of the respondents, coloured light blue) which includes tester, developer, programmer, and testing supervisor;
7) **Clerical worker group** (6% of the respondents, coloured dark green), which includes secretary and assistant; and,
8) **The business sector group** (24% of the respondents, coloured green) which includes marketing people, business/requirement analyst, and business representatives.

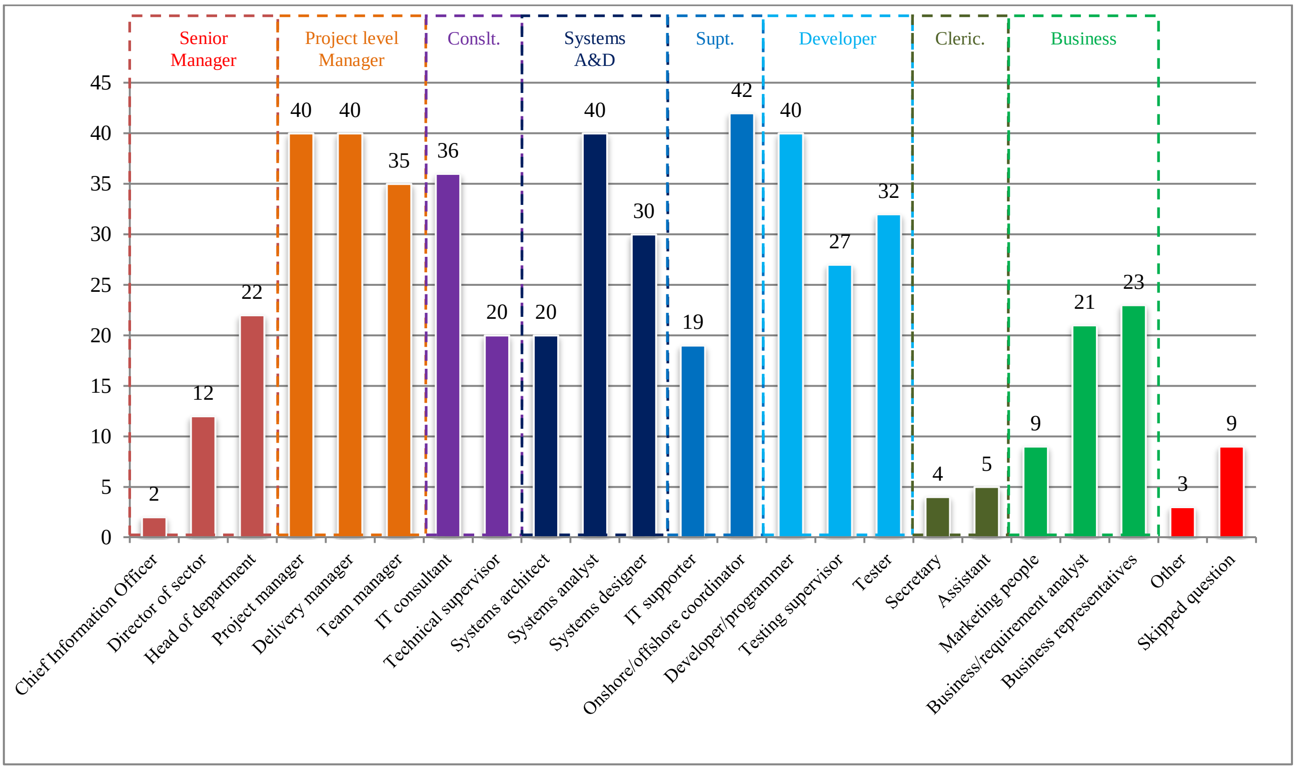


Figure 6.28: Question D5 – with whom GSO practitioners usually communicate in GSO projects

For three people selected the option "Other – please specify", all of them can be grouped into the *business sector* – their answers are: 1) "business stakeholders"; 2) "Directly with business analyst"; and, 3) "HR manager on the business side". All of these answers have been added in to the *business sector* group in the following discussion.

6.8.5.1 A project contact heat map

As communication is one of the most important domains in GSO projects (see discussions in section 2.6.3, section 4.5.3.3, and section 5.5.1), therefore, the author combines results of Question D2 (project responsibilities), Question D5 (project communications), Question E5 (staff groups), and Question E6 (IT positions) to trace how project contact was performed between different development parties in GSO projects.

Table 6.7 lists the results of cross-tabulating between these survey questions, which illustrates the situation of project contact between *six* key project duties (the first column in the table) and *eight* main project stakeholder groups (the first row in the table). Table 6.7 is also used to form into a project contact heat map which is presented in Figure 6.30. To be specific, the table below illustrates the number of project contact counted after cross-tabulating results of key project responsibilities (with respect to Question D2) and main project stakeholders (with respect to Question D5). As Question D2 does not contain enough data to establish a meaningful *management & support* category, therefore, the author includes results of Question E5 and E6 during the data analysis.

Table 6.7: The project contact between project stakeholder groups and key project responsibilities

D5 / D2, E5 & E6	Senior manager	Project level manager	Consult ant	Systems A&D	IT support	Develo per	Business sector	Clerical worker
Initiation & Planning	16	31	25	24	25	22	18	4
Requirement & analysis	10	26	20	21	23	25	14	3
Design	9	21	18	17	18	21	13	3
Implementation	12	30	19	26	25	29	15	5
Maintenance & review	14	34	25	28	29	31	18	6
Management & support*	12	29	23	20	18	21	17	2

*The Management & Support category is produced based on cross-tabulating results of Question D5, D2, E5 and E6, as the project management group is established in section 6.7.

Based on the above table, the author calculates *communication levels* (IDC 2007a; Cataldo & Herbsleb 2008) to present the performance of project contact in GSO practices. Figure 6.29 below briefly shows the process of calculating the communication levels. For instance, if 40 respondents reported that they had design duties, the project contact between the design duty and other main project stakeholder groups can be derived from cross-tabulating Question D2 and D5 – see the row labelled “Design” in Figure 6.29; by dividing 40 (people had design duties) into the values in the row “Design”, *communication levels* of stakeholders’ project contact with the designer group are computed and listed in the row labelled “Percentage” in the diagram below.

D5 / D2	Senior manager	Project level manager	Consultant	Systems A&D	IT support	Developer	Business sector	Clerical worker
Design	9	21	18	17	18	21	13	3

Divided by 40

Percentage	*22.5%*	*52.5%*	*45.0%*	*42.5%*	*45.0%*	*52.5%*	*32.5%*	*7.5%*

Figure 6.29: How to calculate communication levels

As justified in section 6.8.2 – the survey respondents are moderately equally distributed in *six* project duties (on average, 25-30% of the respondents), hence the communication levels calculated in this section are representative of most of the key development duties in GSO projects. Moreover, according to IDC (2007), the communication levels can be used to *partially* reflect the performance of project contact and communication network during the development: 1) if the communication levels between two parties are below 30%, their project contact is considered *cold*; 2) if the communication levels are between 31% and 60%, the project contact is considered *moderate*; and, 3) if the communication levels are over 61%, their project contact is considered *hot*.

After computing the communication levels through the above process, a heat map of project contact between different project stakeholder groups and key development duties is produced (see Figure 6.30) – cells with the high communication levels are coloured dark red (hot spots, 71%-100%) or red (61%-70%), whereas cells that have low communication levels are coloured with light blue (21%-30%), blue (11%-20%), or purple (0%-10%). Cells with relatively moderate communication levels (e.g., 51%-60%, 41%-50%, and 31%-40%) are coloured orange, yellow, and green respectively.

Project groups / Dev. duties	**Senior manager**	**Project level manager**	**Consultant**	**Systems A&D**	**IT support**	**Developer**	**Business sector**	**Clerical worker**
Initiation & Planning	32.7%	63.3%	51.0%	49.0%	51.0%	44.9%	36.7%	8.2%
Requirement & analysis	20.8%	54.2%	41.7%	43.8%	47.9%	52.1%	29.2%	6.3%
Design	22.5%	52.5%	45.0%	42.5%	45.0%	52.5%	32.5%	7.5%
Implementation	23.5%	58.8%	37.3%	51.0%	49.0%	56.9%	29.4%	9.8%
Maintenance & review	26.4%	64.2%	47.2%	52.8%	54.7%	58.5%	34.0%	11.3%
Management & support	34.3%	82.9%	65.7%	57.1%	51.4%	60.0%	48.6%	5.7%

71%-100%	**61%-70%**	**51%-60%**	**41%-50%**	**31%-40%**	**21%-30%**	**11%-20%**	**0%-10%**

Figure 6.30: A heat map of project contact generated based on communication levels

6.8.5.2 Discussion of project contact in the collaboration

The heat map above indicates that the project contact was particularly hot in the project management column. However, due to lack of respondents in the clerical worker group, the communication levels in the "clerical worker" column is much lower than other *seven* project stakeholder groups. As the result for this category in the heat map might not be representative, hence the author decides to exclude the clerical worker group in the following discussion. Table 6.8 below summarises insufficient project contact areas discovered in Question D5.

Table 6.8: Areas with insufficient project contact

Project Stakeholder Group	Project Areas with Insufficient Project contact
1. Senior management group	1) Initiation & planning 2) Management & support
2. Project management group	3) Requirements & analysis 4) Systems design
3. The consultancy group	5) Requirements & analysis 6) Systems design 7) Maintenance & review
4. Systems analyst & designer group	8) Initiation & planning 9) Requirements & analysis 10) Systems design
5. IT support group	11) Systems design 12) Implementation
6. Developer group	13) Initiation & planning
7. The business sector group	14) Initiation & planning 15) Requirement & analysis

1) **Senior management group** – In general, project contact between the senior management group and key project duties was very limited. It is partly expected, as senior managers do not need to make much contact with development teams in GSO projects. However, the heat map indicates that their contact with phases such as *initiation & planning* and *management & support* was also relatively inadequate, which implies that the senior management might need to increase their project contact with the initiation & planning group to ensure GSO project arrangements and project-level managers to understand the actual progress and performance of GSO projects.

2) **Project management group** – This group was more communicative than other groups, which is understandable as normally project and people managers need to communicate with every part of a GSO project. In addition, the heat map shows that the communication levels between project managers and areas such as initiation & planning, maintenance & review, and management & support are higher than other areas, which indicates that project managers paid much attention to duties such as project arrangements, performance verification, and progress supervision. However, the results also suggest that, project managers' contact was relatively inadequate with areas at the operational level (e.g., *requirements capture* & *analysis, and design*).

3) **The consultancy group** – Except the implementation duty, the consultancy group had a reasonable good project contact with other GSO development parties – the results suggest that

consultants had a relatively high project contact with the *management & support* group. However, for development areas that often require regular consultancy support (e.g., such as *requirements capture*, *analysis & design*, and *verification*), the consultancy group did not present a sufficient project contact according to the heat map.

4) **Systems analyst & designer group** – It is observable that people with analysis & design duties had relatively good project contact with others development parties throughout the project lifecycle. Surprisingly, their contact with early development responsibilities such as *initiation & planning*, *requirements & analysis*, and even *design*, was slightly lower than other areas. Because the quality of analysis & design is largely dependent on the performance of *requirements capture and definition* (Satzinger *et al.* 2008), therefore, research findings in this question suggest that the systems analysts and designers might need to increase their project contact with teams who are responsible for transforming business requirements into IT/IS solutions. Additionally, the results also partially explain the reason why some operation level GSO practitioners complained about the quality of requirements capture and definition in the GSO interview survey.

5) **IT support group** – This group had relatively high project contact with project areas such as initiation & planning, maintenance & review, and management & support. However, their communication levels with people at the operation level (e.g., *design* and *implementation*) were relatively low. As onshore and offshore coordinators belong to this group, a high project contact between IT support group and people working at the operational level is expected. However, the results illustrate that IT supporter's contact with designers and developers was just moderate, which indicates that an in-depth study might be necessary in order to discover communicative issues such as communication methods or reporting channels during the development.

6) **Developer group** – Development teams in GSO projects often have high project contact with people working in areas such as systems analysis & design, IT support, and project management (Herbsleb 2007). Reasonably high communication levels between the developer group and project duties such as systems analysis and design, IT support, and project management are expected. The heat map suggest that, besides *initiation & planning*, developers maintained a relatively good contact with other development parties. It explains the reason why many interviewees in the GSO interview survey gave positive comments to the phase of implementation.

7) **The business sector group** – In software development projects, the business sector often do not need to make too much contact with project teams at implementation level (e.g., developers, tester, and designers). Hence, it is reasonable that the business sector had a relatively low project contact with most of the development areas except management & support. However, it is somewhat

surprising that the business sector's communication levels with *initiation & planning* and *requirement & analysis* were also fairly limited. In order to achieve better project outcomes, high-quality inputs from the business side (e.g., business requirements and project arrangements) are vital to the development work; hence active communications between the business sector and the IT sector are essential in globalised IT software solutions (Cherian 2008). Following that, it seems that the project contact between business sector and both *initiation & planning* and *requirement & analysis* might still need to be improved in GSO projects.

6.8.5.3 Categorised project contact issues during the development

In order to provide presentable results to highlight project contact issues in the development, Figure 6.31 is produced based on cross-tabulating results of Question D5, D2, E5 and E6. The diagram on next page illustrates six radar maps which highlight the status of project contact in six development areas, i.e. initiation & planning, requirement & analysis, design, implementation, maintenance & review, and management & support.

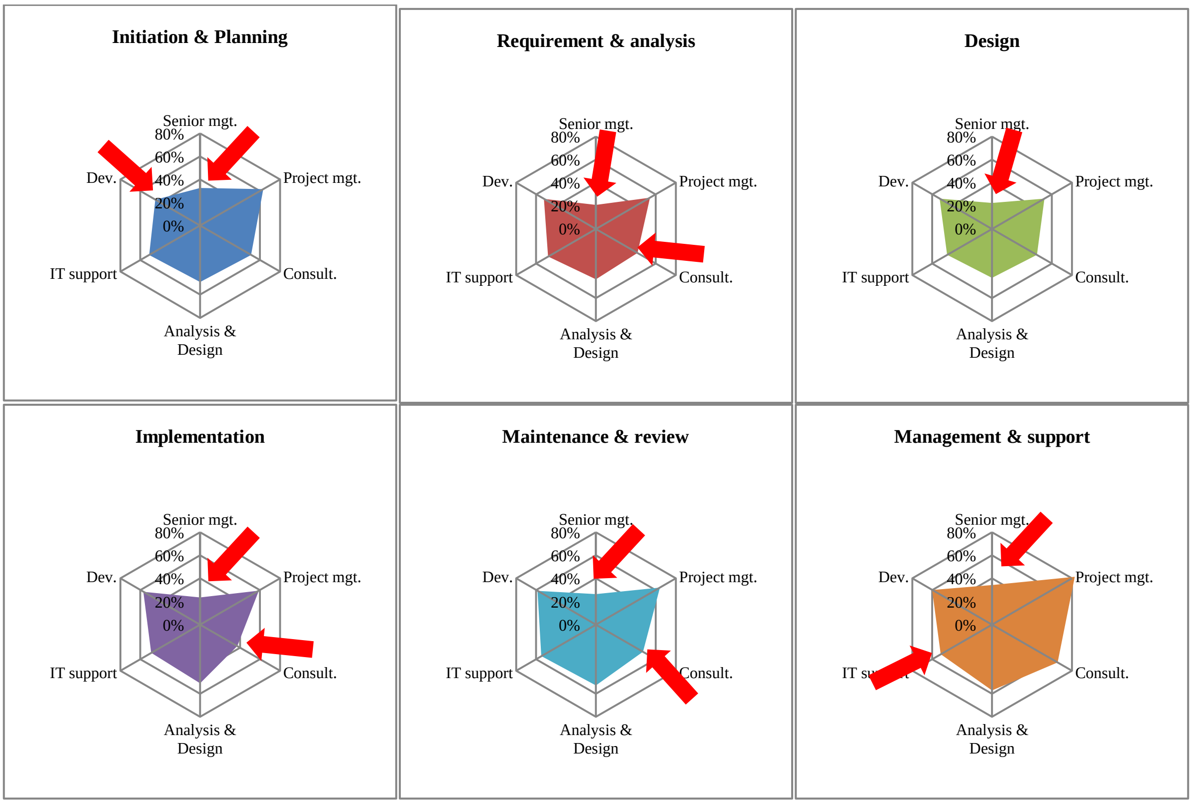


Figure 6.31: Radar maps for project contact between stakeholders and development duties

According to the diagram, it is observable that, besides initiation & planning, the senior management's project contact with other five development areas was considerably lower than other project stakeholders. The diagram also indicates that the project contact is not sufficient between the developer group and initiation & planning duties (the figure on the top left), the analysts & designers group and the design duties (the figure on the top middle), consultants and requirement & analysis duties (the figure on the top middle), consultants and the implementation duties (the figure on the lower left), consultants and maintenance & review duties (the figure on the lower middle), and IT support with management & support project duties (figure on the lower right).

6.8.6 Question D6 – development methods

<u>Question D6: What are the development methods your company adopts in GSO projects? (Please tick as many boxes as appropriate)</u>

Both Question D6 and D7 investigate development methods in GSO practices. Figure 6.32 shows development methodologies adopted by the participating companies – over half of the respondents (n = 42, 51%) reported that their companies used their own development methods in GSO projects, coloured green, followed by organisational oriented methods such as PRINCE (projects in controlled environments), Blended methods such as SSADM (structured systems analysis and design method), rapid development methods (e.g., XP), object-oriented methods (e.g., RUP, rational unified process), and only two persons chose people-oriented methods (e.g., ETHICS, effective technical and human implementation of computer-based systems). Noticeably, five people reported that their companies did not follow any development method and nine survey respondents specified their answers.

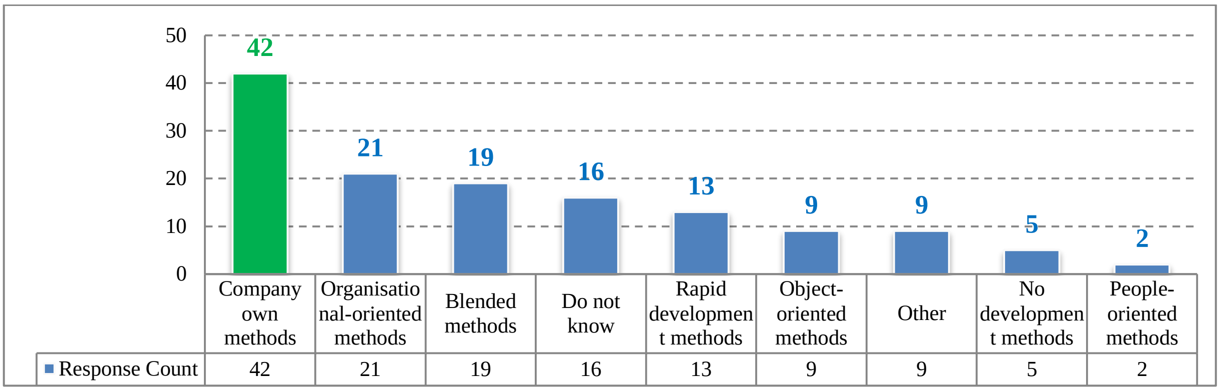


Figure 6.32: Question D6 – development methods in GSO projects

Figure 6.9 below lists those specified answers, based on which the author's interpretation can be seen on the right column labelled "The Author's Interpretation". By adding the above specified answers into the total number of development methods selected by the respondents, the author cross-tabulates the results of Question D6 with C8 (company size). Table 6.10 shows the results of the cross-tabulation, which indicates that large-scale companies (with more than 5000 employees) mainly chose their own standard development methods (57%), followed by Blended (26%) and organisational-oriented (25%). The results in middle size and small-scale companies (with less than 5000 employees) were rather varied – their main development methods were company own methods (41%) and Rapid (35%), however, many respondents from these companies also chose object-oriented method (24%), organisational-oriented method (24%), and no development method (24%).

Table 6.9: Areas with insufficient project contact

Specified Answers	The Author's Interpretation
1. Black box	The respondent might refer to the black box testing, which cannot be counted as a development method
2. Parts of several methods but never properly adhered to	*Company own method*
3. CMMI process framework	Capability maturity model integration, which is *a process improvement approach*
4. CMMI	*A process improvement approach*
5. ADM Accenture in house	*Company own method*
6. TOM – company own development method	*Company own method*
7. QMS	Quality management systems – *Company own method*
8. All of the above	This answer has been excluded due to the vagueness
9. Rapid Application Design (RAD)	the respondent might refer to RAD, which belongs to rapid development methodologies

Table 6.10: Question D6 - the main development methods according to company size

Company Size	Response count	Blended methods	Object oriented	Rapid methods	People oriented	Organisational oriented	Company own methods	No methods
5000+	65	17	5	8	2	16	37	4
1-5000	17	1	4	6	0	4	7	4
Percentage								
5000+	65	**26.2%**	7.7%	12.3%	3.1%	**24.6%**	**56.9%**	6.2%
1-5000	17	6%	**23.5%**	**35.3%**	0.0%	**23.5%**	**41.2%**	**23.5%**

6.8.7 Question D7 – successful development methods

<u>Question D7: In your opinion, which methods have been successfully applied to the GSO project(s)? (Please tick as many boxes as appropriate)</u>

Based on Question D6, Question D7 looks into which development methods had been successful in GSO practices. Figure 6.33 presents the survey respondents' opinions on which development methods were successfully followed in their GSO projects. Interestingly, 28 people (34%) claimed that they did not know which method(s) was successful, followed by own companies' methods (27%), Blended methods (18%), organisational-oriented (17%), Rapid (15%), object-oriented (7%), and only one person mentioned people-oriented methods. Four people (5%) specified their answers (e.g., "structured – Waterfall approach", "Agile", "CMMI", and "CMM&CMMI"). After having added these specified answers into the total number of successful development methods, the author cross-tabulates the results of Question D7 with Question C8. Table 6.11 below presents that both Blended (23%) and company own development methods (28%) were reported as successful development methods by people from large-scale companies, in comparison with professionals from middle size and small-scale companies preferred Rapid (41%) as their main methods.

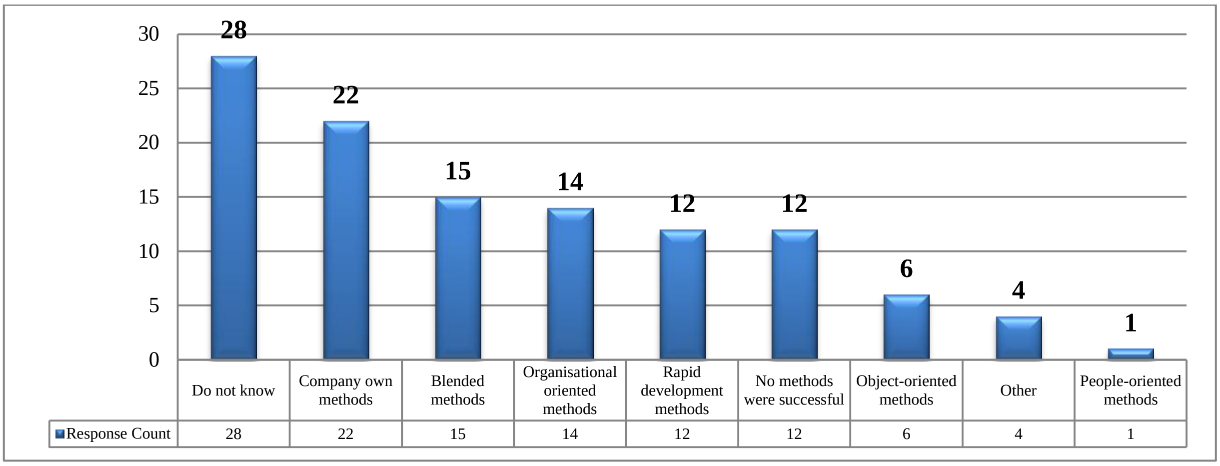


Figure 6.33: Question D7 – successful development methods in GSO projects

Table 6.11: Question D7 - the successful development methods according to company size

Company Size	Response count	Blended methods	Object oriented	Rapid methods	People oriented	Organisational oriented	Company own methods	No successful methods
5000+	65	15	4	7	1	10	18	10
1-5000	17	3	3	7	0	4	5	1
Percentage								
5000+	65	**23.1%**	6.2%	10.8%	1.5%	15.4%	**27.7%**	15.4%
1-5000	17	17.6%	17.6%	**41.2%**	0.0%	23.5%	**29.4%**	5.9%

6.8.7.1 Discussion of Question D6 and D7

Question D6 and Question D7 disclose that large-scale GSO related companies preferred controlled and structured methods (e.g., Blended and organisational-oriented methods) or their companies' own development methods; whereas middle and small-scale companies adopted many different types of development methods in GSO practices – amongst these methods, Rapid methods and company own methods were popular choices.

The results are understandable because big companies always want to have more control over their projects (Trategy & B. Fitzgerald 2008), whereas small or middle size companies want to deliver faster (Lings *et al.* 2007). Hence small or middle size firms prefer more flexible development methods to deliver services; and large scale companies are willing to follow well-organised structured methods. However, when comparing the results between Question D6 and D7, it is noticeable that only 18 out of 37 (49%) people from big companies claimed that their own development methods were successful in GSO practices, compared with six out of seven (86%) respondents from small and middle size companies who had reported that Rapid development methodologies were performed successfully according to their experienced GSO projects. The above findings indicate that no generally acceptable development methods had been reported by this online survey; thus, in order to seek suitable methods for the increasing GSO employment, companies might need to discuss with their clients/providers when arranging their GSO projects.

6.8.8 Question D8 – the development performance

Question D8: In order to understand the quality and implementation of current GSO projects, we need to look into some project related factors. Based on your GSO project experiences, how well do you rate the performance of these project factors below? (Please tick one box for each issue. If you are not sure about some answers, please tick the "Do not know" column)

This subscale measures the development performance in GSO projects. 83 people gave ratings to the first part of Question D8 and only two persons have specified open-ended answers. On average, around 15% of the respondents have selected "do not know", which might be caused by these people's project duties (see Question E5 and E6) that prevented them from commenting on every factor.

6.8.8.1 The development subscale

The detailed question and its option list can be found in Appendix C. Table 6.12 shows the subscale for capturing the respondents' views on the performance of the development work in GSO projects. A typical five-level Likert scale is used. The scores were statistically analysed and compared with results obtained from earlier research approaches. There are 12 items presented on the scale. An additional option "*Do not know*" is added for people who might not have the expertise to contribute. An option "Other (please specify)" was included in the subscale to collect open-ended exceptional answers.

Table 6.12: Question D8 – the development subscale

		Very Good	**Good**	**Indifferent**	**Poor**	**Very Poor**	**Do not know**
Systems Development	Understanding of business requirements	☐	☐	☐	☐	☐	☐
	Systems analysis/design skills	☐	☐	☐	☐	☐	☐
	Systems architecture skills	☐	☐	☐	☐	☐	☐
	Efficiency in programming/debugging	☐	☐	☐	☐	☐	☐
	Efficiency in testing	☐	☐	☐	☐	☐	☐
	Efficiency in delivery	☐	☐	☐	☐	☐	☐
	Quality of delivery	☐	☐	☐	☐	☐	☐
	Understanding of development method(s)	☐	☐	☐	☐	☐	☐
	Efficiency in training	☐	☐	☐	☐	☐	☐
	Project management	☐	☐	☐	☐	☐	☐
	People management	☐	☐	☐	☐	☐	☐
	Extended working hours	☐	☐	☐	☐	☐	☐
	Other (Please specify)						

6.8.8.2 Reliability testing

As described in section 6.3.2, the author has used SPSS to test the reliability of the scale. When coding the scale into SPSS, the author has renamed each item with an alias, for example "business requirements" as DF1 and "systems analysis/design skills" as DF2. After conducting reliability statistics in SPSS, SPSS Output 6.8.1 (Table 6.13) is produced, which presents the basic results of reliability analysis for the development subscale.

Table 6.13: SPSS Output 6.8.1

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.897	.906	11

The value of Cronbach's Alpha suggests that the overall reliability of the measured scale is *0.897* and the standardised item alpha is *0.906,* which indicates a good reliability of the development scale. The results are considerably over the acceptable magnitude of 0.7 to 0.8, which is recommended by Kline (2000). Noticeably, the factor *Extended working hours* has been removed from the development subscale in the following analysis, due to its presence on the scale has reduced the overall reliability of the established subscale.

Table 6.14: SPSS Output 6.8.2

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	**Corrected Item-Total Correlation**	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
DF1	30.71	69.801	**.584**	.773	.890
DF2	30.91	69.037	**.743**	.742	.882
DF3	30.91	69.492	**.732**	.735	.883
DF4	30.62	68.695	**.729**	.656	.882
DF5	30.71	71.392	**.557**	.445	.891
DF6	30.82	69.968	**.593**	.660	.889
DF7	30.58	69.159	**.669**	.595	.885
DF8	30.44	68.707	**.686**	.781	.884
DF9	30.87	69.300	**.697**	.638	.884
DF10	30.89	68.010	**.834**	.799	.878
DF11	30.93	68.291	**.751**	.785	.881

Besides the above basic results, the author also uses SPSS to calculate the item total statistics. In SPSS Output 6.8.2 (see Table 6.14 above), the column labelled "Corrected Item – Total Correlation" shows the correlations between each item on the development subscale and the total score of the measured scale. According to Field (2005), if items on the scale do not correlate with the measured scale, values of these items normally are usually below 0.3 and therefore may need to be removed from the scale. Following that, in the above SPSS output, it is evident that all factors have encouraging correlations – all above *0.55*. Also, the column "Cronbach's alpha if item deleted" includes values of the overall alpha if a particular item is not included in the calculation. As the overall Cronbach's alpha is 0.897, theoretically, all values in the column should be around the overall alpha (Kline 2000). When examining the values in this column, it is manifest that the majority of these values are less than the value of the overall Cronbach's alpha, if they are deleted; it suggests that the deletion of any item on the scale will reduce the reliability of this development subscale.

6.8.8.3 Overall ratings on the performance of GSO development

Figure 6.34 illustrates the respondents' overall ratings on the performance of these factors presented on the scale, which clearly suggests people's opinions on different aspects of the development work in GSO projects. In the diagram, the author groups the "Very good" ratings (coloured light blue) and "good" ratings (coloured dark red) together and places them to the left of the plot area; similarly, he combines the "Poor" (coloured purple) and "Very poor" (coloured light blue) ratings and places them to the right of the plot area. For these rated "indifferent", the author paints them with white and places them in the middle of the plot area, so that the positive views can be separated from the negative opinions in the diagram. Red circles with dash outlines highlight oddities of the results.

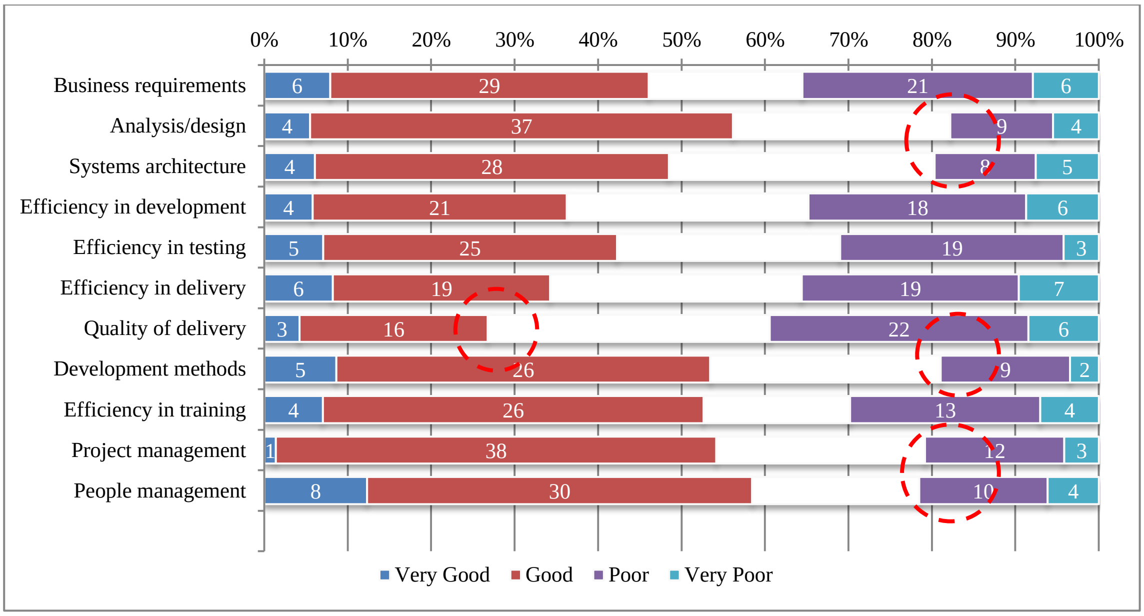


Figure 6.34: Question D8 – overall ratings of the development performance in GSO projects*

*The white space in this chart represents "indifferent"

To the left side of the diagram, over half of the respondents thought that their GSO projects were performing well in areas such as *analysis/design*, *understanding development methods*, *efficiency in training*. Below 40% of the respondents reported that *efficiency in development*, *the delivery quality*, and *the delivery efficiency* were conducted with high quality. For the factor "delivery quality" in particular, just 19 people (26%) believed that it was carried out well. Surprisingly, dissimilar to the results reported in the GSO interview survey, ratings for project and people management were relatively higher than most of the factors on the scale.

By contrast, to the right side of the diagram, between 30% and 40% of the respondents had negative views on development factors such as business requirements understanding, quality of delivery, efficiency in development, efficiency in testing, and efficiency in delivery. Around 20% of the respondents had given low ratings to factors such as project/people management, analysis and design skills, systems architecture, and development methods. Particularly for analysis/design and methods, fewer people gave negative views to these areas, which are rather strange as the preliminary study clearly indicates that using dissimilar development methods in the collaboration had significant impacts on the performance of GSO projects.

Additionally, the GSO interview survey discovers that few interviewees were satisfied with the phase of analysis and design, which is incompatible with the findings listed above. Thus, in order to explore the reason why conflicts exist between different research phases, the author takes the data analysis one step further – he cross-tabulates Question D8 and Question C7 (companies' roles in GSO) and analyses the development performance according to three GSO company groups.

6.8.8.4 Results for the GSO client group

Figure 6.35 presents the ratings provided by GSO clients. Over 50% of the respondents highly rated implementation factors, for example, efficiency in development, testing, development methods, and project/people management. Only between 10% and 25% of people gave high scores to the delivery quality and efficiency in training. Observably, over 40% of the respondents had negative views on factors such as business requirements, the delivery quality, and efficiency in training.

The results indicate that the client's workers were particularly not satisfied with areas such as project initiation (e.g., business requirements), verification (e.g., the delivery quality), and training. Still, most of them had positive views on implementation related areas (e.g., development methods and testing) and project/people management.

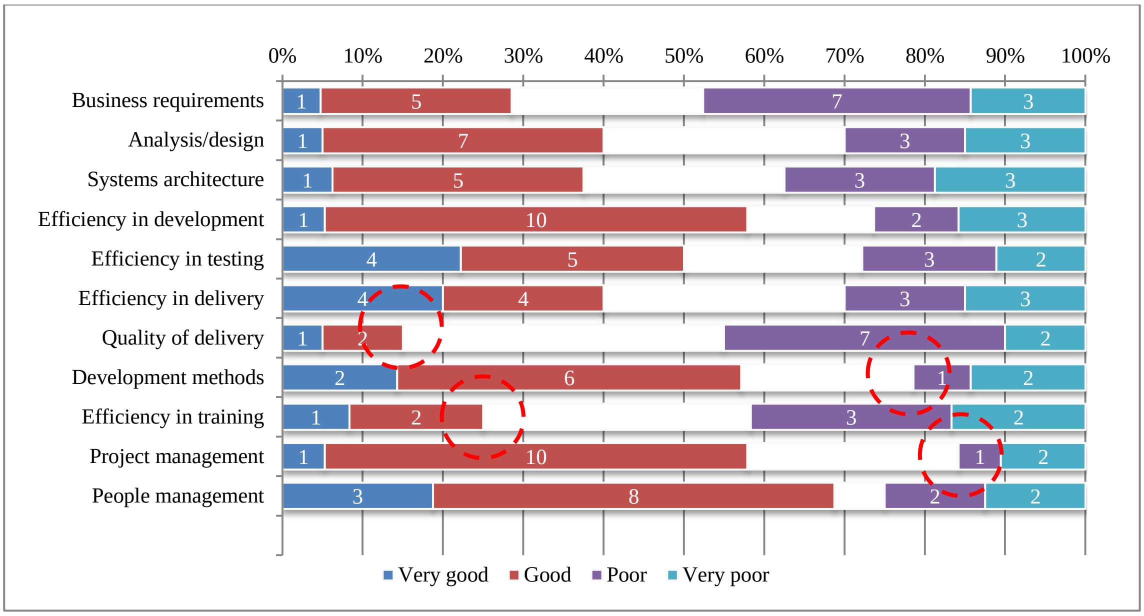


Figure 6.35: Question D8 – GSO clients' ratings on the development performance*

*The white space in this chart represents "indifferent"

6.8.8.5 Results for the GSO provider group

Figure 6.36 on the next page presents the ratings supplied by people from various GSO providers. According to the diagram, the GSO provider group had dissimilar views on the GSO development, in comparison to the GSO client group. Over 50% of the respondents from this group gave high ratings to development phases, such as business requirements, systems analysis and design, systems architecture, project level management, and development methods. Particularly for areas such as *business requirements*, *analysis and design*, and *systems architecture*, over 65% of the respondents in this group highly rated these areas – less than 10% of people had negative views on these factors.

Noticeably, only around 30% of people in this group gave high scores to implementation related areas such as *efficiency in development*, *testing*, *efficiency in delivery*, and *the delivery quality*, which suggests that people from the GSO provider group were not entirely satisfied with the performance of their implementation work in practice. However, because around 35% of the GSO provider workers had chosen "indifferent" for the above factors, it is possible that people might think that their implementation work was neither improved nor worsened in GSO practices. Additionally, the above diagram also suggests that the GSO provider group was dissatisfied with areas such as *development methods* and *efficiency in training* – both of the factors were reported in the earlier industrial studies (see section 4.6.1 for the development methods issue and section 5.5.1 for the training issue).

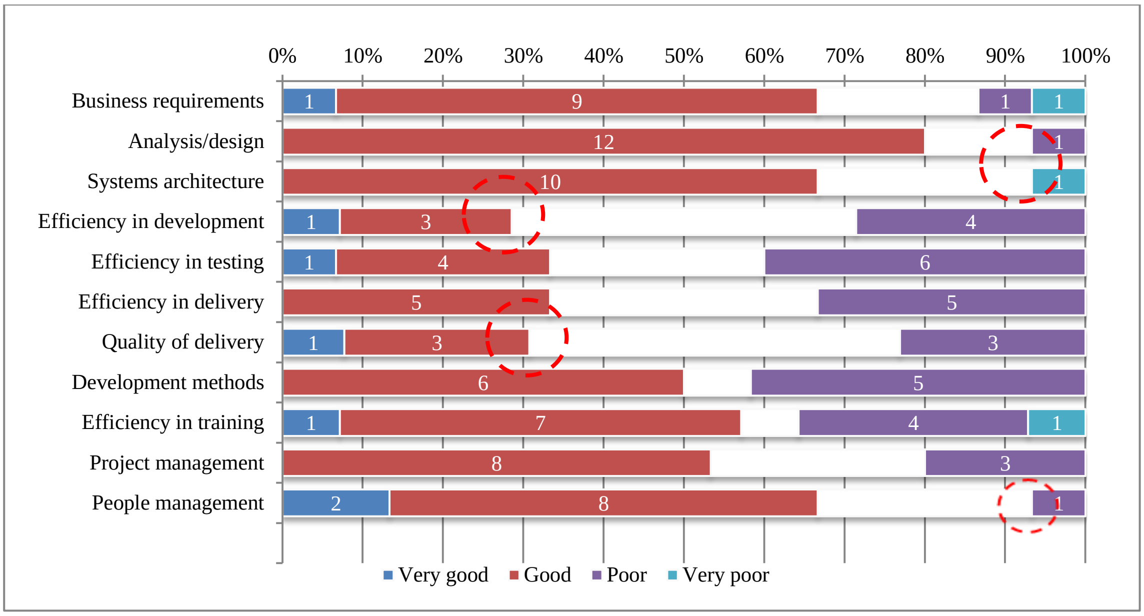


Figure 6.36: Question D8 – GSO providers' ratings on the development performance*

*The white space in this chart represents "indifferent"

6.8.8.6 Results for companies working on both

Figure 6.37 shows the ratings provided by people from companies that worked on both outsourcing and providing services. Generally speaking, the results reported by this group are very similar to those described in section 6.8.8.3, though the rating on *efficiency in development* is relatively lower – just 30% of the respondents gave good scores to this factor and over 35% gave low ratings.

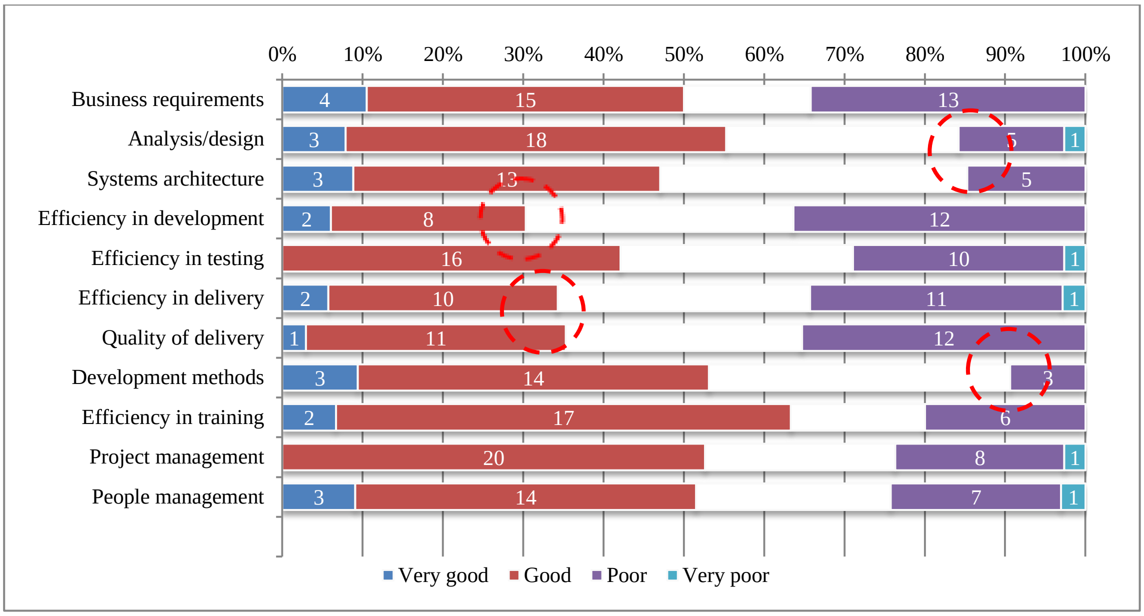


Figure 6.37: Question D8 – ratings of companies working on both*

*The white space in this chart represents "indifferent"

The results indicate that people working in this type of companies generally had positive opinions on early development phases (e.g., *business requirements*, *analysis/design*, and *development methods*), company training, and project/people management. However, most of them had negative views about the efficiency and the quality of development work in GSO projects; thus they have given low ratings to factors such as *efficiency in development*, *efficiency in delivery*, and *the delivery quality*.

6.8.8.7 Discussion of Question D8 – the development performance

The first part of Question D8 examines the performance of the development in GSO projects. A Likert scale was used to capture the respondents' views on a range of development related factors. The results of this part of the question suggest that people from different types of GSO companies had dissimilar views on the performance of the development work in GSO projects. Table 6.15 distils these opinions and suggests that GSO clients' views are somewhat different to the other two groups. In general, many respondents were not entirely satisfied with *business requirements*, *training*, *the delivery quality*, and *efficiency in delivery*:

1) **The GSO client group** highly rated factors related with implementation and project management. However, people from this group were mostly unsatisfied with development related factors (e.g., requirements capture, the delivery quality, and training), which suggests that, in order to improve the development quality in GSO practices, client companies might need to pay further attention to areas such as project initiation (e.g., the requirements), verification (e.g., the outcome), and communicative issues (e.g., the reporting channel and to share information).

2) **The GSO provider group** mainly gave high ratings to some early development phases (e.g., requirements capture, analysis & design, and development methods) as well as project level management. However, people from this group rated relatively low on implementation. This finding suggests that the performance of the actual implementation in GSO projects was not conducted well, which indicates that, in order to improve the efficiency and the quality of the delivery, GSO services providers shall spend more time on reviewing their implementation processes during the development.

3) **The group working on both** also reported positive opinions on early development areas and project level management. Different to the other two groups, people from this group were satisfied with training in their GSO projects. Many people reported negative views about the efficiency and the quality of the delivery, which suggests that process control and quality control need to be carefully reviewed for improvement.

Table 6.15: The performance of development areas in GSO projects

Survey Groups	Areas for Improvement	Dissatisfied Areas	Satisfied Areas
1. GSO clients	Early development phases	• Business requirements • Training • The delivery quality	• Efficiency in development • Development methods • Project/people management
2. GSO providers	The phase of implementation	• Training • Development methods • Testing • Efficiency in delivery	• Business requirements • Analysis and design • Systems architecture • People management
3. Working on both	Process and quality control	• Business requirements • Efficiency in development • Efficiency in delivery • The delivery quality	• Analysis & design • Development methods • Training • Project/people management

6.8.9 Question D8 (continued) – the performance of communication

This is the second part of Question D8, which collects the ratings on communication factors. Based on issues reported in the early phases, this section introduces a scale to measure the performance of communications in GSO projects. 83 people had contributed to the question, with only one person specified an open-ended answer. On average, 12% of people selected "do not know" on the scale.

6.8.9.1 The communication subscale

The options of the communication subscale can be seen in Table 6.16, which shows how to capture the respondents' views on the performance of communication in GSO projects. In order to capture opinions on these listed factors, a five-level Likert scale is used. Similar to the last section, items on the scale are scored from *Very Good* to *Very Poor*. There are six factors presented on the scale. For each factor, an additional option "*Do not know*" is added. An option "Other (please specify)" is included to handle unexpected answers.

Table 6.16: Question D8 – the communication subscale

		Very Good	**Good**	**Indiffer ent**	**Poor**	**Very Poor**	**Do not know**
Communication	Efficiency in communication	☐	☐	☐	☐	☐	☐
	Quality of Language	☐	☐	☐	☐	☐	☐
	Understanding of different working styles	☐	☐	☐	☐	☐	☐
	Understanding of different culture	☐	☐	☐	☐	☐	☐
	Cross company communication	☐	☐	☐	☐	☐	☐
	Cross culture communication	☐	☐	☐	☐	☐	☐
	Other (Please specify)						

6.8.9.2 Reliability testing

Similar to last section, the author used SPSS to test the reliability of the scale. SPSS Output 6.8.3 (see Table 6.17) presents basic results of the reliability analysis of the subscale. The value of Cronbach's Alpha shows that the overall reliability is 0.853 and the standardised item alpha is 0.857. Both of them indicate good reliability of the communication scale.

Table 6.17: SPSS Output 6.8.3

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.853	.857	6

Besides the above basic results, the author also calculates the item total statistics. In SPSS Output 6.8.4 (Table 6.18), the column labelled "Corrected Item – Total Correlation" shows that all measured factors have high item-total correlations as their values are much greater than 0.3. As the overall Cronbach's alpha is 0.853, all values in the column labelled "Cronbach's alpha if item deleted" are below the overall alpha, which means the deletion of these items will reduce reliability.

Table 6.18: SPSS Output 6.8.4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Efficiency_in_communication	14.83	17.283	**.542**	.628	**.848**
Quality_of_language	14.90	16.951	**.558**	.652	**.845**
Understanding_work_styles	14.54	17.155	**.684**	.535	**.821**
Understanding_different_culture	14.58	16.523	**.668**	.678	**.823**
Cross_company_communication	14.54	16.763	**.721**	.619	**.814**
Cross_culture_communication	14.60	16.794	**.688**	.772	**.820**

6.8.9.3 Overall ratings on the communication performance

Figure 6.38 shows overall ratings of the performance of six communication factors reported in the survey. The diagram shows that factors such as efficiency in communication (n = 40, 48%) and quality of language (n = 40, 48%) received more positive ratings than the other four factors – 30-40% of the respondents gave positive ratings to understanding of different cultures and working styles, cross-company and cross-cultural communications.

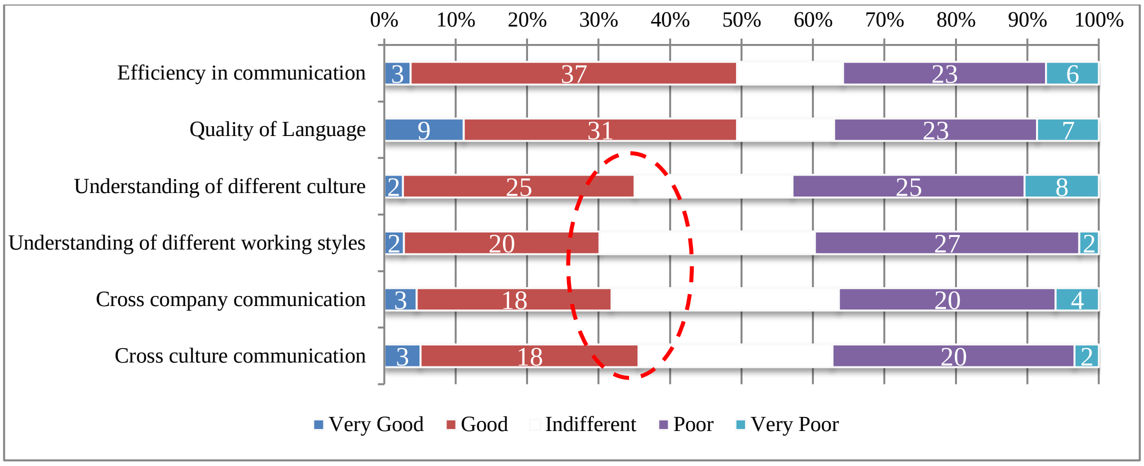


Figure 6.38: Question D8 – overall ratings on the GSO communication performance*

*The white space in this chart represents "indifferent"

Amongst six factors, 22 people (30%) reported that *understanding of different working cultures* was performed well in GSO projects. The respondents who gave negative scores to these factors ranged from 30% to 45%. Amongst these factors, *understanding of different culture* attracted slightly low ratings than other factors. Interestingly, between 30% and 40% of the respondents had selected "indifferent" for factors such as *understanding different working styles*, *cross-company communication*, and *cross-cultural communication*, which indicate that the performance of these factors had not been changed in GSO practices.

The above diagram combines ratings reported by 83 survey respondents. However, because the performance of communications is largely dependent on *the quality of language* as well as *cross-cultural understanding* in the collaboration (see section 2.6.3), therefore, in order to examine views reported by people from different cultural backgrounds, the author divides the overall results into two groups (native English speakers and non-native English speakers) through cross-tabulating Question P9 and results of the second part of Question D8.

6.8.9.4 Ratings for different language groups

Figure 6.39 illustrates the ratings provided by people from two language groups. The results from native English speakers are placed to the left of the diagram below and the results from non-native English speakers are presented to the right. In order to simplify the presentation of the diagram, the author has renamed each commutation factor with an alias (e.g., "efficiency in communication" as CF1, "Quality of language" as CF2 and so forth, and so on).

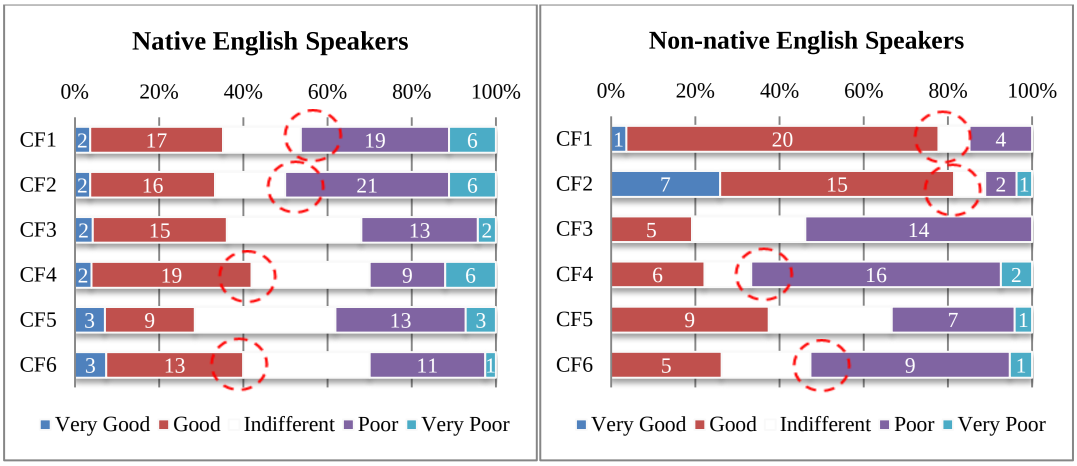


Figure 6.39: Question D8 – ratings provided by different language group*

*The white space in this chart represents "indifferent"

According to the results from native English speakers, their positive ratings ranged from 25% to 45%. CF4 (*the understanding of different culture*, 42%) and CF6 (*cross-cultural communication*, 40%) were rated somewhat better than the other factors. Notably, over 40% of them thought that CF1 (*efficiency in communication*, 45%) and CF2 (*quality of language*, 51%) did not perform well in GSO projects, followed by 37% who gave negative ratings to CF5 (*cross-company communication*). The results from this group coincide with the findings in the GSO interview survey, which has also indicated that *the quality of language* (including speaking and written) and communication barriers (e.g., communication channels) were main issues that impacted the performance of GSO projects.

The results from the group of non-native English speakers are extraordinarily different to those reported by the first group. Surprisingly, CF1 (*efficiency in communication*, 77%) and CF2 (*the quality of language*, 82%) had been positively rated by this group. By contrast, CF3 (*the understanding of different working styles*, 53%), CF4 (*the understanding of different culture*, 67%), and CF6 (*cross-cultural communication*, 52%) had been given much negative ratings by non-native English speakers. The results suggest that non-English speakers encountered more cultural issues (e.g., *cross-cultural communication*, *the understanding of different culture* and *work styles*) than language related issues (e.g., *the quality of language* and *the efficiency in communication*), which can also be found in the preliminary study and the GSO interviews – dissimilar development styles and working styles caused communicative barriers in practice (see section 4.6 and 5.5).

Nevertheless, the author does not expect a high percentage of positive ratings on factors such as *efficiency in communication* and *the quality of language*. Presumably, it could be caused by these non-native English speakers' work environment in the survey – most of the non-native English speakers were working closely with staff from GSO client companies or companies working on both, therefore, they could be more satisfied with the quality of language and the efficiency of communication carried out by their clients. Another possible reason is that, as many GSO providers were required to work at onshore R&D sites, these people supposed to have better language and interpersonal skills and could be more confident than those who were working on offshore sites.

6.8.9.5 Discussion of Question D8 – the communication performance

Table 6.19 below lists the main satisfied and dissatisfied communication factors reported by the survey. According to the table above, it is observable that native English speakers (mainly from GSO clients and firms working on both) worried about *language related issues* (e.g., *the quality of language* and *communication efficiency*); whereas many non-native speakers (from the GSO providers) raised their concerns regarding *cross-cultural* and *cross-company issues* (e.g., *different working styles* and *cultures*, and *cross-cultural communication*). The finding of this section indicates that companies with dissimilar representation in GSO projects shall pay attention to different types of communicative issues in practice, which means that diverse processes might need to be followed by GSO related companies. For example, GSO clients with more native English speakers might need to improve their staff's *cultural related knowledge*, so that their staff can understand GSO providers' cultures and work styles better; whereas, for GSO providers who employ more non-native English speakers, more training would be useful to enhance staff's knowledge of *how to communicate* with GSO clients as well as to improve *the quality of English*.

Table 6.19: The performance of communication factors in GSO projects

Survey Groups	Satisfied Factors	Dissatisfied factors
Native English speakers	• The understanding of different cultures • Cross-cultural communication	**Language related issues:** • Efficiency in communication • The quality of language • Cross-company communication
Non-native English speakers	• Efficiency in communication • The quality of language	**Cross-cultural and cross-company issues:** • The understanding of different working styles • The understanding of different cultures • Cross-cultural communication

6.8.10 Question D9 – the desirability of outsourcing

<u>Question D9: In your opinion, which part(s) of IT software development is appropriate to outsource? (Please tick one box for each issue. If you are not sure about some answers, please tick the "Do not know" column)</u>

This question examines development phases and duties that are desirable for outsourcing. 83 respondents gave ratings to this question and only two persons specified open-ended answers. On average, the percentage of selecting the option "do not know" is around 6%.

6.8.10.1 The option list

Table 6.20 introduces the list of 13 options, which contain four levels to measure the suitability of a development phase or project duty in GSO practices. Because this is *not* a Likert scale, reliability testing is not suitable for this scale. Also, options such as "*Do not know*" and "Other (please specify)" have been added on the list.

Table 6.20: Question D9 – the outsourcing scale

Development phases to outsource	**High Desirability**	**Middle Desirability**	**Low Desirability**	**Never Desired**	**Do not know**
Feasibility study (including initial requirements understanding and decision making)	☐	☐	☐	☐	☐
Project investigation and planning (including understanding high level functional and non-functional requirements)	☐	☐	☐	☐	☐
System architecture	☐	☐	☐	☐	☐
High level systems analysis and design	☐	☐	☐	☐	☐
Detailed systems analysis and design	☐	☐	☐	☐	☐
Components analysis and design	☐	☐	☐	☐	☐
Development methodology adoption	☐	☐	☐	☐	☐
Implementation (including programming and debugging)	☐	☐	☐	☐	☐
Testing	☐	☐	☐	☐	☐
Quality control	☐	☐	☐	☐	☐
Maintenance and support (including training and documentation)	☐	☐	☐	☐	☐
Review and verification (including organisational learning)	☐	☐	☐	☐	☐
Project level management	☐	☐	☐	☐	☐
Other (please specify)					

6.8.10.2 Overall results of Question D9

83 people answered this question and only two persons specified open-ended answers. Figure 6.40 shows the respondents' overall opinions on which development phases and duties can be outsourced. In the diagram below, after combining the selections of "high desirability" and "middle desirability", it is evident that over 61% of people reported that *detailed analysis/design* (64%), *component analysis & design* (76%), *implementation* (84%), *testing* (72%), and *maintenance & support* (63%) were desirable for outsourcing. Around 31% to 60% of the respondents believed that *development methods* (43%), *systems architecture* (41%), and *project management* (41%) were able to employ the GSO model. Only below 30% of the survey participants claimed that *high-level analysis & design* (32%), *quality control* (30%), *review & verification* (30%), *project investigation* (27%), and *feasibility study* (16%) should be contracted out to external GSO services provider companies.

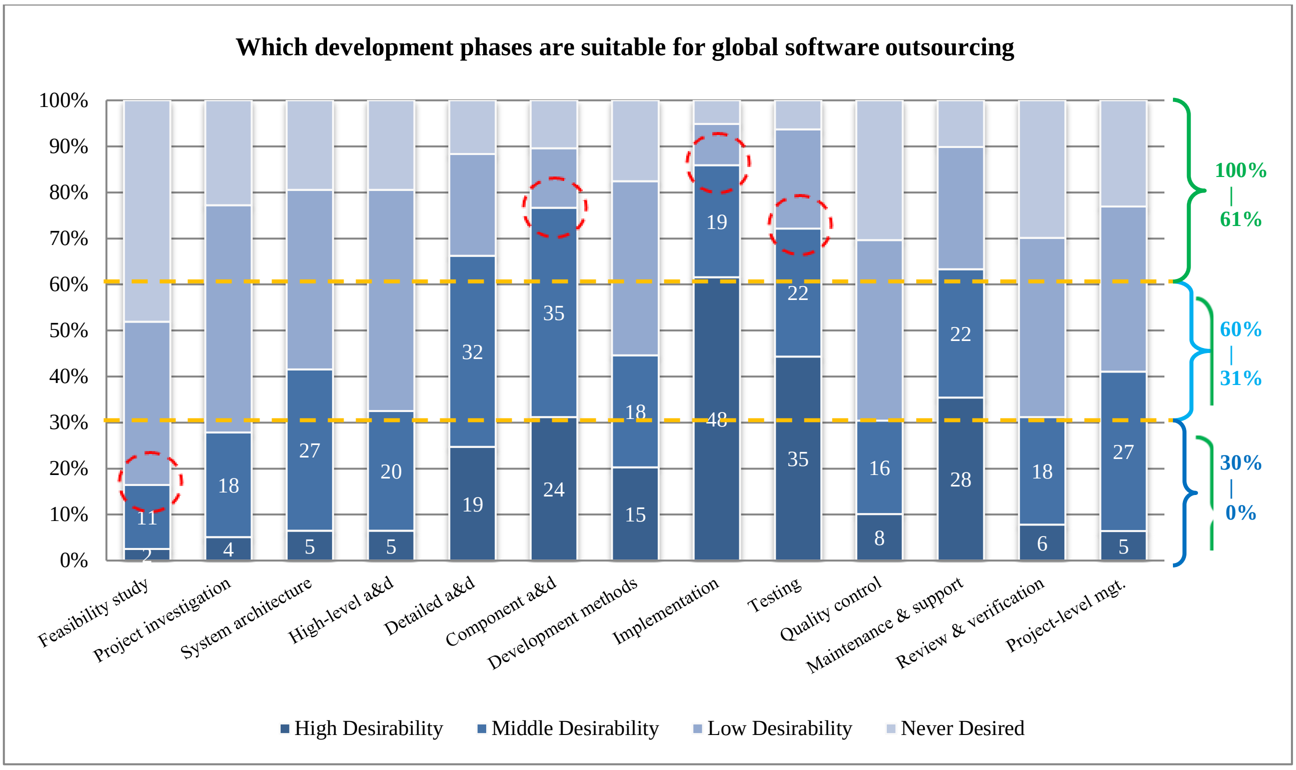


Figure 6.40: Question D9 – development phases/duties for GSO practices

The overall results suggest that the survey respondents commonly accepted that the GSO model could be applied to various implementation phases as well as the phase of maintenance & support; however, for early development work and verification, the desirability of GSO is considerably low. Because the above results combine views of people from three GSO groups, therefore, similar to the data analysis conducted in Question D8 (see section 6.8.8), the author divides the results into three groups. The following sections describe the reported results.

6.8.10.3 *The GSO client group*

Totally, 23 people from the GSO client group contributed towards Question D9. Figure 6.41 presents their views on how suitable the listed development phases and project duties are for GSO practices. In the diagram below, over 60% of the respondents claimed that *component analysis & design* (71%), *implementation* (82%), *quality control* (64%), and *maintenance & support* (60%) were suitable for offshore outsourcing, whereas less than 20% of them believed that *feasibility study* (4%), *project investigation* (13%), *quality control* (22%), and *review & verification* (17%) should be kept in-house. The results indicate that clients' workers thought that GSO providers could work on most of *the operational level* duties and *maintenance & support*; however, phases such as project initiation and planning, verification, project management, and quality control were low desirable.

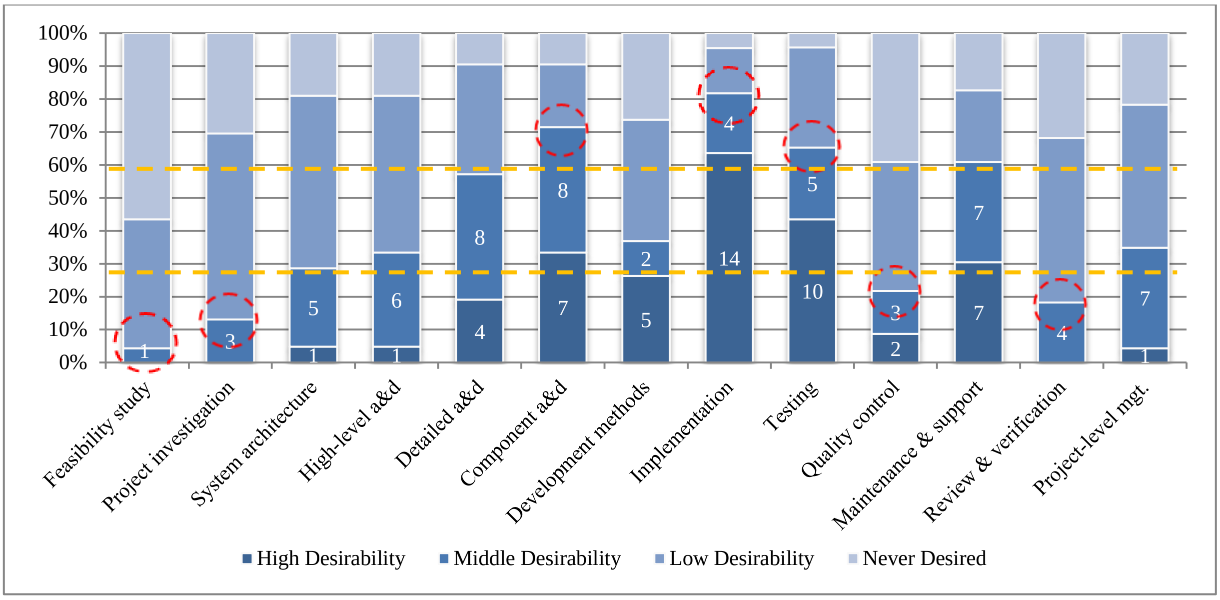


Figure 6.41: The GSO client group's views on development phases/duties for GSO

6.8.10.4 The GSO provider group

16 people from the GSO provider group commented on this question. Figure 6.42 below presents their opinions on which development phases and project duties are suitable for GSO practices. According to the diagram, unsurprisingly, most of people from this group claimed that development work *at the operational level* could be handed over to external services providers. Interestingly, they also reported that *feasibility study* (32%), *project investigation* (46%), and *project level management* (65%) were suitable for the GSO model, which is noticeably different compared with the other two groups.

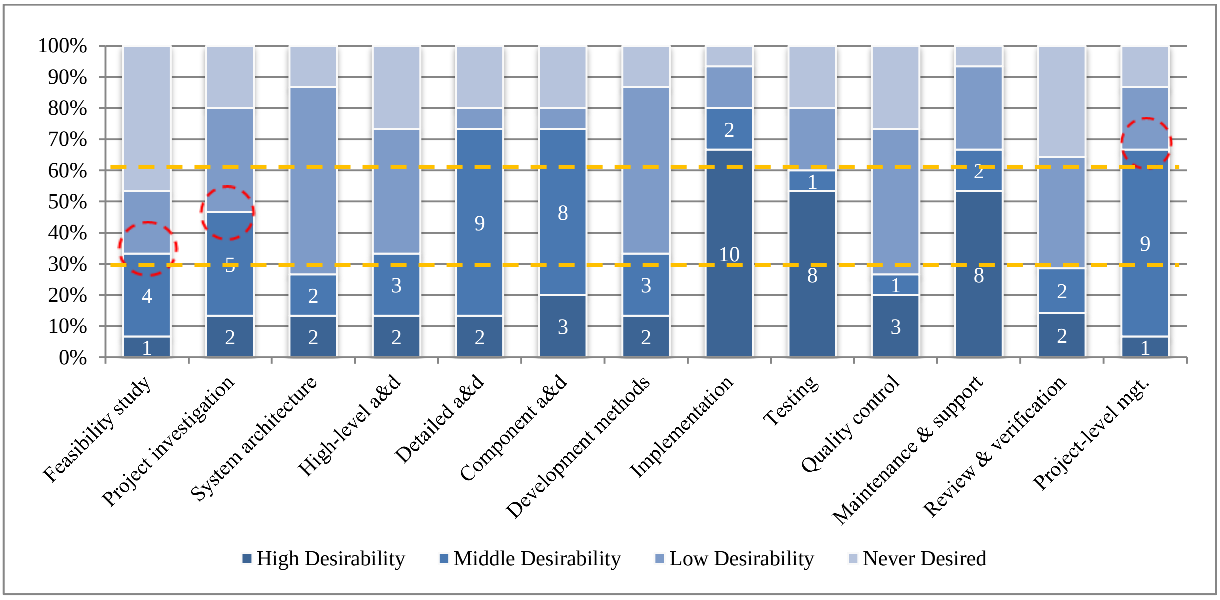


Figure 6.42: The GSO provide group's views on development phases/duties for GSO

This finding strongly indicates that people from GSO providers wanted to be involved in early development phases (e.g., *project initiation & planning* and *project management*). It implies that GSO provider companies were keen to increase GSO service level in practice. For other development phases and project duties, it is understandable that the GSO providers' opinions were somewhat similar to the other two groups.

6.8.10.5 The group of companies working on both

44 people from companies working on both outsourcing and providing services commented on this question. Figure 6.43 presents their views on which development phases and duties were appropriate in GSO practices. Many people in this group had similar opinions. Interestingly, 50-60% respondents from this group (much higher than those in the other two groups) claimed that *systems architecture* (54%) and *development methods* (52%) could also be contracted out, which suggests that companies working on both thought that systems level analysis & design and development methods adoption would be possible for external services providers. Surprisingly, verification duties such as *quality control* (35%) and *review and verification* (37%) were also claimed as appropriate outsourcing areas by this group, which suggests that people from this group were keen to arrange their GSO projects at a higher GSO service level - GSO services provider companies would have more responsibilities throughout the GSO project lifecycle.

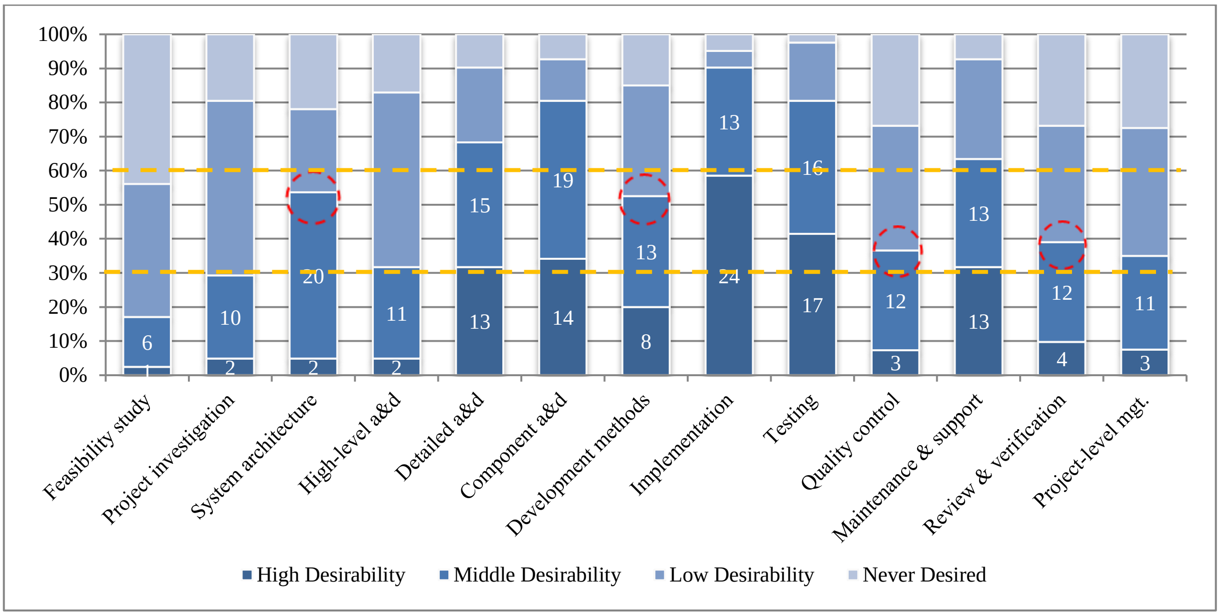


Figure 6.43: Views from companies working on both

6.8.10.6 Findings of Question D9

Table 6.21 summarises the findings in Question D9. In the table below, *high desirability* and *middle desirability* are coloured in green, whereas *low desirability* and *never desired* are coloured in amber and red respectively. The results of this question suggest that the majority of the respondents believed that *operational level work* (e.g., detailed analysis & design, component analysis & design, implementation, and maintenance & support) were suitable for the GSO model. For phases and duties that require certain levels of *business knowledge* (e.g., feasibility study and project initiation) and specialised *systems understanding* (e.g., systems architecture, development methods, and high-level analysis & design), these areas should be retained in-house; furthermore, most of the respondents claimed that *verification duties* (e.g., review & verification) were not suitable for offshore outsourcing.

Based on the table below, many interesting results emerge: 1) **GSO clients** believed that *project initiation/planning*, *verification*, and *project level management* had low desirability to employ the GSO model; 2) **GSO providers** suggested that *project initiation/planning* and *project management* could be outsourced, which indicates that GSO providers were keen to be involved in early development phases to increase the service level in the collaboration; 3) **Companies working on both** claimed that *systems level analysis & design* and *verification duties* could be outsourced to external providers, which suggests that this group expected higher service level in GSO projects.

Table 6.21: The desirability of employing GSO services in practice

Development Phases and project areas	Overall RAG Status	GSO Clients	GSO Providers	Working on both
Feasibility study				
Project investigation				
System architecture				
High-level analysis and design				
Detailed analysis and design				
Component analysis and design				
Development methods				
Implementation				
Testing				
Quality control				
Maintenance and support				
Review and verification				
Project management				

6.8.10.7 Discussion on the levels of GSO services

The above findings strongly indicates that decisions on which development phases or duties can be outsourced are mostly dependent on client companies' decisions on the levels of their GSO services (also see discussion in section 4.5.1). It is observable that GSO service level one and level two mainly focus on duties at operational level. Only when GSO clients decide to move up to service level three or level four, GSO providers are required to provide various services that involve *business understanding* and *system level knowledge* (e.g., high level analysis & design, systems architecture, development methods selection, and project level management). Interestingly, when including selections of low desirability into consideration, it is noticeable that, except areas such as *feasibility study*, *quality control*, and *verification*, most of the development lifecycle can be outsourced to GSO services providers. This finding corresponds with the scenario defined in *total outsourcing*.

Thus, the above discussion suggests that GSO clients can follow a steady procedure when employing the GSO model: 1) **Step One** (*GSO service level one* or *two*) – the collaboration shall start from development duties at the operational level (e.g., implementation and testing); 2) **Step Two** (*GSO service level two* or *three*) – gradually, the collaboration can be progressed to development duties at the systems level (e.g., analysis & design and systems architecture); 3) **Step Three** (*GSO service level three* or *four*) – if necessary, GSO providers could take over most of the development lifecycle, which can include project management; 4) **Step Four** (*GSO service level four*) – along with the maturity of GSO services, GSO clients might need to concentrate on *inputs* (e.g., requirements capture and definition), *controls* (e.g., quality assurance), and *outputs* (e.g., review and verification).

6.8.11 Question D10 – outsourced development phases

Question D10: Which part(s) of the software development is your company currently working on? (Please tick as many boxes as appropriate)

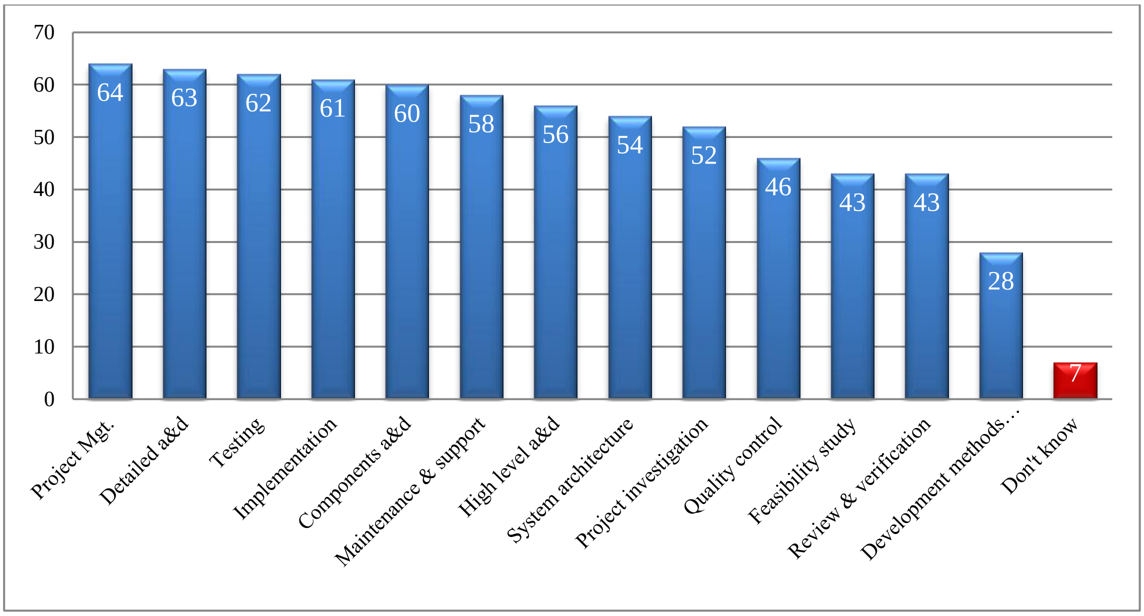
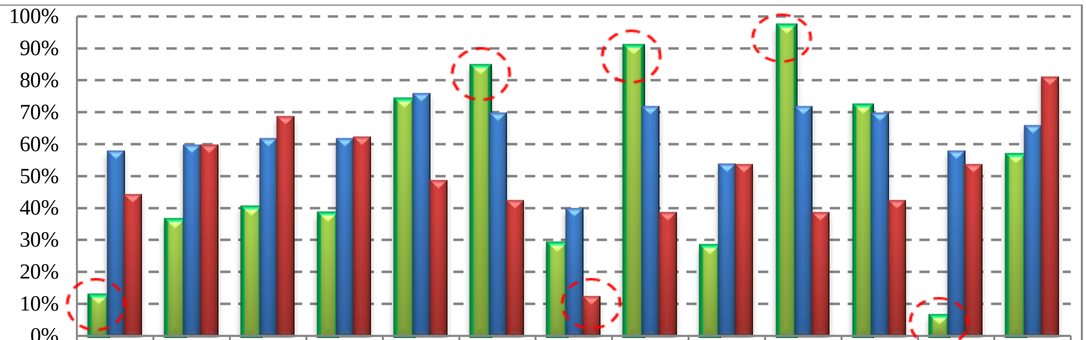


Figure 6.44: Development phases/duties on which participating companies were working

83 people have answered this question and only seven of them (8%) selected "Do not know", coloured dark red. Figure 6.44 illustrates the development phases and areas that the participating companies were working on during the survey. As the figure combines results from all the respondents, therefore, a fairly balanced distribution can be seen in the above diagram: 77% chose project management, followed closely by detailed analysis & design (76%), testing (75%), implementation (74%), components analysis & design (72%), support & maintenance (70%), high-level analysis & design (68%), systems architecture (65%), and project investigation (63%). Besides them, 46 people (55%) reported that their companies also had responsibilities in quality control, 43 respondents (52%) selected feasibility study, 43 (52%) chose review & verification, and only 28 out of 83 (34%) claimed that development methods selection was their companies' responsibilities.

6.8.11.1 Results based on different company types

In order to achieve a comprehensive view of the development duties in GSO projects, the author divides the results of Question D10 according to the participated companies' representation in GSO projects, through cross-tabulating Question C7 and D10. However, because limited people had contributed to the factor "development methods selection", therefore, discussions of *development methods* might not be representative in the following paragraphs. In addition, due to the unbalanced number of respondents from three company groups – for example, 44 people came from companies *working on both*, 23 people were employed by *GSO clients*, and 16 people worked for *GSO providers*, therefore, the author has used the response percentages (e.g., by dividing the number of responses from each group into the total number of people in each group) to present the research findings.



	Feasibility study	Project investigation	High level a&d	System architecture	Detailed a&d	Components a&d	Development methods	Implementation	Quality control	Testing	Maintenance & support	Review & verification	Project Mgt.
Providing	13%	36%	40%	38%	74%	85%	29%	91%	28%	97%	72%	6%	57%
Working on both	58%	60%	62%	62%	76%	70%	40%	72%	54%	72%	70%	58%	66%
Outsourcing	44%	60%	69%	63%	49%	43%	13%	39%	54%	39%	43%	54%	81%

Figure 6.45: Development phases/duties on which three types of companies were working

Figure 6.45 above presents *thirteen* key development phases/duties on which three types of GSO companies worked on (companies *working on both* are coloured blue, *GSO clients* and *GSO providers* are coloured red and green respectively). These companies' project duties were varied in practice:

1) **Project initiation** (including *feasibility study* and *project investigation*) – In the first development phase, the results illustrate that companies working on both and GSO clients had more responsibilities in this phase than GSO providers – limited survey respondents (less than 15%) from this group reported project duties in this area.

2) **High-level analysis & design** (including *high level systems analysis & design* and *systems architecture*) – Over 60% of the respondents from GSO clients and companies working on both claimed that their companies were responsible for this development area, in comparison to less than 40% of the respondents from GSO providers reported that they worked in this area.

3) **Detail level analysis & design** (including *detailed systems analysis & design* and *components analysis & design*) – Interestingly, on average over 70% of the professionals from GSO providers and companies working on both reported that they operated in this development area, in comparison to less than 50% of people from GSO clients said that they needed to work in the area. The finding coincides with Question D9 – detail level analysis and design work had been mostly delivered by GSO providers and companies working on both.

4) **Development methods selection –** Although there was a lack of responses on this project area, it is visible that companies working on both and GSO providers had higher response rates than GSO clients, which might suggest that GSO client companies had limited responsibilities when deciding development methods in GSO projects.

5) **Implementation & testing** – The result of this development phase is expected. According to the diagram above, it suggests that GSO providers had significantly more project responsibilities in this phase than the other two types of companies. However, companies working on both also had a relatively high response rate (72%) in this phase, which indicates that companies working on both need to maintain a certain amount of people to undertake their in-house development work.

6) **Project level quality control** – For this project duty, people from the GSO provider group did not report many responsibilities towards this duty. Hence, the GSO provider group's share is much lower than the other two groups in this area. The result suggests that GSO clients and companies working on both have much responsibility for quality control and quality assurance.

7) **Maintenance & support** – Both GSO providers and companies working on both had better response rates in this area compared with the GSO client group, which shows that many GSO client companies have outsourced this function in practice.

8) **Review & verification** – According to the diagram above, only 6% of the survey respondents from GSO provider companies worked this development phase, in comparison to over 50% of people from the other two types of companies claimed that they were responsible for this phase. The results clearly indicate that in order to review and verify the delivery work in GSO projects, GSO client companies and companies working on both paid much attention to this area.

9) **Project Management** – The result presents that GSO clients had more responsibilities than the other two types of companies in order to manage GSO projects. However, it is noticeable that a certain amount of people from companies working on both (65%) and GSO provider companies (56%) also worked on project-level management during the GSO collaboration.

6.8.11.2 Discussion of Question D10

The previous question (Question D9) suggests that most of *the operational level development work* and the phase of *maintenance & support* were reported as suitable areas for employing the GSO model. The finding in Question D10 accords with those in Question D9 – GSO providers had more responsibilities in the operational level development work (e.g., *detailed analysis & design*, and *implementation*). Noticeably, for some early development phases that require business backgrounds (e.g., *project investigation*) and systems expertise (e.g., *systems architecture*), GSO providers also accounted for a solid share (averagely 40%) according to the survey. Although Question D9 indicate that many respondents were keen to retain development duties (e.g., project initiation & planning, systems level analysis & design, and project management) in the clients' in-house R&D centres, Question D10 suggests that providers had already taken some responsibilities in those areas.

6.8.12 Question D11 – GSO benefits

Question D11: In your opinion how well is the current GSO project benefiting the following project factors? (Please tick one box for each issue. If you are not sure about an answer, please tick the "Do not know" column)

Based on the respondents' experiences in GSO practices, this question examines to what degree GSO projects have benefited an IT software project. A benefit scale is designated to measure GSO project level benefits from eight angles. 83 survey respondents have given their ratings and only one person has specified an open-ended answer. On average, the percentage of selecting the option "do not know" is around 10%.

6.8.12.1 The benefit scale

These factors on the benefit scale are listed in Table 6.22, which are mainly based on finding discovered in the GSO interview survey (see section 5.5.4 and 5.5.5). The scale captures the respondents' opinions on how GSO projects benefited these factors. For each beneficial factor, an option "*Do not know*" is included.

Table 6.22: Question D11 – the benefits scale

GSO project benefits	**Very Good**	**Good**	**Indifferent**	**Poor**	**Very Poor**	**Do not know**
Project planning	☐	☐	☐	☐	☐	☐
Resource management	☐	☐	☐	☐	☐	☐
Systems development	☐	☐	☐	☐	☐	☐
Delivery on time	☐	☐	☐	☐	☐	☐
Quality of the delivery	☐	☐	☐	☐	☐	☐
Global software development	☐	☐	☐	☐	☐	☐
GSO partner flexibility	☐	☐	☐	☐	☐	☐
Project management	☐	☐	☐	☐	☐	☐
Other, please specify:						

6.8.12.2 Reliability testing

The author has used SPSS to test the reliability of the scale. SPSS Output 6.8.7 (see Table 6.23) presents the basic results of reliability analysis. The overall value of Cronbach's Alpha shows that, for this eight item scale, the overall reliability is 0.936 and the standardised item alpha is 0.937, which indicate good reliability of the benefits scale.

Table 6.23: SPSS Output 6.8.7

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.936	.937	8

Besides the above statistics, the author also calculates the item-total statistics. In SPSS Output 6.8.8 (see Table 6.24), the column labelled "Corrected Item – Total Correlation" shows that all measured factors have high item-total correlations; in the column labelled "Cronbach's alpha if item deleted", all values are around the overall alpha (0.963), which means the deletion of these items will reduce reliability of the scale.

Table 6.24: SPSS Output 6.8.8

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Project_planning	18.98	47.098	**.806**	.693	**.925**
Resource_mgt	19.10	44.613	**.821**	.749	**.924**
Systems_dev	19.29	45.980	**.874**	.804	**.921**
Deliver_on_time	19.21	44.004	**.838**	.774	**.923**
Quality_of_delivery	18.58	47.166	**.818**	.716	**.925**
GSD	19.11	50.692	**.545**	.362	**.943**
GSP_flexibility	19.48	47.500	**.691**	.519	**.934**
Project_mgt	19.23	47.424	**.840**	.739	**.924**

6.8.12.3 Results for the benefits scale

When analysing the results for the benefits scale, it is observable that different types of companies' answers are somewhat similar. Thus, to simplify the discussion for Question D11, the author uses overall results in the following sections.

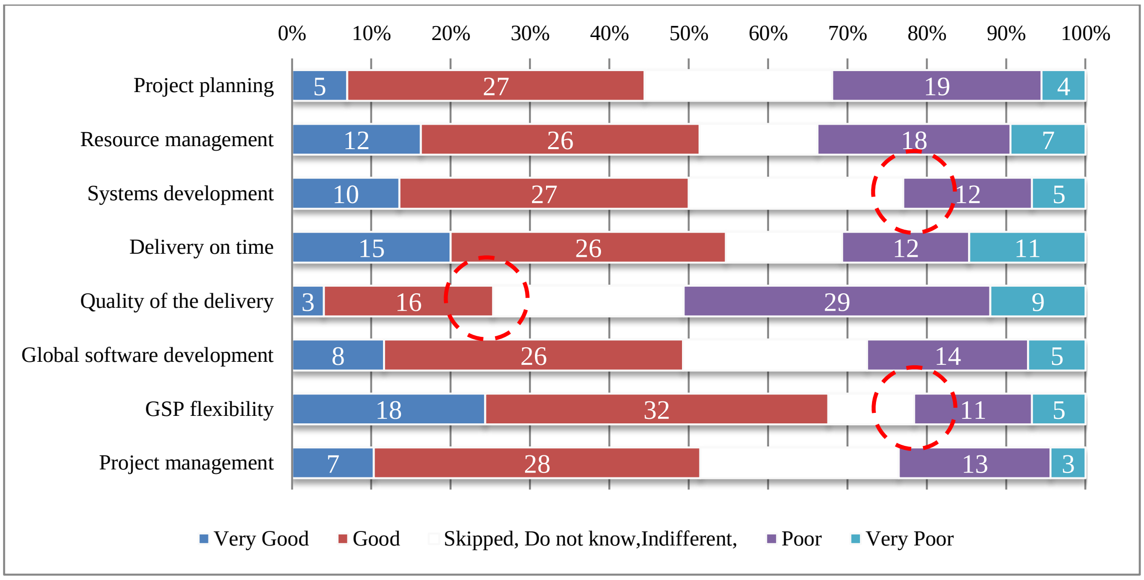


Figure 6.46: Project level benefits brought by the GSO model*

*The white space in this chart represents "indifferent"

Figure 6.46 above shows the ratings of to what degree GSO projects have benefited the development. According to the diagram, for positive ratings, most of the respondents (67%) reported that *GSP flexibility* (global services partner) had largely benefited GSO projects, followed by beneficial factors such as delivery on time (54%), resource management (52%), project management (52%), systems development (49%), global software development (48%), and project planning (44%). Noticeably, *the delivery quality* (25%) has received much less positive ratings than other factors – it had been given more negative ratings than other factors (51%). Around 30% of the respondents had negative views on resource management (34%), project planning (32%), and delivery on time (31%). Slightly over 20% of the respondents thought that systems development (23%), GSP flexibility (22%), and project management (24%) did not benefit the IT software development.

6.8.12.4 Discussion of Question D11

When correlating the above results with the first part of Question D8 (section 6.8.8), it is evident that the performance of the delivery quality was conducted poorly in GSO projects. In fact, many concerns over the delivery quality have been raised in the early research phases, for example, the GSO interview survey (sections 5.4.3 and 5.4.5). It suggests that *the delivery quality* was commonly treated as a main project level issue in GSO practices. Besides it, around half of the respondents claimed that GSO practices had been benefited by factors such as resources management, delivery on time, and project management, which indicate that *resources supply* and *project control* in GSO projects were performed better after employing the GSO model.

This finding partially explains the reason why interviewees in the GSO interview survey reported improvements in areas such as *delivery on time* and *resource flexibility* according to their experienced GSO projects (see section 5.5.3). Particularly in Question D11, the factor *GSP flexibility* has been reported as one of the most significant benefits in GSO projects – 67% respondents rated this factor as "good" or "very good", which suggests that GSO practitioners broadly accept that GSP had enhanced the flexibility of the development in practice. When reviewing the results in the early research phases, similar findings have also been constantly reported and discussed, for instance, the literature review (see section 2.4.2), the preliminary industrial study (see section 4.5 and 4.6) ,and the GSO interview survey (see section 5.4.2).

6.8.13 Question D12 – critical decision factors for GSO projects

<u>Question D12: In your opinion, how do the following factors contribute to your company's decision to obtain or approve a GSO project? (Please tick one box for each item. If you are not sure about some answers of listed items, please tick the "Do not know" column.)</u>

The last scale measures the critical decision factors for companies to choose the GSO model. 80 people answered this question and only one person specified an open-ended answer. On average, around 17% of people selected “do not know” on the scale.

6.8.13.1 *The critical decision factor scale*

The items of the critical-factor scale can be seen in Table 6.25, which captures the survey respondents’ opinions on which factors are critical for client companies to consider when choosing the GSO model. A five-level Likert scale is used – items on the scale are scored from *Very Important* to *Not Important At All*. There are 16 factors on the scale and each one has an option “*Do not know*”.

Table 6.25: Question D11 – the critical decision factor scale

Critical factors to choose the GSO model	**Very Important**	**Fairy Important**	**Neither important nor unimportant**	**Not Very Important**	**Not Important At All**	**Do not know**
Company reputation	☐	☐	☐	☐	☐	☐
Company track record (successful industrial precedents)	☐	☐	☐	☐	☐	☐
Cross-company relationship	☐	☐	☐	☐	☐	☐
Highly skilled staff	☐	☐	☐	☐	☐	☐
CMM/CMMI or other IT authentication	☐	☐	☐	☐	☐	☐
Competitive market quote						
High-standardised IT infrastructure	☐	☐	☐	☐	☐	☐
High quality of IT delivery						
Efficient systems development capability	☐	☐	☐	☐	☐	☐
Advanced IT technology/skills	☐	☐	☐	☐	☐	☐
Communication skills and language ability	☐	☐	☐	☐	☐	☐
Government support	☐	☐	☐	☐	☐	☐
Culture/language similarity	☐	☐	☐	☐	☐	☐
Social/political similarity	☐	☐	☐	☐	☐	☐
Domestic market requirement	☐	☐	☐	☐	☐	☐
Global Market requirement	☐	☐	☐	☐	☐	☐
Other, please specify						

6.8.13.2 *Reliability testing*

SPSS was used to test the reliability of the scale. SPSS Output 6.8.9 (see Table 6.26) presents the overall results of reliability analysis. The overall value of Cronbach’s Alpha suggests that, for this 14 items scale (*CMM/CMMI or other IT authentication* and *Competitive market quote* were removed due to low correlation with the scale), the overall reliability is 0.895 and the standardised item alpha is 0.890, which indicate a good reliability of this critical-factor scale.

Table 6.26: SPSS Output 6.8.9

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.895	.890	14

The author also calculates the item-total statistics. SPSS Output 6.8.10 (see Table 6.27), the column labelled "Corrected Item – Total Correlation" shows that all measured factors have strong item-total correlations. Comparing with the overall Cronbach's alpha, all values in the column labelled "Cronbach's Alpha if Item Deleted" are close to the overall value of Cronbach's alpha, which suggests a good reliability for this scale.

Table 6.27: SPSS 6.8.10

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Company_reputation	34.91	71.126	.566	.697	.889
Industrial_presendents	34.91	70.664	.562	.653	.889
Cross_company_relationships	34.42	70.017	.448	.562	.894
Skill_staff	34.98	74.519	.377	.515	.894
IT_infrastructure	34.34	68.729	.648	.584	.885
IT_delivery	34.87	68.886	.633	.776	.886
Development_capability	34.75	68.919	.726	.815	.883
Advanced_ICTs	34.62	67.278	.754	.769	.881
Communication_ability	34.40	66.321	.736	.785	.881
Government_support	33.42	67.055	.630	.580	.886
Cultural_language_similarity	33.91	66.895	.677	.744	.884
Social_political_similarity	33.36	66.234	.736	.813	.881
Domestic_market	34.15	67.169	.611	.653	.887
Global_market	34.30	68.984	.592	.573	.887

6.8.13.3 Overall results for critical decision factors

Figure 6.47 presents the respondents' views on how important the listed decision factors are, when considering whether or not to employ the GSO model or a GSO services provider. Again, when analysing the results of this question, the author analysed answers from client companies and non-client companies. Because results from both groups are fairly similar, thus, the combined results of Question D12 were used in the following discussion. According to the diagram below, over 70% of people highly rated factors such as reputation, company's track records, highly skilled staff, delivery capability, development capabilities, and advanced ICTs. Between 30% and 70% of the respondents reported that vital decision factors were cross-company relationship, IT infrastructure, communication ability, culture/language similarity, domestic and global market requirements. Noticeably, government support (18%) and social/political similarity (19%) were given fairly low ratings.

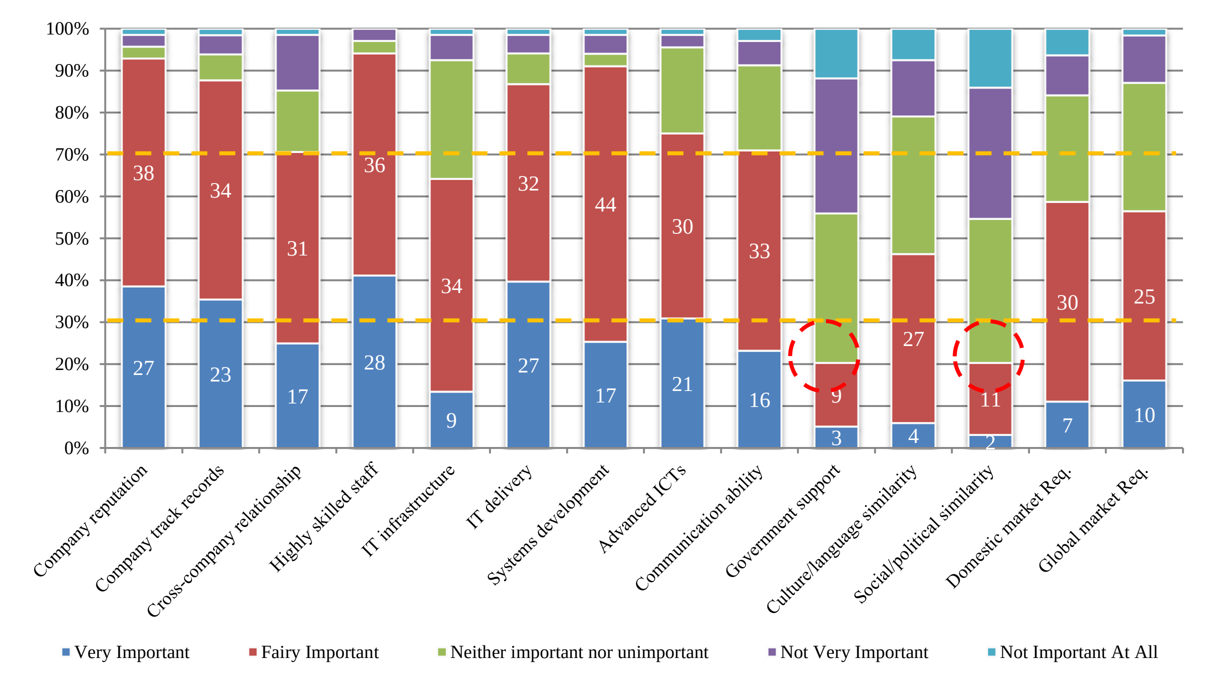


Figure 6.47: Question D12 – ratings of the critical decisions factors

6.8.13.4 Discussion of Question D12

Table 6.28 summarises the overall ratings on critical decision factors reported in Question D12. In the table below, *very important* and *fairly important* are coloured green, *neither important nor unimportant* and *not very important* are coloured amber, and *not important at all* are coloured with red. Question D12 suggests that, in order to obtain or approve GSO projects, GSO related companies were seeking proofs of capabilities to deliver high-quality IT software services, which can normally be demonstrated by GSO providers' track records, reputation in GSO services, the quality of their staff, and capabilities in development.

These listed critical decision factors indicate what to consider when deciding whether or not to choose external services providers to deliver internal IT/IS functions. Results from the early research phases (e.g., the literature review, the preliminary industrial study, and the GSO interview survey) suggest that GSO clients' quick decisions of employing the GSO model had caused unnecessary problems in practice, which was largely caused by lack of a rigorous decision making process.

Therefore, when making decisions of employing the GSO model and selecting GSO providers, client companies shall consider critical decision factors discovered in this question.

Table 6.28: The critical decision factors for the employment of the GSO model

Beneficial Factors	Overall RAG Status
1. Company reputation	Green
2. Company's track records	Green
3. Cross-company relationship	Green
4. highly skilled staff	Green
5. IT infrastructure	Amber
6. IT delivery capability	Green
7. Systems development capabilities	Green
8. Advanced ICTs	Green
9. Communication abilities	Green
10. Government support	Red
11. Culture/language similarity	Amber
12. Social/political similarity	Red
13. Domestic market requirements	Amber
14. Global market requirements	Amber

6.8.14 Question D13 – non-development issues in GSO projects

<u>Question D13: Have you experienced any of the following problems when working on GSO projects? (Please tick as many boxes as appropriate)</u>

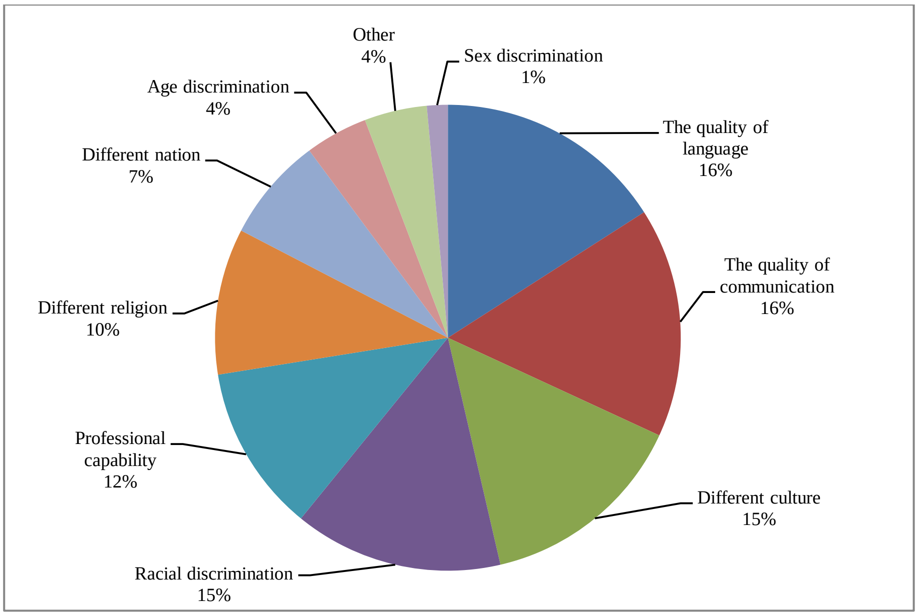


Figure 6.48: Question D12 – non-development issues in GSO projects

This question collects the survey respondents' views on non-development issues according to their experienced GSO projects. The reason why to place this section in the survey is because the literature review (see section 2.6.3) and the GSO interview survey (see section 5.4.2) indicate that various sociological issues could impact on the performance of the GSO collaboration. Hence, with aims of identifying sociological issues encountered by the survey respondents in GSO projects, the author placed this question in the questionnaire.

In the survey, 83 people have answered this question: 55 people (66%) working for GSO clients and companies working on both claimed that no problem was encountered at all, in comparison with 28 people (34%) from GSO providers shared their opinions towards Question D12. Figure 6.48 presents these 28 people's encountered non-development issues. According to the above diagram, 47% of them reported sociological problems such as *different culture* (15%), *racial discrimination* (15%), *different religions* (10%), and *different nations* (7%); 32% had communicative problems such as *the quality of language* (16%) and *communication* (16%); 12% encountered *professional capability* matters; 4% selected *age discrimination*; and only 1% chose *sex discrimination*.

This question suggests that non-development issues also require attention by GSO companies. For example, as many problems were reported by workers from GSO providers, project managers in client companies might need to investigate these reported sociological problems as well as to understand the impact of these issues in the development. Thus, feasible resolutions could be discovered to provide a sound foundation for these on-going GSO projects and forthcoming GSO practices.

6.8.15 Question D14 – the last open-ended question

<u>Question D14: If you have any comments on GSO projects or this GSO survey, please could you specify in the textbox below…</u>

This question encourages the respondents to comment on the survey. According to the survey database, 28 people (30%) answered this question and 65 (70%) skipped it. As most of the answers are not related with the main research objectives of this PhD research project, therefore, no further discussion is conducted for the last question (all responses are attached in Appendix G).

6.8.16 Findings of Section Four

Section Four is the most important part of this survey. Much data have been collected. The analysis of GSO projects forms into various findings. For example, research discoveries are: communications in GSO projects, project contact between different development parties, development methods, the performance of project duties, outsourced development duties, GSO benefits, critical decision factors, and non-development issues in GSO practices. According to the early findings (see section 4.6 and

5.5), these results can be categorised into five areas: project arrangements, relationship management, development processes, project/people management, and communications. The communication related questions (i.e. Question D2, D3, D4, D5, and the second part of Question D8) analyse the respondents' project duties, communication methods, and their project contacts. The results suggest that:

1) Instant information **exchanging methods** are more popular than other methods;
2) Native English speakers and non-native English speakers had different views on the examined **communicative factors**; and,
3) **Project contact** between some project stakeholder groups (e.g., senior manager group and consultancy group with development teams) was insufficient.

Development related questions (i.e. Question D6, D7, D8, D9, and D10) suggest that:

1) **The size of a company** has a strong connection with its adopted development methods – big companies were willing to follow more structured methods, whereas middle and small-scale companies preferred more flexible methods;

2) People from different **types of GSO companies** had dissimilar views on development work and project duties in the collaboration, for example, the performance of development work (see discussion in section 6.8.8), which areas are suitable for the GSO model (see sections 6.8.10 and 6.8.11), and how the GSO model has benefited the development (see section 6.8.12); and,

3) **Critical decision factors** (Question D12) and **non-development issues** (Question D13) have been examined (see sections 6.8.12, 6.8.13, and 6.8.14 for details).

6.9 Discussion and conclusion

This chapter details the questionnaire survey conducted in the detailed industrial study. The first half of the chapter introduces topics that are related to how to design the questionnaire and how to conduct the survey, which includes the survey method, survey question design, and data analysis. Based on a sound understanding of how to conduct the survey, the author has distributed the questionnaire via Internet in 2008. The second half of the chapter analyses the survey data, which includes conclusions and discussions of the findings from this phase.

6.9.1 Conclusion

Four sections are included in the questionnaire, which examine four key areas of GSO projects – people, companies, employment, and projects. The results advise that:

1) **GSO professionals** (section 6.5), who had involved in this survey, were mainly males; had good educational backgrounds (mostly specialised in subjects such as IT, business, or other science topics); averagely had over five-year work experience; and used English in the workplace.

2) **GSO companies** (section 6.6) participated in the survey are mostly private and public oriented companies (specialised in sectors such as financial services and IT software services), the majority of them are large-scale UK or Indian organisations; had either CMM/CMMI authentication or other IT authentication/certification (mainly the ISO 9000 family); and had three project representations – clients, services providers, and both providing and outsourcing.

3) The **GSO employment** section (section 6.7) looks into the respondents' employment and how the GSO model had impacted their career development. Due to confidentiality issues, only Question E5, E6 and E7 are specified in the thesis.

4) **GSO projects** section (section 6.8) investigates the most important part of this survey. The findings of this section discover that communications issues in GSO projects were connected to project contact between different development parties and communication methods. Development related factors (e.g., development methods, project duties, outsourced phases, benefits, CSFs, and even non-development issues) had direct impacts on GSO projects.

6.9.2 Key issues identified

Table 6.29 summarises key GSO project issues discovered in the survey. It shows that most of the identified issues are related to project domains such as development process and communications. By dividing the issues into the issue framework, *nine* GSO project level problems are emerged.

Most of the discovered issues are at operational level, which closely correspond with the objectives formed in the exploration. When comparing these issues with those from the GSO interviews, the multiple-case study, and the literature review, it is evident that the online questionnaire focused on development related areas as well as detailed implementation problems throughout the development lifecycle. Hence, the findings and their implications develop the issue framework and validate previous findings in early research phases (see detailed discussion in section 7.2).

Table 6.29: Key issues in GSO projects reported by interviewees

<table>
<tr><th>Project Domain</th><th>Discovered Issues</th><th>Sections in Chapter Six</th></tr>
<tr><td rowspan="2">Project arrangements</td><td>1) Development methods for GSO projects</td><td>Section 6.8.7</td></tr>
<tr><td>2) Critical decisions factors when arranging GSO projects</td><td>Section 6.8.13</td></tr>
<tr><td>Relationship management</td><td>3) Project contact between different project stakeholder groups</td><td>Section 6.8.5</td></tr>
<tr><td rowspan="3">Development Process</td><td>4) Issues during the development:
• GSO clients: earlier development phases
• GSO providers: the phase of implementation
• Working on both: process and quality control</td><td>Section 6.8.8</td></tr>
<tr><td>5) Problematical outsourced development areas:
• Feasibility study
• Project investigation
• System architecture
• Quality control
• Review and verification</td><td>Section 6.8.10
Section 6.8.11</td></tr>
<tr><td>6) The delivery quality was a main project level issue</td><td>Section 6.8.12</td></tr>
<tr><td>Project and people management</td><td>7) Non-development issues during the development</td><td>Section 6.8.14</td></tr>
<tr><td rowspan="2">Communications</td><td>8) Insufficient project contact between some project stakeholder groups in practice</td><td>Section 6.8.5</td></tr>
<tr><td>9) The performance of communications:
• Language related issues
• Cross-cultural and cross-company issues.</td><td>Section 6.8.9
Section 6.8.14</td></tr>
</table>

6.9.3 Development areas for improvement

Findings in the survey (sections 6.8.8, 6.8.10, and 6.8.11) indicate that respondents had varied views on which development areas should be improved. Based on their answers, **early development phases** (e.g., feasibility study, project investigation, and system architecture) and **later phases** (e.g., quality control, review & verification) are not suitable for the GSO model. Besides that, the respondents also reported that some areas (e.g., requirements understanding, development methods, and training) and process/quality control (e.g., the delivery quality and the efficiency) needed to be improved. In particular, results in section 6.8.11 suggest that some outsourced areas (e.g., project initiation and planning, systems analysis & design, and project management) were performed better onshore.

6.9.4 Other findings

Besides the above findings, the survey also investigates *three* GSO project related areas, i.e. the benefits of GSO projects (section 6.8.12), CSFs (section 6.8.13), and non-development issues (section 6.8.14) in the implementation. The results suggest that:

1) **GSO benefits** were reported mainly in *five* development related areas (e.g., resources supply, project control, delivery on time, resource flexibility, and GSP flexibility);

2) **Critical decision factors** shall include *eight* aspects: company reputation, company's track records, cross-company relationship, highly skilled staff, IT delivery capability, systems development capabilities, advanced ICTs, and communications;

3) **Non-development issues** were mainly caused by *four* areas of problems, which include the quality of language, the quality of communications, different cultures and races, and professional capabilities.

Chapter 7 Conclusions and Discussions

Previous chapters introduce this research, IT/IS outsourcing, GSO and its development in the UK, research methodology, selected methods, the preliminary study, and the detailed study (including GSO interviews and the online questionnaire). The exploration has examined many areas in GSO practices and discovered various practical issues. More importantly, a framework of GSO project issues is developed throughout the research. The final chapter concludes this research and reinforces key findings and main contributions of this industrial study, which contains three sections: 1) a brief summary; 2) main research findings and their practical implications for the IT/IS outsourcing research community; and, 3) limitations and suggestions for future research.

7.1 A brief summary

The overall aim of this research was to examine issues in GSO projects and development areas that urgently require improvements, therefore, the research focused on investigating project level problems and their practical impacts on GSO projects. To that end, the author conducted an industrial study to understand how offshore outsourcing projects were performed in the UK's financial services sector. The findings indicate that the GSO model is still maturing and many project areas (e.g., project arrangements, development process, relationship management, communications, and project and people management) need to be rectified for future practices.

7.1.1 The primary study

Chapter One looks into the recent trend of global IT software outsourcing and its development in the UK. A wide range of academic and industrial publications have been reviewed to understand current practices and future developments of this field. In order to establish a sound foundation for the literature review, the author has studied topics such as GSO services and terminologies in this area. From the primary study and the author's industrial experience, it is evident that much existing GSO research lacked a coherent focus on practical themes (e.g., how to conduct a project, how to measure the outcome). This leads to a discussion of opportunities, motivations, objectives, and the significance of this study at the second half of the first chapter.

7.1.2 Literature review

Chapter Two considers many representative academic and industrial publications on the subject of IT/IS outsourcing. For example, the author has concentred on reviewing papers published by some prestigious IT/IS journals (e.g., Journal of Information Systems, Journal of Information Technology, European Journal of Information Systems, and Management Information Systems) as well as many prominent market reports issued by several world leading IT professional bodies (e.g., BCS, NASSCOM, PWC, and Deloitte). During the review, topics, such as globalisation, the theoretical foundation of outsourcing, the subject of IT/IS outsourcing, the field of GSO, and key issues of outsourcing practice have been studied.

Whilst reviewing the literature, the renowned outsourcing stage model (see section 2.4.1) was employed to categorise findings into five groups: 1) why to outsource, 2) what to outsource, 3) which process to outsource, 4) how to outsource, and 5) outsourcing outcomes. In particular, extra attention was paid to literature on how to implement GSO services in the industry and typical issues in practice, which has refined the author's understanding of the GSO model and its industrial application. At the end of the review, findings and areas for further studies are summarised, which reinforce the author's knowledge of the domain and consolidate the aim and objectives of the following investigation.

7.1.3 Research methodology

Chapter Three details the research methodology as well as the selected methods and techniques that underpinned the exploration. The author examined topics such as the philosophical basis of the discipline of IS, quantitative and qualitative studies, and mixed methods research approaches. Based on the industrial nature of this study, a mixed methods approach has been chosen, which contains various methods and techniques, for example, literature review, a multiple-case study, interviews, questionnaires, and qualitative/quantitative data analysis. At the end of the chapter, a research framework and a detailed five-stage plan are designed for the following industrial study.

7.1.4 The preliminary industrial study

A multiple-case study was carried out at this stage – between 2006 and 2008. Three GSO projects in Company Alpha were investigated and some typical project level problems were identified. These can be grouped into five areas: 1) project arrangements, 2) development process, 3) relationships management, 4) project and people management, and 5) communications. The preliminary study indicates that practical issues could be found throughout the software development lifecycle. Results from this stage not only guided the author in the detailed study, but also helped him develop specific research questions in the following stages (e.g., what factors impact the performance of GSO projects, how well development methods were conducted, and what were the relationships between different project stakeholder groups).

7.1.5 The detailed study – GSO interviews

A mixed methods research approach was followed in the detailed survey. This includes *two* surveys: GSO interviews and the online questionnaire. Chapter Five specifies the interview survey, which contains how to design the survey, how to conduct the survey, interview data analysis, and the survey results. Five questions (e.g., GSO project experiences, strengths and weaknesses, critical successful factors, the performance of key development phases, and suggestions for the forthcoming GSO collaboration) were asked in the interviews. The richness of the interview survey was highlighted by the many quotes within the discussion sections (from section 5.4.2 to section 5.4.6).

After analysing the survey data, it is noticeable that different interview groups (e.g., GSO clients, services providers, developers, and the management) had mixed views on GSO projects – people from GSO client companies paid much attention to factors that impacted the development procedure, whereas GSO providers focused on discussing benefits of the GSO model and higher GSO service levels (see discussion in section 5.5). Overall, the findings suggest that extra attention should be paid to these highlighted topics, so that recommendations can be made to improve GSO practices. Hence, with aims of developing and cross-validating findings of the exploration, a detailed questionnaire has been designated to investigate the practical themes in GSO practices.

7.1.6 The detailed study – the GSO online questionnaire survey

Chapter Six discusses the online questionnaire survey, which covers the survey method, questions design, data analysis, and findings of the survey. It aims to learn about the practicalities in GSO projects. Four categories of information have been analysed:

1) **Personal information section** includes respondents' personal backgrounds, education, work experiences, annual salaries, and language(s) used at the workplace;
2) **Participating companies section** investigates the companies' industrial sectors, their GSO employment, the CMM/CMMI authentication or other IT certifications, and their GSO project representations in practice.
3) **GSO employment section** provides the respondents' staff groups, company positions, and responsibilities in GSO projects; and,
4) **GSO project section** surveys project related factors such as outsourced phases, development methods, critical decision factors (CSFs), communications, benefits, and non-development issues.

The questionnaire clarifies problems in GSO practices. Moreover, it has examined many outsourced development phases and their suitability for outsourcing. The survey discovers that some early phases (e.g., project initiation, requirement capture, analysis and design) and several later phases (e.g., verification and maintenance) were not performed well in GSO projects (refer to section 6.9).

7.2 Key findings and implications

Results of this study have many practical implications (see discussions from section 7.2.1 to 7.2.3). The greatest contribution of this research is to introduce a framework for various GSO project issues, which not only structures the identified problems, but also specifies their interrelationships. This research represents one of the first explorations to investigate operational issues in GSO practices. It is largely grounded in first-hand industrial data and diverse views contributed by many practitioners (e.g., project consultants, project managers, developers, and testers), who had direct development responsibilities in GSO projects. Key findings and implications are grouped into three sub-sections, these are: 1) key project issues, 2) development areas for improvement, and 3) other findings.

7.2.1 Key GSO project issues

In the previous chapters, section 4.6.1 summarises issues found in the preliminary study, section 5.5.1 discusses issues reported in the GSO interviews, and section 6.9.2 details problems discovered from the online questionnaire. Based on these discussions, an issue framework is formulated and refined. According to the framework, the performance of GSO projects was strongly impacted by *five* areas of problems: 1) GSO project arrangements, 2) relationship management, 3) project/people management, 4) development process, and 5) communications.

7.2.1.1 GSO project arrangements

Table 7.1 summarises issues identified in the domain of GSO project arrangements. It shows that the project arrangement problems are at three analysis levels: *three* organisation level issues, *two* systems level problems, and *five* project level issues. The exploration suggests that this type of issues could have a number of negative impacts on the GSO collaboration, for example, project delay, reduced job security, poor performance in the cooperation, low in-house staff morale, insufficient project tracking, and poor knowledge transfer between project teams.

The findings support and in some cases extend results from previous GSO studies. For instance, discoveries of poor process maturity and lack of business/systems understanding correspond to studies published by Cohen and El-Sawad (2007) and Baumer *et al.* (2009). The GSO service level matters identified in the detailed study extend the market survey conducted by Lacity and Rottman (2008), which also support outcomes claimed by Lings *et al.* (2007) and Handley and Benton (2009) – the selection of GSO service levels can influence a client company's organisational strategy, which could lead to increasing development costs and management difficulty.

Notably, the author has made two unique contributions in this area. First, the research indicates that some scholars (Herbsleb *et al.* 2005) should not merely focus on the organisational level factors whilst arranging GSO projects. In fact, operational level issues (e.g., development framework, project level contracts, and tight control over GSO services providers) have more practical significance to the success of GSO practices. Second, dissimilar to the well-known outsourcing development model proposed by Lacity and Hirschheim (1994), Betz *et al.* (2008), and Handley and Benton (2009), this study discovers that operational level practitioners from GSO client companies were strongly against total outsourcing (see section 2.5.3), as this service level was infeasible in practice and unviable for GSO clients' core competence. Therefore, when arranging GSO projects, the management should not outsource some development phases (project initiation, requirement capture, analysis and design, quality control, and verification) to external services providers.

Table 7.1 Issues identified in the domain of GSO project arrangements

Problem Domain	Levels of Analysis	Key Issues Identified	Sections in the Thesis
GSO Project Arrangements	Organisation level	Unclear GSO service level	Sections 4.6.1 & 5.5.1
		Poor process maturity	Sections 4.6.1 & 5.5.1
		IT/IS skill loss	Section 5.5.1
	Systems level	Software licensing	Sections 4.6.1 & 5.5.1
		Lack of business and systems knowledge	Sections 4.6.1 & 5.5.1
	Project level	Incompatible development processes	Sections 4.6.1, 5.5.1, & 6.9.2
		Losing flexibility of selecting providers	Section 5.5.1
		Unqualified provider staff	Section 5.5.1
		Increasing development hidden costs	Section 5.5.1
		Lack of detailed project level contracts	Section 5.5.1

7.2.1.2 Relationship management

Table 7.2 lists recognised issues in the domain of relationship management. It shows that problems in this area can be found at two analysis levels: *one* organisation level problem and *four* project level issues. The main impact of these issues could affect the collaboration between onshore and offshore development parties in many ways. For instance, poor interactions between project stakeholder groups, lack of mutual understanding between clients and their services providers, reduced deliver quality, delayed development progress, and unsatisfied project tracking records.

Table 7.2 Issues identified in the domain of relationship management

Problem Domain	Levels of Analysis	Key Issues Identified	Sections in the Thesis
Relationship Management	Organisation level	Unsatisfied relationships between clients and their services providers	Sections 4.6.1 & 5.5.1
	Systems level	N/A	N/A
	Project level	Unsatisfied onshore and offshore collaboration	Sections 4.6.1 & 5.5.1
		Dissimilar work styles and work cultures	Sections 4.6.1 & 5.5.1
		Lack of control over GSO providers	Sections 4.6.1 & 5.5.1
		Lack of detailed project contracts	Section 5.5.1

Generally speaking, the above findings enrich the study of outsourcing relationship management by addressing some typical project level issues. In particular, papers published in this area (Dibbern *et al.* 2004; Fleming & Low 2007; Balaji & Ranganathan 2007; Lacity & Rottman 2008) mostly focus on analysing problems and impacts at organisation level. According to Herbsleb *et al.* (2005), very limited research has been conducted in order to study operational level matters in this field. Following this line of discussion, this study develops results from previous investigations.

One unique finding is that this research somewhat conflicts with the popularly quoted relationship model (Koh *et al.* 2004), which suggests that offshore outsourcing relationship shall be mostly based on a psychological contract (e.g., mutual trust) between clients and providers. However, this study strongly suggests that both clients and providers need to enter into a stricter project level contact to simplify the relationship management; otherwise continuous clarification would be required throughout the development, in order to clarify job boundary and service levels between different project stakeholder groups. Hence, although a psychological contract might be ideal for long-term cross-company cooperation (Herbsleb 2007), due to the short-term nature of the GSO model, it is practical to follow a stricter project contract to manage relationships.

7.2.1.3 Development process

Problems in this domain attract most of the author's interests throughout the study – many questions have been designed to survey matters in this area (see sections 5.2.3 and 6.3.1). Table 7.3 summarises two levels of issues: *two* systems level problems and *five* project level issues. As discussed in early sections (sections 4.6, 5.5, and 6.9), development process issues could have direct impacts on GSO practices. For instance, some representative ones are mismatching development methods and styles between clients and providers, increasing concerns due to poor delivery quality, constant reworking, too many detailed specification support, and growing project costs caused by poor requirements capture, reworking, and unqualified GSO services providers.

Table 7.3 Issues identified in the domain of development process

Problem Domain	Levels of Analysis	Key Issues Identified	Sections in the Thesis
Development Process	Organisation level	N/A	N/A
	Systems level	Lack of process control	Section 5.5.1
		Lack of quality control	Section 5.5.1
	Project level	Poor quality of the delivery	Sections 5.5.1 & 6.9.2
		Unclear development framework	Sections 4.6.1 & 6.9.2
		Dissimilar development methods and styles	Sections 4.6.1, 6.9.2 & 6.9.3
		Poor requirements definition	Sections 4.6.1, 5.5.1, 5.5.2 & 6.9.3
		Problematical outsourced phases (e.g., feasibility study, project investigation, system architecture, quality control, review and verification)	Sections 4.6.1, 5.5.2, 6.9.2 & 6.9.3

The above findings conflict with market reports published by some leading software services professional bodies (BCS 2006; BCG 2007; NASSCOM 2009), who constantly advocate that GSO services providers are capable of delivering high-quality services. This research, on the contrary, indicates that, even though GSO providers' delivery quality was relatively higher than their clients', the quality of their work was still not entirely satisfactory to the clients.

Similar to much offshore outsourcing research (Petter & Vaishnavi 2007; Trategy & B. Fitzgerald 2008; Philip & Schwabe 2009), this study also supports that it is important to produce high quality project specifications (e.g., requirements definition, different levels of systems analysis and designs). In fact, to improve GSO providers' business and systems understanding, explicit and comprehensive specifications are essential in the collaboration. Though it is arguable that producing many detailed project documents could lead to longer project lifecycle and much reworking (see sections 4.5.3, 5.5.1, and 5.5.2), the research indicates that project documents might be one of the most feasible ways to bridge the gap between clients and providers.

Lastly, this study highlights the practical significance of project level process control and quality control in GSO practices. To be specific, previous findings (Kurbel 2007; Heiskanen *et al.* 2008; Gopal & Gosain 2009) mainly focus on applying organisational control to monitor development progress in GSO projects. However, findings from this research suggest that using project level process control (e.g., QMS, CMM/CMMI) can benefit the development (see sections 4.5.1 and 5.4.4).

7.2.1.4 Project and people management

Although the topic of business management is not a major concern of this research, many project and people management issues have been found in the exploration. Table 7.4 summarises two levels of problems: *two* organisation level problems and *four* project level issues. Although the questionnaire survey suggests that people/project management were performed reasonably well (see section 6.8.16), both GSO interviews (section 5.5.1) and the preliminary study (section 4.6.1) reported negative factors in this area. For instance, inexperienced project managers led to ambiguous job boundaries, dissimilar development styles, growing development costs, and inflexible resource management; and people form GSO client companies were concerned about poor onshore/offshore staff supervision, lack of GSO related training, and insufficient control over GSO providers.

Table 7.4 Issues identified in the domain of project and people management

Problem Domain	Levels of Analysis	Key Issues Identified	Sections in the Thesis
Project and people management	Organisation level	Inexperienced management	Sections 4.6.1 & 5.5.1
		Poor providers' staff rotation policy	Section 5.5.1
	Systems level	N/A	N/A
	Project level	Poor project planning	Sections 4.6.1 & 5.5.1
		Insufficient project tracking	Section 4.6.1
		Lack of GSO related training	Section 5.5.1
		Poor client and provider staff supervision	Section 5.5.1

The findings confirm some researchers' worries about inexperienced project management in GSO practices (Petter & Vaishnavi 2007; Philip & Schwabe 2009). It enriches outsourcing management studies (Herbsleb 2007; Kurbel 2007) by highlighting negative managerial impacts on GSO projects. Moreover, based on some prominent business management studies (Beynon-Davies & Williams 2003; Herbsleb *et al.* 2005; Lacity & Rottman 2008), this study advises that future research need to pay attention to the connection and cross-effects between the management and key development phases (see section 5.4.5).

7.2.1.5 Communications

Due to the practical significance of communications (see section 2.6.3), issues in this domain also attracted the author's interests throughout the investigation. Table 7.5 below summarises three levels of communication issues: *three* systems level issues, *two* systems level problems, and *four* project level matters. They could have various impacts on GSO projects. For example, language barriers and corporative/technical differences can cause misunderstanding in the collaboration; GSO providers' insufficient business knowledge and systems understanding could cause information exchange to rely on formal communication channels (e.g., project documents); moreover, similar to the development process issues (section 7.2.1.3), incompatible development methods and styles could develop insufficient project contact between development parties (see section 6.8.5).

Table 7.5 Issues identified in the domain of communications

Problem Domain	Levels of Analysis	Key Issues Identified	Sections in the Thesis
Communications	Organisation level	Cross-cultural issues	Sections 4.5.3 & 6.9.2
		Cross-company issues	Sections 4.5.2, 6.9.2 & 6.9.4
		Poor client/provider communications	Sections 4.5.3, 5.5.1, and 6.9.2
	Systems level	Poor business knowledge	Section 5.5.1
		Poor systems understanding	Sections 4.6.1 & 5.5.1
	Project level	Insufficient project contact between different development parties	Sections 6.8.5, 6.8.16 & 6.9.2
		Technical culture differences	Section 4.6.1
		Language barriers	Sections 4.6.1, 5.5.1 & 6.9.2
		Unsatisfied reporting channels	Sections 4.6.1, 6.8.5 & 6.9.2

The above findings supports some previous studies on common outsourcing communication issues (Rice 2003; Sparrow 2005; Aspray *et al.* 2006; Layman *et al.* 2006; Cataldo & Herbsleb 2008). For example, similar discoveries are lack of onshore and offshore communication models, language and culture barriers, and technical and corporative differences.

One exclusive contribution of this research is an early attempt to examine project contact between different project stakeholder groups. According to Petter and Vaishnavi (2007) and Trategy and Fitzgerald (2008), due to lack of industrial connections, few researchers could be directly involved in the development process in order to examine how project contact was performed between different development parties. Because of that, much research on this topic is merely based on views from senior level or middle level managers and consultants. However, due to the understanding gap between the management and the development teams (Kurbel 2007), many operational problems (e.g., technical feasibility, development methods, and implementation quality) cannot be fully understood and accordingly reacted. Thus, this research has endeavoured to remedy this gap by highlighting the performance of project contact as well as discussing problems between different project groups (see detailed discussion in section 6.8.5 and section 6.8.9).

7.2.2 Development areas for improvement

In addition to the key project issues, this research has paid attention to development areas. In brief, the results suggest that some early phases (e.g., feasibility study, project initiation, and high-level analysis and design), several later development phases (e.g., quality/process control, delivery review, and verification), and project/people management should be improved in GSO practices:

1) Both clients and providers agreed that the performance of early development phases shall be enhanced (see section 5.4.5.9). Many people from client companies claimed that early phases were not suitable for the GSO model, thus they should be either retained in-house or handled by onshore services suppliers. Similar findings have been reported by Cherian (2009) and Philip and Schwabe (2009), who suggest that outsourcing clients and onshore services suppliers shall take main responsibility in early development phases.

2) Professionals from GSO provider companies proposed a completely different view on early development phases. They stated that, due to offshore providers' higher project satisfaction and better delivery quality, clients need to increase the service level and give more development responsibilities to GSO providers (see discussion in sections 5.4.2.4 and 5.5.1). In another words, similar to results claimed by NASSCOM (2007), client companies shall involve their offshore services providers in the development lifecycle as early as possible.

3) Interestingly, it is generally agreed by both clients and providers that the performance of some later development phases needs to be controlled by clients' in-house staff (refer to sections 4.5.1, 5.4.5.9, and 6.9.3). However, according to Herbsleb (2007) and Gopal and Gosain (2009), GSO client companies need to consider how to provide better training; what is more, measurement systems need to be available in order to control quality and measure efficiency in practice.

4) Lastly, the detailed study (sections 5.4.5 and 6.8.8) suggests that, although project and people management was performed relatively satisfactorily in practice, middle level management had raised concerns regarding this area. For example, GSO clients were losing control over their providers, project managers had difficulty tracking the offshore development progress, and GSO providers expected better project management from their clients. Hence, this subject also requires further attention in future outsourcing research, which has also been highlighted by Herbsleb *et al.* (2005) and Lacity and Rottman (2008).

7.2.3 Other findings

Other findings include GSO benefits, critical successful factors (CSFs), and non-development matters. As they are *not* the author's main focus, therefore, they are only briefly discussed in this section.

7.2.3.1 GSO benefits

This study has examined project benefits brought by the GSO model, which are closely connected to the implementation in the development procedure. *Five* benefits have been widely reported by the participants (see sections 5.5.3, 6.8.12 and 6.9.4): 1) resource supply management, 2) project control,

3) delivery on time, 4) resource flexibility, and, 5) the option of choose services providers globally. Based on that, the research successfully summarises *four* practical advantages for employing the GSO model (see sections 5.5.3 and 6.9.4): 1) resource flexibility, 2) fewer in-house staff, 3) cost saving, and, 4) GSO providers' advanced IT expertise/experiences. Noticeably, limited benefits were reported regarding relationship management and communications, which imply that these domains might not benefit greatly from the GSO model.

7.2.3.2 Critical successful factors

In total, *sixteen* CSFs are reported and verified in the detailed study (see sections 5.4.4 and 6.8.13). After cross-validating these factors against discovered project issues, some generally accepted factors are summarised in this section. They contain suggestions for both GSO clients and providers to improve their future GSO practices.

1) **GSO clients** need to be well-prepared in *five* areas in order to gain success:
   - *Project arrangements*, which include stricter contract, appropriate service level, a refined development framework, and suitable outsourced development phases;
   - *Relationships management*, which contains closer team work and coordinating different development styles;
   - *Development process*, which covers process/quality control, stricter measurement systems, and track records of services providers;
   - *Communications*, which contain how to simplify report channels and how to provide better requirements definition; and,
   - *Project/people management*, which includes tightening management on providers, providing training, and reducing the staff turnover.

2) **GSO providers** need to be advanced in *seven* fields to secure GSO contracts, these are: company reputation, company's track records, cross-company relationship, highly skilled staff, delivery and development capabilities, advanced ICTs, and communication skills.

7.2.3.3 Non-development findings

The study highlights two types of non-development findings, which includes personnel issues (see sections 5.4.3.3 and 5.4.3.4) and non-development issues (see sections 6.8.14 and 6.9.4):

1) **Personnel issues** could cause concerns and irritation in the cooperation. For example, many GSO practitioners' technical capabilities (e.g., systems knowledge) and cross-company adaptabilities

(e.g., communication skills) were not suitable for undertaking outsourcing tasks. Similar studies have been conducted by Fleming and Low (2007) and Philip and Schwabe (2009).

2) Many **non-development issues** were caused by cultural/sociological differences (e.g., cultural differences and racial discrimination). Although this type of issues does not have direct impact on the development work, according to Dibbern *et al.* (2004) and Philip and Schwabe (2009), they still can cause damage to manage the relationship between clients and providers.

7.2.4 Main contributions

The previous sections have summarised the research, key findings, and their implications. Based on the aim and objectives of the study, this section reinforces main contributions and achievements.

1) To the best of the author's knowledge, few outsourcing studies have systematically explored GSO project issues based on first-hand industrial data and views reported by a large number of operational level GSO practitioners. Hence, **this exploration** represents one of the first attempts to investigate such types of issues.

2) The author established a **GSO project issue framework** and summarised **development areas** that require urgent improvements. Though there has been similar research, most of them focus at the industrial or organisational level. This research, on the contrary, concentrates on the operational level, which indicates that its results fill the gap in the present outsourcing studies.

3) Findings provide recommendations (see section 7.2) with great **practical significance**. For example, results have been sent to senior IT consultants who are working for leading software services companies (e.g., TCS, Wipro, and AGS). They helped to validate the results; some also suggested how to further this investigation in other industrial settings.

7.3 Limitations and future research

It is widely agreed that limitations often lead to opportunities for future research. Therefore, the author discusses these topics as follows:

7.3.1 Research funding and research time

The research progress was constrained by limited funding and time. Due to Company Alpha's huge redundancy plan in late 2007, a major management change happened in early 2008. The departure of Company Alpha's CIO directly caused this study to lose managerial and financial support from senior management of the company. Without research funding, the author spent much time in employment (e.g., teaching, tutoring, analysing financial products, and consulting GSO projects) in order to pay tuition fees and support this project. Hence, time spent on research has been limited since the second year of the author's PhD research. It led to a longer than expected research duration. Researchers need to bear in mind that industrial explorations can be easily influenced by many internal and external factors – therefore, it is important to commence a research with both funding and participating companies' commitments are largely secured.

7.3.2 Time lags and the related measurements

Another limitation is that the research was carried out at a designed period of time. As a result, the exploration can only reflect understanding and interpretation of GSO practices for that duration. Although the industrial situation has been stabilised in the last two to three years, the changeable nature of GSO projects suggests that a continuous process is required to monitor this industrial phenomenon. Furthermore, except for comparing and cross-validating results from different research phases, this study has done few measurements on whether the respondents' opinions were changed before or after the author's departure from Company Alpha. Because of that, the impact of the time lag during the exploration is *not* fully investigated and measured, which suggests that further research could set up a longitudinal study to measure relationships and the development of key GSO project factors (e.g., project issues, CSFs, and performance elements) across a longer period of time. In doing so, new results might better reflect the procedure and the trends of this industrial sector.

7.3.3 Sample management

The study has used a mixed methods research approach. Although the sample size for the interview survey (n = 26) and the online questionnaire survey (n = 93) are more than adequate, the sample population used in this study is *not* statistically significant. Thus, the author cannot claim that results and findings are representative of the financial services sector in the UK. Following this line of thought, larger samples from other financial services companies and domestic services suppliers could provide more confidence when drawing general conclusions.

Additionally, many participants from GSO provider companies were working at onshore R&D sites. As onshore GSO providers' treatment and work environment were fairly different to those working at offshore R&D sites, therefore, future research could include more offshore services provider workers and compare views from dissimilar demographic groups. However, it is understandable that such research settings would require much greater research expenses and industrial resources.

7.3.4 Research methods

The limitation of methods in this study is mainly caused by the drawback of the mixed methods approach and some selected techniques (i.e. interviews and questionnaires). First, employing a mixed methods approach necessitated much time to learn and combine qualitative/quantitative approaches, which was very time-consuming. Second, although interviews can provide valuable insights from a real situation, they are not statistically representative. Because of that, the author followed a qualitative data analysis and data transform procedure to transfer the qualitative data into meaningful quantitative data presentation. However, this procedure is based on the author's interpretation.

Moreover, due to some companies' policies, some interviewees did not want to comment on some topics, such as their client's performance, or their own company's mistakes, which prevented the author gaining a comprehensive view of the situation of GSO practices. Finally, although many techniques have been used to ensure the validity of the online questionnaire (see section 6.2.5), it is impossible for the author to ensure that the respondents had interpreted questions correctly and would accurately choose the right answer(s) to reflect their opinions. Hence, unexpected results could be reported and some results could be misinterpreted.

7.3.5 Data analysis

The use of Cronbach's alpha for scales with many items can arguably be erroneous, as Cronbach's alpha is positively influenced by the number of items on the scale. Because of that, future research could consider composite reliability as a preferable alternative. Also, an exploratory factor analysis might be suitable to test whether items on the scale are loaded as expected. Although many interesting results are found through comparing different project groups' rating, most of the comparisons have been completed visually (based on statistical analysis) rather than mathematically.

Thus, future work might need to run advanced statistical tests to support the findings. For example, the Student T-test could be used to compare between groups, Chi-square could be used to look into difference within three groups. However, due to the limited sample population, a meaningful ANOVA is not suitable for this research. Furthermore, it will be interesting for future research to look into results according to the respondents' project duties (e.g., the development group and the managerial group) and to test the relationships between some project variables, so relationships between outcome variables (e.g., GSO benefits) and input variables (e.g., communications, CSFs, and development methods) can be explored. If these factors are robust and one-dimensional, a simple structural model with simple regression might be acceptable.

7.4 Conclusion

The last chapter of this thesis summarises this research, which includes four sections. These are: 1) a brief summary of this research, 2) a discussion of key findings and their implications, 3) an introduction of main research contribution; and, 4) a review of limitations and recommendations for future research. Based on the main findings, it is evident that the exploration fills the gap of practice studies in the subject of IT/IS outsourcing by exploring and highlighting project level issues and development areas for improvement in GSO projects; and moreover, the research provides great practical insights for GSO clients and providers to improve their present GSO practices.

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Glossary

- BPO (business process outsourcing)
- Business requirements (BRD)
- Critical Success Factors (CSFs)
- Database management system (DBMS)
- End-to-end design (E2E)
- The European Union (EU)
- Geographically distributed development (GDD)
- Global IT outsourcing (GIO)
- Global software development (GSD)
- Global services partner (GSP)
- Global software outsourcing (GSO)
- High level design (HLD)
- Information communication technologies (ICTs)
- Information systems (IS)
- Information technology (IT)
- IT enabled services (ITES)
- Information technology outsourcing (ITO)
- KPO (knowledge process outsourcing)
- The National Association of Software and Services Companies (NASSCOM)
- Qualitative data analysis (QDA)
- Quality management system (QMS)
- Red, Amber, and Green Status (RAG Status)
- Research and development (R&D)
- Systems development lifecycle (SDL)
- Time to market (TTM)

Appendix A – The timescale of this PhD research

This PhD project has continued for over four years. The project chart below illustrates the timescale of this research – format bars coloured blue indicate industrial/academic literature review, bars coloured green represent PhD milestones (i.e. project approval and upgrade from MPhil to PhD), bars coloured light purple show industrial studies and data collection process, and those coloured maroon represent data analysis and results verification.

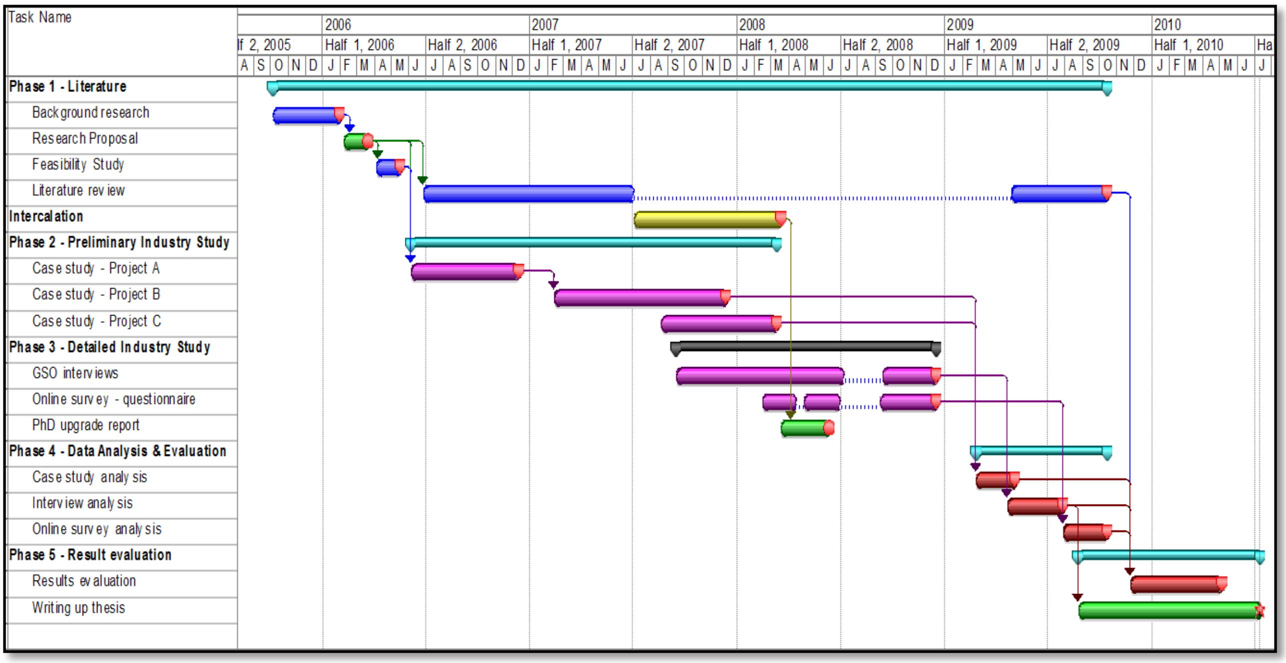

Figure A.1: Detailed PhD project processes

The author started his PhD as a part-time PhD student (between October 2005 and January 2007). Due to research funding issues in 2007 and 2008, he intercalated for over half a year and stayed in the industry as a full-time systems analyst to boost his finances. In April 2008, he returned to the university as a full-time student and continued his PhD research since. The timescale of this PhD research can be seen as follows:

1) From October 2005 to June 2007 (part-time PhD study), implementing primary research, feasibility study and literature review – the author updated the literature review in middle 2009 to understand the recent academic contributions;
2) From January 2006 to March 2008 (part-time and full-time PhD study), carrying out the preliminary industry study – three GSO projects have been studied;
3) From July 2007 to March 2008, intercalating due to funding problems;

4) From October 2007 to December 2008 (full-time PhD study), undertaking the detailed industry study (the interviews and the online survey);
5) From February 2009 to October 2009 (full-time PhD study), analysing the data collected from different phases; and,
6) From October 2009 to July 2010 (full-time PhD study), evaluating research findings and writing up the PhD thesis.

Noticeably, due to great difficulty in the industrial exploration and the complexity of a mixed methods research, it was extremely difficult to organise and implement this research in an ideal manner. As can be seen in the Figure above, although the author still successfully achieved adequate results at Stage Two (the preliminary industry study) which fed into Stage Three (the detailed industry study), it is noticeable that the boundary between Stage Two and Stage Three is fairly vague. Also, many overlapping tasks can be found in Phase II (e.g., between Project B and Project C) and Phase III (e.g., the semi-structured interviews and the online questionnaire survey). These instances were mainly caused by unstable research environment (e.g., the senior management in IT department of the studied company has been replaced, and a huge staff reduction programme initiated in the studied company in the beginning of 2008); and issues with the author's research funding – he lost the funding in early 2008, due to the studied company's staff reduction programme. However, with a great determination to succeed, the author finally managed to finish this industrial exploration.

Appendix B – The template for GSO interviews

Interview Survey on Global Software Outsourcing (GSO)

(*Version 1.1*)

Ji Zhou

School of Computing Sciences
University of East Anglia

PhD Supervisor: Dr Pam J. Mayhew

Nov 2007

Before we start this interview, I want to reconfirm that many professionals are taking part in this survey and your answers will be treated totally confidentially.

All the data collected in this survey will be used for research purposes only.

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1. Based on your own experience, please give a brief overview of global software outsourcing (GSO) projects that you have been involved in?
(Ask for overall rating for GSO projects they've experienced, on a scale of 1 to 5 – *1* is *very poor* and *5* is *excellent*, 0.5 is allowed)

2. What are the main advantages/disadvantages of GSO projects that you have experienced?

3. Suppose you are a senior manager who is responsible for arranging GSO projects, what kind of project level factors you will consider before the project?

4. From a GSO client/provider's perspective, how would you rate the following development phases/factors in your experiences of GSO projects – please provide rating to both GSO clients as well as GSO providers?
(For example, key phases in SDL, the quality of the delivery, project satisfaction, and project management – on a scale of 1 to 5, as *1* is *very poor* and *5* is *excellent*, 0.5 is allowed)

	Client	Provider
Requirements capture		
Analysis & design		
Implementation – development except testing		
Implementation – testing		
The delivery quality		
Project satisfaction		
Project management		

5. What would you suggest for your company's forthcoming GSO projects?

(At the end of the discussion, ask whether or not other important issues or topics need to be mentioned before finishing the interview)

Thank you very much for spending your time to be interviewed, we, the INFO Research Group in the School of Computing Sciences, UEA (University of East Anglia, Norwich, United Kingdom), really appreciate your help and wish you all the best in your future work/life.

Designed and produced by J. Zhou and Dr P.J. Mayhew
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11/2007

Appendix C – Interview coding sheets

Table C.1: Final coding sheet for GSO interview Question Three

Interview ID	Company Status	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
1	Client	Quality assurance	Communication channel	Training	Precedents		
2	Client	Project management	Contract	Process control	Quality assurance	Services level	
3	Client	Contract	Type of work to outsource				
4	GSO Provider	Training	Development framework	Delivery measurement			
5	GSO Provider	Process control	Work style	Development framework			
6	Client	Communication channel	Project management	Type of work to outsource	Closer team work	Delivery measurement	
7	UK provider	Development framework	Project management	Training	Contract		
8	Client	Closer team work	Work style	Quality assurance	Delivery measurement	Process control	Precedents
9	Client	Requirement definition	Services level	Quality assurance	Delivery measurement		
10	UK provider	Contract	Process control	Staff maintenance	Quality assurance		
11	Client	Communication channel	Contract	Closer team work	Delivery measurement	Process control	
12	Client	Communication channel	Project management	Development framework	Delivery measurement		
13	GSO Provider	Services level	Project management	Requirement definition	Training		
14	GSO Provider	Development framework	Process control	Type of work to outsource	Services level		
15	GSO Provider	Training	Closer team work	Staff maintenance			
16	GSO Provider	Requirement definition	Staff maintenance	Training	Work style	Delivery measurement	
17	UK Provider	Contract	Services level	Type of work to outsource			
18	Client	Project management	Process control	Requirement definition	Quality assurance	Precedents	Services level
19	Client	Project management	Quality assurance	Staff maintenance	Process control		
20	Client	Quality assurance	Contract	Precedents	Project management	Communication channel	
21	Client	Development framework	Precedents	Quality assurance	Process control		
22	UK provider	Requirement definition	Communication channel	Contract	Process control	Closer team work	Delivery measurement
23	GSO Provider	Training	Closer team work	Project management	Staff maintenance		
24	GSO Provider	Services level	Contract	Requirement definition	Closer team work	Project management	Work style
25	GSO Provider	Work style	Services level	Precedents	Contract	Process control	
26	Client	Process control	Services level	Training	Development framework	Communication channel	

Table C.2: Final coding sheet for GSO interview Question Five

Interview ID	Company Status	Suggestion 1	Suggestion 2	Suggestion 3	Suggestion 4	Suggestion 5
1	Client	Further cost saving	GSO project arrangement			
2	Client	Strict contract	Further cost saving	Project management		
3	Client	Knowledge transfer	Communication			
4	GSO Provider	Further cost saving	Knowledge transfer	Development framework		
5	GSO Provider	GSO project arrangement	Project management			
6	Client	Communication	Development framework			
7	UK provider	Knowledge transfer	Strict contract	GSO project arrangement	Project management	Development framework
8	Client	GSO project arrangement	Project management	Development framework	Strict contract	
9	Client	Project management	Further cost saving			
10	UK provider	GSO project arrangement				
11	Client	Communication	Knowledge transfer	Development framework	GSO project arrangement	
12	Client	Strict contract	Further cost saving			
13	GSO Provider	Communication				
14	GSO Provider	Knowledge transfer	Further cost saving	GSO project arrangement		
15	GSO Provider	Communication				
16	GSO Provider	GSO project arrangement	Knowledge transfer			
17	UK Provider	Knowledge transfer	Project management	GSO project arrangement	Further cost saving	
18	Client	GSO project arrangement	Communication	Further cost saving	Strict contract	Project management
19	Client	Strict contract	GSO project arrangement			
20	Client	Project management	GSO project arrangement	Development framework		
21	Client	Knowledge transfer	Project management	Communication	Further cost saving	Strict contract
22	UK provider	Development framework	GSO project arrangement			
23	GSO Provider	Further cost saving	Knowledge transfer			
24	GSO Provider	GSO project arrangement	Project management	Development framework	Knowledge transfer	Communication
25	GSO Provider	Further cost saving	Knowledge transfer	GSO project arrangement	Project management	
26	Client	Project management	Further cost saving	GSO project arrangement		

Appendix D – Detailed interview coding sheets for question two

Table D.1: Final coding sheet for reported project level advantages

	Interviewee ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Pro 1	cost saving	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y			Y	Y	Y				Y	Y	Y	Y	Y	Y
Pro 2	expertise in IT	Y		Y		Y	Y	Y						Y	Y					Y	Y			Y			
Pro 3	extend working hours	Y										Y		Y	Y	Y		Y				Y			Y	Y	
Pro 4	GSO experience	Y		Y		Y		Y						Y						Y					Y		
Pro 5	hard working	Y			Y	Y				Y			Y	Y		Y		Y						Y			
Pro 6	quality of the delivery	Y			Y										Y	Y					Y			Y		Y	
Pro 7	better project control		Y																								
Pro 8	cost effective		Y			Y								Y					Y				Y	Y			Y
Pro 9	deliver on time		Y		Y										Y	Y			Y							Y	
Pro 10	in-house staff maintenance		Y	Y							Y		Y						Y				Y	Y			
Pro 11	mature development process		Y																Y				Y		Y		
Pro 12	risk migration		Y			Y													Y		Y					Y	
Pro 13	core competence		Y							Y	Y						Y		Y			Y		Y			
Pro 14	resource availability			Y			Y		Y	Y	Y										Y		Y				Y
Pro 15	resource flexibility			Y			Y		Y	Y	Y		Y					Y		Y	Y				Y		Y
Pro 16	project management				Y									Y				Y	Y							Y	Y
Pro 17	Access to new technologies					Y	Y							Y	Y					Y							
Pro 18	repetitive work						Y		Y	Y		Y					Y					Y	Y				
Pro 19	business learning														Y		Y										

Table D.2: Final coding sheet for reported project level disadvantages

	Interviewee ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Con 1	communication	Y		Y	Y		Y					Y	Y	Y		Y	Y					Y			Y		Y
Con 2	cultural difference	Y												Y	Y			Y				Y			Y		
Con 3	data protection	Y	Y				Y			Y											Y					Y	
Con 4	language barrier	Y		Y			Y				Y	Y		Y		Y						Y		Y			Y
Con 5	quality of work	Y	Y				Y	Y	Y		Y		Y					Y	Y			Y					
Con 6	requirement understanding	Y		Y				Y				Y						Y		Y	Y		Y		Y		
Con 7	lack of control	Y				Y		Y	Y	Y	Y							Y		Y							Y
Con 8	losing flexibility		Y					Y			Y			Y				Y		Y			Y				Y
Con 9	Hidden costs		Y	Y				Y		Y								Y	Y				Y				
Con 10	business understanding		Y	Y	Y		Y			Y			Y			Y	Y			Y						Y	Y
Con 11	provider's commitment		Y	Y								Y							Y					Y			Y
Con 12	contract		Y			Y					Y		Y													Y	
Con 13	Quality measurement		Y												Y				Y		Y	Y					Y
Con 14	cultural difference			Y			Y																				
Con 15	Project management			Y		Y		Y	Y					Y	Y	Y	Y		Y					Y	Y		
Con 16	work style			Y	Y				Y	Y		Y							Y			Y	Y	Y		Y	
Con 17	requirement definition				Y	Y				Y				Y	Y	Y	Y	Y					Y	Y	Y		Y
Con 18	GSO services levels				Y									Y										Y	Y		
Con 19	Process management				Y	Y					Y				Y				Y		Y		Y	Y	Y		
Con 20	risk management					Y						Y	Y			Y			Y								
Con 21	in-house job security					Y	Y	Y					Y									Y					
Con 22	project delays						Y				Y		Y											Y		Y	
Con 23	GSO staff rotation							Y	Y	Y		Y				Y				Y		Y		Y			
Con 24	quality of GSO staff							Y	Y		Y	Y	Y					Y		Y							
Con 25	Software licence							Y							Y									Y			
Con 26	project learning								Y											Y			Y				
Con 27	skill losses								Y	Y			Y								Y	Y				Y	
Con 28	systems understanding								Y	Y										Y	Y		Y				
Con 29	reworking								Y		Y		Y					Y	Y								

Appendix E – A request letter for the online questionnaire survey

The School of Computing Sciences
University of East Anglia (UEA)
Norwich, UK
NR4 7TJ

UEA NORWICH

Date xx/xx/xxxx

Dear Sir or Madam,

First of all, many thanks for you time to read this letter and consider my request.

This is Ji Zhou from University of East Anglia (UEA), UK. Currently, I am a PhD student in the school of Computing Sciences and my research area is Global Software Outsourcing (GSO) and Business Information.

Whilst I am still a research student in UK universities, I am working in IT Department of Company Alpha as a Systems Analyst for over two years. Moreover, during my work in Company Alpha, I have been involved in many GSO projects and have been cooperating with your company's professionals.

I am currently researching on varieties of GSO project level issues such as working pattern, culture difference, company reorganisation, development styles, etc. However, in order to collect more industrial data for resolving issues in GSO practices, I am hoping to distribute my research questionnaire to your company's onshore and offshore IT software professionals who are working part in the software outsourcing.

Thus, with great anxiety, I am writing this letter to request your assistance for this questionnaire survey. I fully believe that, with your company's help, the research can precisely locate industrial issues in practice and make great improvements for this area.

Once again, many thanks for your time and efforts! I look forward to hearing from you soon.

Yours sincerely,

Ji Zhou

PhD Student, MSc, BEng
School of Computing Sciences
University of East Anglia
Norwich, UK

Appendix F – Basic statistics for the online questionnaire

Section One – GSO Professionals

P1. Are you?		
Answer Options	**Response Percentage**	**Response Count**
Male	80.6%	75
Female	19.4%	18
	answered question	**93**
	skipped question	**0**

P2. Please specify what is your nationality?	
Answer Options	**Response Count**
	87
answered question	**87**
skipped question	**6**

P3. Into which of these age bands do you fall? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
16-24	7.5%	7
25-34	39.8%	37
35-44	34.4%	32
45-54	16.1%	15
55-65	2.2%	2
65+	0.0%	0
	answered question	**93**
	skipped question	**0**

P4. What is your highest level of educational qualification? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
GCSE/O-Level	3.2%	3
AS Level	0.0%	0
A Level	5.4%	5
Diploma (below degree level)	16.1%	15
Diploma (postgraduate level)	6.5%	6
Bachelor	37.6%	35
Master	24.7%	23
Doctorate	3.2%	3
Other (please specify)	3.2%	3
	answered question	**93**
	skipped question	**0**

P5. Is the subject of your most recent school/college/university study relating to _______? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
Information Technology (IT)	44.1%	41
Business/Accounting/Marketing	19.4%	18
Project Management (PM)	2.2%	2
Science except IT related subjects	17.2%	16
Social Science except Business/Accounting/Marketing	0.0%	0
Other (please specify)	17.2%	16
	answered question	**93**
	skipped question	**0**

P6. How many years have you been working? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
Less than one year	1.1%	1
1-5 years	18.3%	17
6-10 years	22.6%	21
11 – 20 years	33.3%	31
21 – 30 years	19.4%	18
30+ years	5.4%	5
	answered question	**93**
	skipped question	**0**

P7. How many years have you been working in GSO or GSO related projects? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
Less than one year	8.6%	8
1-5 years	68.8%	64
6-10 years	19.4%	18
11 – 20 years	2.2%	2
21 – 30 years	1.1%	1
30+ years	0.0%	0
	answered question	**93**
	skipped question	**0**

P8. In which of these salary bands does your current annual income fall? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
Less than £2,000 (roughly $4,000) per annum	0.0%	0
£2,001 - £5,000 (roughly $10,000) per annum	0.0%	0
£5,001 - £10,000 (roughly $20,000) per annum	6.6%	6
£10,001 - £25,000 (roughly $50,000) per annum	16.5%	15
£25,001 - £50,000 (roughly $100,000) per annum	58.2%	53
£50,001 - £100,000 (roughly $200,000) per annum	15.4%	14
Over £100,000 (roughly $200,000) per annum	3.3%	3
	answered question	**91**
	skipped question	**2**

P9. What is your first language? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
Chinese	5.4%	5
English	67.4%	62
French	0.0%	0
German	0.0%	0
Hindi	20.7%	19
Japanese	0.0%	0
Spanish	2.2%	2
Other (please specify)	4.3%	4
	answered question	**92**
	skipped question	**1**

P10. Which language do you mainly use during your work? (Please tick as many boxes as appropriate)		
Answer Options	**Response Percentage**	**Response Count**
Chinese	2.2%	2
English	98.9%	92
French	0.0%	0
German	0.0%	0
Hindi	18.3%	17
Japanese	0.0%	0
Spanish	2.2%	2
Other (please specify)	1.1%	1
	answered question	**93**
	skipped question	**0**

Section Two – GSO Professionals

C1. What type of organisation is your employer? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
Private	52.7%	49
Joint venture	2.2%	2
Foreign investment	1.1%	1
Public oriented	35.5%	33
Government owned	2.2%	2
Other (please specify)	6.5%	6
	answered question	**93**
	skipped question	**0**

C2. Which field does your company specialise in? (Please tick as many boxes as appropriate)		
Answer Options	**Response Percentage**	**Response Count**
Banking and/or Financial Services	38.7%	36

Education	1.1%	1
Engineering	5.4%	5
Insurance	73.1%	68
Manufacturing	3.2%	3
Marketing, PR and Advertising	4.3%	4
Public Sector	3.2%	3
Sales	3.2%	3
Scientific and Research	3.2%	3
Other (please specify)	22.6%	21
	answered question	**93**
	skipped question	**0**

C3. Where is the head office of your company? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
Africa	0.0%	0
Asia*	0.0%	0
Europe**	1.1%	1
Canada	0.0%	0
China	0.0%	0
India	23.7%	22
Israel	0.0%	0
Japan	0.0%	0
Republic of Ireland	0.0%	0
Hong Kong	0.0%	0
Taiwan	0.0%	0
UK	72.0%	67
USA	1.1%	1
Do not know	0.0%	0
Other (please specify)	2.2%	2
	answered question	**93**
	skipped question	**0**

C4. Does your organisation have CMM/CMMI authentication? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
Yes - Go to C5	59.1%	55
No - Go to C6	12.9%	12
Do not know - Go to C6	28.0%	26
	answered question	**93**
	skipped question	**0**

C5. As your company has CMM/CMMI authentication, what is the CMM/CMMI level of your company? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
Level 5	39.7%	23
Level 4	3.4%	2
Level 3	46.6%	27
Level 2	0.0%	0

Level 1	0.0%	0
Do not know	10.3%	6
	answered question	**58**
	skipped question	**35**

C6. Does your company have any other IT related ISO authentication? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
No	15.9%	14
Do not know	61.4%	54
Yes (please specify)	22.7%	20
	answered question	**88**
	skipped question	**5**

C7. Does your company ________? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
outsource company's software projects	29.0%	27
provide software services/solutions	17.2%	16
work on both outsourcing software projects and providing software solutions	53.8%	50
	answered question	**93**
	skipped question	**0**

C8. How many people work for your company? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
1- 50	5.4%	5
51 – 250	2.2%	2
251 – 500	1.1%	1
501 – 1000	3.2%	3
1001 – 5000	3.2%	3
5001 – 10000	3.2%	3
10000+	80.6%	75
Don’t know	1.1%	1
	answered question	**93**
	skipped question	**0**

Section Three – GSO Employment

E1. What type of employment contract do you have? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
Permanent	81.3%	74
Fixed term	11.0%	10
Temporary	3.3%	3
Annualised hours	0.0%	0

Agency	4.4%	4
Do not know	0.0%	0
Other (please specify)	0.0%	0
	answered question	**91**
	skipped question	**2**

E2. How many hours per week are you contracted for? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
Less than 35 hours	5.5%	5
35 hours or more	94.5%	86
	answered question	**91**
	skipped question	**2**

E3. How many hours per week do you normally work on GSO or GSO related projects? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
Less than 10 hours	20.9%	19
11 – 25 hours	16.5%	15
26 – 40 hours	36.3%	33
40+ hours	26.4%	24
	answered question	**91**
	skipped question	**2**

E4. Does your company pay you for the overtime? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
Yes	20.0%	18
No	65.6%	59
Partially	13.3%	12
Do not know	1.1%	1
	answered question	**90**
	skipped question	**3**

E5. Which occupational staff group do you belong to? (Please tick as many boxes as appropriate)		
Answer Options	**Response Percentage**	**Response Count**
Clerical - Go to E7	3.3%	3
Finance - Go to E7	3.3%	3
HR - Go to E7	0.0%	0
IT - Go to E6	79.1%	72
Management - Go to E7	16.5%	15
Secretarial - Go to E7	1.1%	1
Other - Go to E7	7.7%	7
	answered question	**91**
	skipped question	**2**

E6. If you are working in IT, which position best describes your role? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
Chief Information Officer	0.0%	0
Director of department	0.0%	0
Head of department	1.3%	1
Project manager	10.5%	8
Delivery manager	6.6%	5
Team manager	6.6%	5
IT consultant	35.5%	27
Technical supervisor	3.9%	3
Systems architect	3.9%	3
Systems analyst	15.8%	12
Systems designer	9.2%	7
IT support	3.9%	3
Onshore/offshore coordinator	7.9%	6
Developer/programmer	15.8%	12
Testing supervisor	1.3%	1
Tester	7.9%	6
Secretary	1.3%	1
Assistant	2.6%	2
Other (please specify)	13.2%	10
	answered question	**76**
	skipped question	**17**

E7. If you are working in an area other than IT, please specify your role __________?	
Answer Options	**Response Count**
	21
answered question	**21**
skipped question	**72**

E8. Have you attended any professional training when you work on GSO or GSO related projects? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
Yes - Go to E9	45.1%	41
No - Go to E11	50.5%	46
Don’t know - Go to E11	4.4%	4
	answered question	**91**
	skipped question	**2**

E9. If you have attended any GSO training, who provided the training? (Please tick as many boxes as appropriate)		
Answer Options	**Response Percentage**	**Response Count**
Your company	82.9%	34
Your GSO partner’s company	14.6%	6
External training company	36.6%	15
Other (please specify)	0.0%	0
	answered question	**41**
	skipped question	**52**

E10. If you have attended any GSO training, what is your opinion on the usefulness of the training? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
Very good	13.2%	5
Good	68.4%	26
Indifferent	13.2%	5
Poor	2.6%	1
Very poor	2.6%	1
	answered question	**38**
	skipped question	**55**

E11. In your opinion, do you have the opportunity for career development for your job since you started to work on GSO projects? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
Yes	63.7%	58
No	24.2%	22
Don't know	12.1%	11
	answered question	**91**
	skipped question	**2**

E12. As GSO project(s) rely heavily on overseas IT professionals, if you are required to undertake overseas work, who will apply the work visa for you? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
Company	54.9%	50
Job Agency	0.0%	0
I do not work in a different country - Go to E14	28.6%	26
Do not know - Go to E14	15.4%	14
Other (please specify)	1.1%	1
	answered question	**91**
	skipped question	**2**

E13. Have you encountered any problems in applying for a work visa when working on GSO projects? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
No	79.6%	43
Don't know	18.5%	10
Yes (please specify)	1.9%	1
	answered question	**54**
	skipped question	**39**

E14. If you have been working on GSO projects over one year, would you consider working continuously onshore or offshore? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
I prefer to work onshore *	53.0%	44
I prefer to work offshore **	9.6%	8
Company will send me offshore* anyway	3.6%	3
Company will send me onshore anyway**	9.6%	8

Don't know	24.1%	20
	answered question	**83**
	skipped question	**10**

E15. If you have been working on GSO projects over one year, would you consider leaving GSO or GSO related projects? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
No	27.5%	25
Don't know	41.8%	38
Yes (please specify your reasons)	30.8%	28
	answered question	**91**
	skipped question	**2**

Section Four – GSO Projects

D1. How long has your company been working on GSO projects? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
Less than 1 year	1.2%	1
1-5 years	39.8%	33
6-10 years	26.5%	22
10+ years	26.5%	22
Do not know	6.0%	5
	answered question	**83**
	skipped question	**10**

D2. Which part of a GSO project are you normally involved with? (Please tick as many boxes as appropriate)		
Answer Options	**Response Percentage**	**Response Count**
Decision making	32.5%	27
Company strategy making	24.1%	20
Feasibility study	27.7%	23
Project investigation	30.1%	25
Project planning	36.1%	30
Requirements capture	36.1%	30
High level systems analysis	30.1%	25
Detailed systems analysis	22.9%	19
Component systems analysis	22.9%	19
System architecture	20.5%	17
High level systems design	33.7%	28
Detailed systems design	28.9%	24
Component systems design	27.7%	23
Test planning	31.3%	26
Documentation maintenance	22.9%	19
Programming	25.3%	21
Testing	36.1%	30
Debugging	20.5%	17

Training	26.5%	22
Quality control	43.4%	36
Organizational change	22.9%	19
Systems maintenance	14.5%	12
Other (please specify)	25.3%	21
	answered question	**83**
	skipped question	**10**

D3. Do you work directly with the GSO partners*? (Please tick one box)		
Answer Options	**Response Percentage**	**Response Count**
Yes	79.5%	66
No	18.1%	15
Do not know	2.4%	2
	answered question	**83**
	skipped question	**10**

D4. If you need to communicate with the GSO partners, which method(s) do you usually adopt? (Please tick as many boxes as appropriate)		
Answer Options	**Response Percentage**	**Response Count**
Email	86.7%	72
External/Internal Post	8.4%	7
Telephone	79.5%	66
Telephone conference system	66.3%	55
Video conference system	12.0%	10
Workshop (travelling to the workplace)	37.3%	31
I do not need to communicate with the GSO partners - Go to D6	12.0%	10
Other (please specify)	25.3%	21
	answered question	**83**
	skipped question	**10**

D5. Who do you usually communicate with in the GSO projects? (Please tick as many boxes as appropriate)		
Answer Options	**Response Percentage**	**Response Count**
Chief Information Officer	2.7%	2
Director of department	16.2%	12
Head of department	**29.7%**	**22**
Project manager	54.1%	40
Delivery manager	54.1%	40
Team manager	**47.3%**	**35**
IT consultant	48.6%	36
Technical supervisor	**27.0%**	**20**
Systems architect	27.0%	20
Systems analyst	54.1%	40
Systems designer	**40.5%**	**30**
IT supporter	25.7%	19
Onshore/offshore coordinator	**56.8%**	**42**
Developer/programmer	54.1%	40
Testing supervisor	36.5%	27

Tester	**43.2%**	**32**
Secretary	5.4%	4
Assistant	**6.8%**	**5**
Marketing people	12.2%	9
Business/requirement analyst	28.4%	21
Business representatives	**31.1%**	**23**
Other (please specify)	4.1%	3
	answered question	**74**
	skipped question	**19**

D6. What are the development methods your company adopts in GSO projects? (Please tick as many boxes as appropriate)		
Answer Options	**Response Percentage**	**Response Count**
Blended methodologies such as structured systems analysis and design method (SSADM)	22.9%	19
Object-oriented methodologies such as Rational Unified Process (RUP)	10.8%	9
Rapid development methodologies such as extreme programming (XP) or Dynamic Systems Development Model (DSDM)	15.7%	13
People-oriented methodologies such as Effective technical and human implementation of computer-based systems (ETHICS)	2.4%	2
Organizational-oriented methodologies such as project in controlled environments (PRINCE)	25.3%	21
Company own standard development method/process	50.6%	42
No development methodology	6.0%	5
Do not know	19.3%	16
Other (please specify)	10.8%	9
	answered question	**83**
	skipped question	**10**

D7. In your opinion, which methods have been successfully applied to the GSO project(s)? (Please tick as many boxes as appropriate)		
Answer Options	**Response Percentage**	**Response Count**
Blended methodologies such as SSADM	18.1%	15
Object-oriented methodologies such as RUP	7.2%	6
Rapid development methodologies such as XP or DSDM	14.5%	12
People-oriented methodologies such as ETHICS	1.2%	1
Organizational-oriented methodologies such as PRINCE	16.9%	14
Company own standard development method/process	26.5%	22
No methodology was successfully applied to GSO projects	14.5%	12
Do not know	33.7%	28
Other (please specify)	4.8%	4
	answered question	**83**
	skipped question	**10**

D8. In order to understand the quality and implementation of current GSO projects, we need to look into some project related factors. Based on your GSO project experiences, how well do you rate the performance of these project factors below? (Please tick one box for each issue. If you are not sure about some answers, please tick the "Do not know" column)							
Answer Options	**Very Good**	**Good**	**Indifferent**	**Poor**	**Very Poor**	**Do not know**	**Response Count**
Understanding of business requirements	6	29	14	21	6	7	83
Systems analysis/design skills	4	37	19	9	4	10	83
Systems architecture skills	4	28	21	8	5	17	83
Efficiency in programming/debugging	4	21	20	18	6	14	83
Efficiency in testing	5	25	19	19	3	12	83
Efficiency in training	4	26	10	13	4	26	83
Efficiency in delivery	6	19	22	19	7	10	83
Quality of delivery	3	16	24	22	6	12	83
Understanding of development methods	5	26	16	9	2	25	83
Project management	1	38	18	12	3	11	83
People management	8	30	13	10	4	18	83
Working long hours (over 35 hours per week)	24	15	10	12	6	16	83
Other (please specify)							2
						answered question	**83**
						skipped question	**10**

D8. (continued) The performance of communications							
Answer Options	**Very Good**	**Good**	**Indifferent**	**Poor**	**Very Poor**	**Do not know**	**Response Count**
Efficiency in communication	3	37	12	23	6	2	83
Quality of Language	9	31	11	23	7	2	83
Understanding of different working styles	2	20	22	27	2	10	83
Understanding of different culture	2	25	17	25	8	6	83
Cross company communication	3	18	21	20	4	17	83
Cross culture communication	3	18	16	20	2	24	83
Other (please specify)							1
						answered question	**83**
						skipped question	**10**

D9. In your opinion, which part(s) of IT software development is appropriate to outsource? (Please tick one box for each item. If you are not sure about an answer, please tick the "Do not know" column)						
Answer Options	**High Desirability**	**Middle Desirability**	**Low Desirability**	**Never Desired**	**Do not know**	**Response Count**
Feasibility study (including initial requirements understanding and decision making)	2	11	28	38	4	83
Project investigation (including understanding high-level functional and non-functional requirements)	4	18	39	18	4	83
System architecture	5	27	30	15	6	83

High level systems analysis and design	5	20	37	15	6	83
Detailed systems analysis and design	19	32	17	9	6	83
Components analysis and design	24	35	10	8	6	83
Development methodology adoption	15	18	28	13	9	83
Implementation (including programming and debugging)	48	19	7	4	5	83
Quality control	8	16	31	24	4	83
Testing	35	22	17	5	4	83
Maintenance (including training and documentation preparing)	28	22	21	8	4	83
Review and verification (including organisational learning)	6	18	30	23	6	83
Project level management	5	27	28	18	5	83
Other (please specify)						2
					answered question	**83**
					skipped question	**10**

D10. Which part(s) of the software development is your company currently working on? (Please tick as many boxes as appropriate)		
Answer Options	**Response Percentage**	**Response Count**
Feasibility study	51.8%	43
Project investigation	62.7%	52
High level systems analysis and design	67.5%	56
System architecture	65.1%	54
Detailed systems analysis and design	75.9%	63
Components analysis and design	72.3%	60
Development methodology adoption	33.7%	28
Implementation	73.5%	61
Quality control	55.4%	46
Testing	74.7%	62
Maintenance	69.9%	58
Review	51.8%	43
Project management	77.1%	64
Don't know	8.4%	7
Other (please specify)		2
	answered question	**83**
	skipped question	**10**

D11. In your opinion how well is the current GSO benefiting the following project factors? (Please tick one box for each issue. If you are not sure about an answer, please tick the “Do not know” column)							
Answer Options	**Very Good**	**Good**	**Indifferent**	**Poor**	**Very Poor**	**Do not know**	**Response Count**
Project planning	5	27	17	19	4	11	83
Resource estimate	12	26	11	18	7	9	83
Systems development	10	27	20	12	5	9	83
Delivery on time	15	26	11	12	11	8	83

Quality of the delivery	3	16	18	29	9	8	83
Running projects in global time	8	26	16	14	5	14	83
Resource flexibility	18	32	8	11	5	9	83
Optimising project resource	7	28	17	13	3	15	83
Other (please specify)							1
						answered question	**83**
						skipped question	**10**

D12. In your opinion, how do the following factors contribute to your company's decision to obtain or approve a GSO project? (Please tick one box for each item. If you are not sure about some answers of listed items, please tick the "Do not know" column.)

Answer Options	Very Important	Fairy Important	Neither important nor unimportant	Not Very Important	Not Important At All	Do not know	Response Count
Company reputation	27	38	2	2	1	10	80
Successful industry precedent(s)	23	34	4	3	1	13	78
Inter-company relationship	17	31	10	9	1	12	80
Highly skilled staff	28	36	2	2	0	12	80
CMM/CMMI or other IT authentication	11	29	17	4	1	16	78
Competitive market quote	29	34	4	0	0	13	80
High-standardised IT infrastructure	9	34	19	4	1	13	80
High quality of IT delivery	27	32	5	3	1	12	80
Efficient systems development	17	44	2	3	1	12	79
Advanced IT technology/skills	21	30	14	2	1	12	80
Communication and language ability	16	33	14	4	2	11	80
Government support	3	9	21	19	7	21	80
Culture/language similarity	4	27	22	9	5	13	80
Social/political similarity	2	11	22	20	9	16	80
Domestic market requirement	7	30	16	6	4	17	80
Global market requirement	10	25	19	7	1	18	80
Other (please specify)							1
						answered question	**80**
						skipped question	**13**

D13. Have you experienced any of the following problems when working on GSO projects? (Please tick as many boxes as appropriate)		
Answer Options	**Response Percentage**	**Response Count**
Age discrimination	3.6%	3
Dissatisfaction with your professional capability	9.6%	8
Dissatisfaction with your accent	13.3%	11
Dissatisfaction with the country you come from	6.0%	5
Dissatisfaction with the quality of your communication skills	13.3%	11
Lack of respect for your culture	12.0%	10
Lack of respect for your religion	8.4%	7
Racism/racial discrimination	12.0%	10
Sex discrimination	1.2%	1
No problem at all - Go to I7	66.3%	55
Other (please specify)	3.6%	3
	answered question	**83**
	skipped question	**10**

D14. If you have any comments on GSO projects or this GSO survey, please could you specify in the textbox below…	
Answer Options	**Response Count**
	28
answered question	**28**
skipped question	**65**

Appendix G – Results of question D14

Respondent ID	Answers for Question D14
558239815	This is a nice survey, hopefully our company can learn something from the data analysis. Cheers!
558648763	Not really.
560259242	such a long survey, it took me 30 mines!
561372044	No
561375694	Any issues I have with GSO related projects are more the fault of our company, the outsourcing company, rather than the offshore provider. The process to implement any kind of system change has become so complex now that it is demoralising and surely cannot be a cost-saving. Also, we expect offshore companies (whose staff have a completely different cultural and business background to ourselves) to understand Insurance-related business requirements. This I fee is where all the issues generate from - in my opinions, it is the responsibility of the outsourcing company to specify requirements in such a way that the developer does not need to understand the business requirement.
561379696	Good Survey...
561380341	The cultural difference makes it difficult to know if GSO partner actually understands or whether they are just saying they understand so as not to lose face. They need to be honest and up font.
561503964	The questions could have been worded better.
561804228	Q I1 Have you experienced any of the following problems when working on GSO projects? The answers are all relating to dissatisfaction with myself but I have experienced dissatisfaction from the GSP especially with communication
563796154	Not really
563861269	a number of the questions seemed to be from the viewpoint of the employee of a GSO. As an employee of a UK plc. who is engaged in work with GSO's I have found these questions difficult/impossible to answer
564313026	I think GSO projects can work but in my company they are poorly implemented. My biggest complaint of the staff we get is their poor communication skills and the fact that often they will just do what they are told even if the request would perhaps break something else - more initiative required. The higher levels of management are not interested if the GSO setup is not working as many have staked their reputations on doing it and it is just numbers on a balance sheet to them.
566242047	No, this survey contains too many questions.
566373062	A nice survey
566436740	Logistics are a major issue. My experience is more with partners on-shore staff but there can be issues with language. Generally I've found people that I've worked with to be respectful and eager to please the client but the quality of the work is not always there
568714202	When dealing with a GSO we have had instances of a high turnover of staff with little or no hand over to the new GSO colleague taking over - causing internal rework, cost and frustration. However when an GSO person has had a reasonable time period in a role, we have seen good results.
569011450	This survey is too long
569104957	1) There is a detachment from Senior Management of the outsourcing co. to actual experience in practice. They are not close enough to the problems & hence do not understand & cannot act efficiently to resolve problems. They just appear to want to achieve outsource numbers - not understanding how to achieve the full benefits & efficient operation. e.g. training of outsource staff & embedding the change is totally inadequate. Requirements still specified as if onshore resource able to intelligently interpret. 2) there appears staff turnover in the supplier co. and whilst unit costs appear good - overall costs are higher than before as delivery is slower.
569378697	Not really
570374728	My answers reflect limited involvement on GSO projects
570866178	the main issue i have encountered is that offshore partners are not nearly as passionate about the onshore company's core business and success as its in-house onshore staff
576968586	Gash I have done your survey. Honestly it is a bit longer than I have expected !!!
578098853	Hi Gash, best wishes for your survey and PhD. I have gone back to India in Jan as Micro has been canned. Wish you all the best!
588970204	Gash, this questionnaire took me 25 minutes to finish, hopefully, it will bring some help for your PhD. Keep in touch!
589808761	Hi Gash, nice survey, will be interested in your final report.
611735273	Gash - good luck for your PhD, I have done my job.
614694047	Gash, finally I finish the survey for you, good luck for your study, and let me know when you achieve your degree.
618754622	There are certain questions not applicable to a person who works as a GSO Partner. Bit of restructuring answers would have helped to know a GSO partner's view point. Over all a good survey.